1. Apparatus and method for forming three-dimensional objects using linear solidification

Date: 2018-06-19 | ID: 10000023

Abstract: An apparatus and method for making a three-dimensional object from a solidifiable material using a linear solidification device is shown and described. In certain examples, the linear solidification device includes a laser diode that projects light onto a scanning device, such as a rotating polygonal mirror or a linear scanning micromirror, which then deflects the light onto a photohardenable resin. As a result, the linear solidification device scans a line of solidification energy in a direction that is substantially orthogonal to the direction of travel of the laser diode. In other examples, the linear solidification device is a laser device array or light emitting diode array that extends in a direction substantially orthogonal to the direction of travel of the array.

2. Method for operating a press with an underneath drive and press operated according thereto

Date: 2018-06-19 | ID: 10000032

Abstract: A method and a press are proposed for an energy-efficient drive of a press (1) with a bottom drive, in which a drive device (2) disposed in a bottom section (3), a plunger (1.1) executing a stroke (H) and receiving an upper tool part (1.2) with at least one acting tie rod (2.1.2) of a drive train (2.1) are provided and the upper tool part (2.1) corresponding to a bottom tool part (3.2) disposed in the bottom section (3) machines or forms a work piece (5). The drive device (2) is operated by at least one motor (2.1.1) and by way of a control and regulation device (4) connecting the motor (2.1.1) and the drive train (2.1). Each drive train (2.1) can be operated by its own motor (2.1.1). When using a drawing device with a holder (3.3.1), it is operated in the change and during at least a partial path of the respective stroke (H) by the drive train (2.1) while observing a shaft-type free space (3.2) provided in the bottom section (3) in a coupled or decoupled manner by a releasable rotatory or translational active connection.

3. High kinetic energy penetrator shielding and high wear resistance materials fabricated with boron nitride nanotubes (BNNTS) and BNNT polymer composites

Date: 2018-06-19 | ID: 10000036

Abstract: Boron nitride nanotubes (BNNTs), boron nitride nanoparticles (BNNPs), carbon nontubes (CNTs), graphites, or their combinations, are incorporated into matrices of polymer, ceramic or metals. Fibers, yarns, and woven or nonwoven mates of BNNTs are uses as toughening layers in penetration resistant materials to maximize energy absorption and/or high hardness layers to rebound or deform penetrators. They can be also uses as reinforcing inclusions combining with other polymer matrices to create composite layer like typical

reinforcing fibers such as Kevlar®, Spectra®, ceramics and metals. Enhanced wear resistance and prolonged usage time, even under harsh conditions, are achieved by adding boron nitride nanomaterials because both hardness and toughness are increased. Such materials can be used in high temperature environments since the oxidation temperature of BNNTs exceeds 800° C. in air. Boron nitride based composite materials are useful as strong structural materials for anti-micrometeorite layers for spacecraft and space suits, ultra strong tethers, protective gear for the human body as well as for vehicles, helmets, shields and safety suits/helmets for industry.

4. Electrostatic energy generator using tire cord fabric

Date: 2018-06-19 | ID: 10000097

Abstract: An electrostatic energy generator may include one or more first tire cord fabrics each including a conductive material which is a wire-shaped electrode and a non-conductive material, the non-conductive material configured to surround an outer peripheral surface of the conductive material, and one or more second tire cord fabrics each including a conductive material which is a wire-shaped electrode, and a material configured to surround an outer peripheral surface of the conductive material that is different from the non-conductive material of the first tire cord fabric, wherein the first tire cord fabric and the second tire cord fabric are arranged in a longitudinal direction so as to be in contact with each other and form a bundle, such that frictional electricity is generated due to a friction between the first tire cord fabric and the second tire cord fabric.

5. Pelvic load management using integrated collapsible features in door trim panel

Date: 2018-06-19 | ID: 10000112

Abstract: A door assembly for a vehicle includes a door panel and a door trim panel comprising a shaped pelvic load path energy-absorbing feature disposed on a door panel-facing surface of the door trim panel. The shaped pelvic load path energy-absorbing feature is defined by a plurality of stepped surfaces, which in turn may define as various cross-sectional shapes for the shaped pelvic load path energy-absorbing feature.

6. Method for operating parallel auxiliary converters in a rail vehicle

Date: 2018-06-19 | ID: 10000122

Abstract: In a method for supplying an electrical load of a vehicle with electrical energy by auxiliary converters connected in parallel on the alternating-voltage side, a current flow between the auxiliary converters and a grounded N conductor of an energy supply network is interrupted in the presence a ground fault. The auxiliary converters connected in parallel on the alternating-voltage side are operated with fundamental-wave and pulse synchronicity. An energy supply system of a vehicle, in particular of a rail vehicle, performs this

method, with the energy supply system including at least two auxiliary converters arranged in parallel, an energy supply network for supplying electrical loads, at least one switch for interrupting a current flow between the auxiliary converters and the energy supply network.

7. Power supply apparatus and method for hybrid vehicle

Date: 2018-06-19 | ID: 10000125

Abstract: Provided are a power supply apparatus and method for a hybrid vehicle. The power supply apparatus is integrated with a power conversion device and an energy storage device in order to reduce a size and production cost of the power supply apparatus and includes a battery unit including a plurality of battery cells configured to store different levels of power and a power control unit configured to control the battery unit to integrally or selectively output the power of the plurality of battery cells based on whether an engine of the hybrid vehicle generates power.

8. Method and system for controlling fuel cell vehicle

Date: 2018-06-19 | ID: 10000141

Abstract: A method and system for controlling a fuel cell vehicle are provided. The method includes determining, by a controller, a driving pattern of a driver based on driving information including acceleration and deceleration information. A condition for activation of an idling-stop of a fuel cell is then set based on the determined driving pattern and the fuel cell is stopped from generating electric energy when the condition for activation of the idling-stop is satisfied.

9. Vehicle article carrier with integrated camera and solar powered lighting

Date: 2018-06-19 | ID: 10000160

Abstract: A vehicle article carrier system is disclosed for carrying articles above an outer body surface of a vehicle. The system may incorporate at least one support rail secured to the outer body surface. The support rail may have a support foot portion at each of its opposite ends, with each support foot portion secured to the outer body surface of the vehicle. A sensor may be mounted on the at least one support rail or one of the support feet portions for sensing a characteristic within a field of view around the vehicle and providing related information to a subsystem of the vehicle.

10. Vehicle electrical system and method for operating a vehicle electrical system

Date: 2018-06-19 | ID: 10000168

Abstract: A vehicle electrical system includes a first system branch with a first nominal voltage U1, a second system branch with a second nominal voltage U2, at least one DC/DC converter configured to transmit

energy between the first and second system branches, a first actuating unit to actuate the DC/DC converter(s), a first detection unit to detect an instantaneous voltage Uact,1 of the first system branch, and a comparison unit to compare the detected instantaneous voltage Uact,1 to a first upper voltage threshold value Uo,1 and to a first lower voltage threshold value Uu,1, wherein Uu,1<U1<Uo,1. The first actuating unit actuates the DC/DC converter(s) such that energy is transmitted from the first system branch to the second system branch if Uact,1>Uo,1, and such that energy is transmitted from the second system branch to the first system branch if Uact,1<Uu,1.

11. Vehicle energy-absorbing device

Date: 2018-06-19 | ID: 10000171

Abstract: An energy-absorbing device includes a beam having a longitudinal axis and a plurality of lobes attached to and positioned sequentially along the beam. The lobes are spaced from each other, deformable relative to the beam, and configured to contact adjacent lobes when deformed. The size and spacing of the lobes is such that if a single lobe is deformed, the lobe will not contact adjacent lobes, but if adjacent lobes are deformed, the lobes will contact each other.

12. Mild hybrid powertrain controls

Date: 2018-06-19 | ID: 10000197

Abstract: Mild hybrid powertrain controls and apparatuses, methods and systems including the same are disclosed. One exemplary embodiment is a mild-hybrid system comprising an engine, an electrical machine, power electronics, an energy storage system, and an electrical load. The system includes a controller structured to receive an electrical machine power command based upon a power allocation to the electrical machine, process the electrical machine power command with feedforward controls structured to compensate for an inaccuracy associated with the power electronics, process the electrical machine power command with proportional integral (PI) controls structured to compensate for a power loss associated with one or more electrical loads, provide a compensated machine power command based upon the processing with the feedforward controls and the processing with the PI controls, and output the compensated machine power command to control the electrical machine.

13. Systems and methods for pressure tolerant energy systems

Date: 2018-06-19 | ID: 10000260

Abstract: Systems and methods are disclosed herein for a pressure tolerant energy system. The pressure tolerant energy system may comprise a pressure tolerant cavity and an energy system enclosed in the pressure tolerant cavity configured to provide electrical power to the vehicle. The energy system may include

one or more battery cells and a pressure tolerant, programmable management circuit. The pressure tolerant cavity may be filled with an electrically-inert liquid, such as mineral oil. In some embodiments, the electrically-inert liquid may be kept at a positive pressure relative to a pressure external to the pressure tolerant cavity. The energy system may further comprise a pressure venting system configured to maintain the pressure inside the pressure tolerant cavity within a range of pressures. The pressure tolerant cavity may be sealed to prevent water ingress.

14. Pushing device, moving mechanism and aircraft

Date: 2018-06-19 | ID: 10000276

Abstract: The present application relates to a pushing device, a moving mechanism and an aircraft. According to an aspect of the present application, a pushing device for a moving mechanism of an aircraft is provided, the moving mechanism including a primary moving device and an auxiliary moving device assisting the primary moving device, the pushing device including a support member and a pushing assembly supported by the support member, and the pushing assembly including a pushing element and an energy storage element. The pushing element is adapted to push a broken part of the auxiliary moving device to an offset position from a normal working position by means of energy from the energy storage element when the auxiliary moving device breaks. According to the present application, it is possible to provide an effective fault protection to the moving mechanism of the aircraft.

15. Gas-electric propulsion system for an aircraft

Date: 2018-06-19 | ID: 10000293

Abstract: In one aspect the present subject matter is directed to a gas-electric propulsion system for an aircraft. The system may include a turbofan jet engine, an electric powered boundary layer ingestion fan that is coupled to a fuselage portion of the aircraft aft of the turbofan jet engine, and an electric generator that is electronically coupled to the turbofan jet engine and to the boundary layer ingestion fan. The electric generator converts rotational energy from the turbofan jet engine to electrical energy and provides at least a portion of the electrical energy to the boundary layer ingestion fan. In another aspect of the present subject matter, a method for propelling an aircraft via the gas-electric propulsion system is disclosed.

16. Structures and process for preventing a projection of the laser resealing structure beyond the wafer surface

Date: 2018-06-19 | ID: 10000375

Abstract: A method for manufacturing a micromechanical component including a substrate and a cap connected to the substrate and together with the substrate enclosing a first cavity, a first pressure prevailing

and a first gas mixture with a first chemical composition being enclosed in the first cavity. An access opening, connecting the first cavity to surroundings of the micromechanical component, is formed in the substrate or the cap. The first pressure and/or the first chemical composition is adjusted in the first cavity. The access opening is sealed by introducing energy and heat into an absorbing part of the substrate or cap with the aid of a laser. A recess is formed in a surface of the substrate or of the cap facing away from the first cavity in the area of the access opening for accommodating a material area of the substrate or the cap converted into a liquid aggregate state.

17. Carbon monoxide shift reaction apparatus and carbon monoxide shift conversion method

Date: 2018-06-19 | ID: 10000378

Abstract: A carbon monoxide (CO) Shift reaction apparatus and a CO shift conversion method are capable of increasing the service life of a CO shift catalyst and reducing loss of energy. The CO shift reaction apparatus includes a plurality of CO shift reaction units in which a plurality of CO shift catalysts haying mutually different active-temperature regions are arranged in a gas flow direction.

18. Method for forming of siliceous film and siliceous film formed using same

Date: 2018-06-19 | ID: 10000386

Abstract: A siliceous film having high purity and a low etching rate is formed by (a) a step for forming a siliceous film on a substrate by coating a solution composed of a polysilazane, e.g., perhydropolysilazane on a substrate and then hardening (curing) the solution in an oxidizing atmosphere, or by coating a silica solution formed by a sol-gel method on a substrate, and (b) a step for heating the siliceous film in an inert gas environment containing a nitrogen-containing compound such as an alkylamine having a base dissociation constant (pKb) no greater than 4.5, or a halogen-containing compound in which the bond energy of a halogen atom such as F2, Br2, or NF3 is no greater than 60 kcal/mol, in order to anneal the film.

19. Controlled microwave assisted synthesis of functionalized silica nanoparticles

Date: 2018-06-19 | ID: 10000390

Abstract: A method of synthesizing silica nanoparticles. The method includes hydrolyzing a silica precursor to form a plurality of monomers, each monomer of the plurality comprising a microwave reactive silicon species. The plurality of monomers is irradiated by an energy source configured to generate microwave frequency energy. Irradiation cases the plurality of monomers polymerize into a silica nanoparticle.

20. Organic-waste-processing apparatus, processing method, and control apparatus

Date: 2018-06-19 | ID: 10000403

Abstract: An organic-waste-processing apparatus reducing a moisture of, and conducting a thermal operation process to, an organic waste, includes: a moisture-reducing unit; a combustion unit; a combustion-energy-supply unit; an energy-supply-operation controller; an organic-waste-energy-estimating unit; a total-energy-consumption measuring unit; a relation-maintaining unit; a quantitative-relationship-grasping unit; and a moisture reduction controller. The moisture reduction controller controls an operation of the moisture-reducing unit so that the estimated value of the organic waste energy to be estimated by the organic-waste-energy-estimating unit is directed in a direction reducing a quantitative difference from the optimum value of the organic waste energy based on the quantitative relationship grasped by the quantitative-relationship-grasping unit between the optimum value of the organic waste energy and the latest estimated value of the organic waste energy.

21. Energy and environmentally integrated method for production of aromatic dicarboxylic acids by oxidation

Date: 2018-06-19 | ID: 10000435

Abstract: A continuous process for oxidizing a di-alkyl substituted aromatic compound with compressed air in a primary bubble column reactor; including removing a portion of the three phase reaction medium to a post-oxidation bubble column unit supplied with compressed air separating the post oxidation reaction medium to an overhead gas and an underflow slurry; collecting overhead gases from the oxidation reactors and the de-gassing unit and conducting the combined overhead gases to a water removal column (WRC); transferring the underflow slurry from the de-gassing unit to a digestion unit to effect further oxidation without addition of air to the digestion unit; removing overhead gases to the water removal column; crystallizing the final oxidation slurry; and filtering the slurry on a rotary pressure filter; wherein a portion of the energy of the off gas from the WRC is employed to drive an air compressor to supply the compressed air for oxidation.

22. Method for preparing organic vapor-phase dehydration feedstock

Date: 2018-06-19 | ID: 10000436

Abstract: The present invention relates to a method including: directly heating a fermentation broth to remove impurities, thereby preparing an organic vapor-phase dehydration feedstock; and continuously subjecting the organic vapor-phase dehydration feedstock to a vapor-phase dehydration reaction. According to the present invention, impurities in a fermentation broth, which have been removed by a multi-step process in the prior art, can be completely removed in a single-step process, and thus the time, cost and energy required for a process for preparing an organic vapor-phase dehydration feedstock from the fermentation broth can be effectively reduced, and the process for preparing the organic vapor-phase dehydration feedstock and a

vapor-phase dehydration reaction can be continuously performed in an effective manner.

23. Method for producing tetraalkoxysilane

Date: 2018-06-19 | ID: 10000514

Abstract: An object of the present invention is to provide a method for producing tetraalkoxysilane while saving energy at a high yield. Tetraalkoxysilane can be produced while saving energy at a high yield by the method including a first step of reacting alcohol with carbon dioxide in the presence of a dehydrating agent and/or in a reactor provided with a dehydrating means, and a second step of reacting a reaction mixture obtained in the first step with silicon oxide.

24. Process for producing aromatic vinyl/conjugated diene copolymer and product of hydrogenation thereof

Date: 2018-06-19 | ID: 10000585

Abstract: As a method for producing a copolymer with a high oil absorption rate by separating a solvent from a copolymer solution containing a copolymer in a simple manner with a less energy consumption, the present invention relates to a production method for obtaining a copolymer by separating a solvent from a copolymer solution, the method including the following Steps A to C.

25. Weatherable sheet for solar cell module, product obtained using the sheet, and process for producing the weatherable sheet for solar cell module

Date: 2018-06-19 | ID: 10000616

Abstract: The present invention provides a weather-resistant sheet for a solar cell module, which has better adhesion to a water impermeable sheet, better blocking resistance against the water impermeable sheet, and better adhesion to EVA that is a sealant; a weather-resistant sheet for a solar cell module in which a cured coating film layer thereof can suppress UV transmission significantly; a product including the sheet; and a process for producing the sheet. The weather-resistant sheet for a solar cell module includes, on a water impermeable sheet, a cured coating film layer made of a crosslinked product of a coating composition that includes a hydroxyl group-containing fluoropolymer, wherein in a pressure-resistance test performed when a crosslinking degree of the cured coating film layer is 80 to 99%, the cured coating film layer and the water impermeable sheet without a cured coating film layer formed thereon are not adhered to each other after a load has been applied to the cured coating film layer and the water impermeable sheet being stacked.

26. Methods of forming solar cells with fired multilayer film stacks

Date: 2018-06-19 | ID: 10000645

Abstract: A method of forming a fired multilayer stack are described. The method involves the steps of a) applying a wet metal particle layer on at least a portion of a surface of a substrate, b) drying the wet metal particle layer to form a dried metal particle layer, c) applying a wet intercalation layer directly on at least a portion of the dried metal particle layer to form a multilayer stack, d) drying the multilayer stack, and e) co-firing the multilayer stack to form the fired multilayer stack. The intercalating layer may include one or more of low temperature base metal particles, crystalline metal oxide particles, and glass frit particles. The wet metal particle layer may include aluminum, copper, iron, nickel, molybdenum, tungsten, tantalum, titanium, steel or combinations thereof.

27. Active energy ray-curable inkjet ink composition

Date: 2018-06-19 | ID: 10000649

Abstract: The disclosure relates to an active energy ray-curable inkjet ink composition comprising at least a monomer and a pigment, wherein the monomer comprises at least 2-(2-vinyloxyethoxy)ethyl acrylate and dipropylene glycol diacrylate. A content of 2-(2-vinyloxyethoxy)ethyl acrylate is 36 to 65% by weight in a total weight of the ink. A content of dipropylene glycol diacrylate is 31 to 63% by weight in the total weight of the ink. A content of the pigment is 1 to c % by weight in the total weight of the ink, wherein the c is the pigment concentration at which the average absorbance at 320-380 nm in 2,000-fold dilution of the ink composition with dipropylene glycol diacrylate is 1.

28. Electrically conductive adhesives comprising at least one metal precursor

Date: 2018-06-19 | ID: 10000671

Abstract: The present invention relates to thermally curable adhesives that are suitable for use as electrically conductive materials in the fabrication of electronic devices, integrated circuits, semiconductor devices, passive components, solar cells, solar modules, and/or light emitting diodes. The thermally curable adhesives comprise at least one thermosetting resin, electrically conductive particles having an average particle size of 1 m to 50 m, and at least one metal precursor, wherein the metal precursor decomposes substantially to the corresponding metal during the thermal curing of the thermally curable adhesive.

29. Magnesium alumosilicate-based phosphor

Date: 2018-06-19 | ID: 10000697

Abstract: The invention relates to co-activated magnesium alumosilicate based phosphors, to a process of its preparation, the use of these phosphors in electronic and electro optical devices, such as light emitting diodes (LEDs) and solar cells and especially to illumination units comprising said magnesium

alumosilicate-based phosphors.

30. Method for employing corn plant material comprising cobs in the manufacture of ethanol

Date: 2018-06-19 | ID: 10000777

Abstract: Ear corn is picked from corn fields by ear corn harvesters and transported to a central shelling station associated with an ethanol manufacturing facility. Shelled corn from the central shelling station is processed into ethanol at the ethanol manufacturing facility, and corn cobs from the central shelling station are burned to provide process heat for the ethanol manufacturing process. Energy is conserved and costs are reduced during the picking and shelling of the ear corn and by the burning of cobs for process heat.

31. Titanium alloys exhibiting resistance to impact or shock loading

Date: 2018-06-19 | ID: 10000838

Abstract: Titanium alloys formed into a part or component used in applications where a key design criterion is the energy absorbed during deformation of the part when exposed to impact, explosive blast, and/or other forms of shock loading is described. The titanium alloys generally comprise a titanium base with added amounts of aluminum, an isomorphous beta stabilizing element such as vanadium, a eutectoid beta stabilizing element such as silicon and iron, and incidental impurities. The titanium alloys exhibit up to 70% or more improvement in ductility and up to a 16% improvement in ballistic impact resistance over a Ti-6Al-4V alloy, as well as absorbing up to 50% more energy than the Ti-6Al-4V alloy in Charpy impact tests. A method of forming a part that incorporates the titanium alloys and uses a combination of recycled materials and new materials is also described.

32. Multi-stack electrochemical compressor system and method for operating

Date: 2018-06-19 | ID: 10000855

Abstract: A multi-stack electrochemical hydrogen compressor (EHC) system is provided. The EHC system may have two or more EHC stacks, wherein each EHC stack includes at least one electrochemical cell and a power supply. The EHC system may also have a controller in communication with the power supply of each EHC stack, wherein the controller is configured to reduce total energy consumption of the EHC system by independently controlling the power supply of each EHC stack.

33. Rotary piston engine with operationally adjustable compression

Date: 2018-06-19 | ID: 10001011

Abstract: Axially protruding and centrally cool able pistons rotate within a cylindrical main chamber. Each piston is individually kinetically linked to a flywheel. As the pistons are individually accelerated and

decelerated along their continuous rotating path, rotating volumes between them angularly expand and contract. Inlets and outlets communicate fluid in correspondence with expansion and contraction phases of the rotating volumes. A low number of moving parts, area sealed volumes, no valves, balanced mass forces, smooth rotation and short force transmission paths between opposing mass forces provide for lightweight construction and high rotational speeds. Radial sliding secondary pistons of the kinetic linkage modulate secondary rotating volumes adjacent the main chamber for a dual stage thermodynamically efficient engine operation with intermittent fluid cooling or heating. Inlets and/or outlets may be angularly changed for variable compression and/or combustion engine peak pressures, expansion end pressure, for brake energy recycling and burst mode engine operation.

34. Combined electricity, heat, and chill generation for a Rankine engine

Date: 2018-06-19 | ID: 10001025

Abstract: A generator uses a working fluid in a single-cycle Rankine engine for up to three purposes: generation of electricity; generation of hot water from heat exchanger; and generation of chill by the evaporation of liquefied working fluid. The working fluid, which may be carbon dioxide, goes through a single Rankine cycle for both heat engine and heat pump. Instead of using a pump to liquefy the working fluid, the working fluid experiences cryogenic liquefaction method under controlled pressure. The Hui turbine is used for electricity generation. Heat source for the combined heat pump and heat engine could come from concentrated solar power or from burning a fossil fuel.

35. Gas valve

Date: 2018-06-19 | ID: 10001102

Abstract: A gas valve 1, in particular a dosing valve for a gaseous medium, having a valve seat body 3, which is arranged on a valve housing 2, and a closing body 7, which can perform a stroke motion relative to the valve seat body 3 and to an opening stroke stop 17 interacting with the valve housing 2. According to the invention, a gas valve 1 is provided which is improved as regards its durability. This is achieved by virtue of the fact that the gas valve 1 has an impact body which reduces the impact speed and/or impact energy of the closing body 7 on the valve seat body 3 and/or on the opening stroke stop 17.

36. Energy conversion system and method

Date: 2018-06-19 | ID: 10001107

Abstract: A method, a system, and a device are disclosed which are capable of using moving liquid to create energy in the form of compressed air. The method, system, and/or device does not harm or consume the liquid to operate. The compressed air can be used to operate anything from vehicles to electric generators.

37. Multifunctional wind power green-energy apparatus

Date: 2018-06-19 | ID: 10001109

Abstract: A multifunctional wind power green-energy apparatus generally includes a carrying base, a plurality of wind power generation devices mounted on the carrying base and includes a plurality of blade sections, and at least one electricity accumulation device, water pumping motor, and the air storage device arranged at one side of the carrying base and electrically connected with the wind power generation devices. With such a structural arrangement, through simple combination of the carrying base and the wind power generation devices, terrain limitation conditions for availability of wind power green energy can be reduced to the least for applications to diversified environments. Through operations in combination with the electricity accumulation device, the water pumping motor, and the air storage device, accumulation of electrical energy or direct use of the energy can be available. As such, the utilization of the wind power generation devices can be improved.

38. Solar/air turbine generator system

Date: 2018-06-19 | ID: 10001112

Abstract: The invention provides a solar/air turbine generator system that reduces construction and power generating costs and does not require the use of fossil fuel.A solar/air turbine generator system comprises: a compressor for drawing in and compressing air; a solar receiver for heating the air compressed by the compressor with the use of solar heat collected by a solar collector; an air turbine for driving the compressor and a generator by receiving the compressed air heated by the solar receiver; a regenerative heat exchanger, located between the compressor and the solar receiver, for heating the air compressed by the compressor using the exhaust of the air turbine as a heating medium; and a distribution device, located between the compressor and the regenerative heat exchanger, for distributing the compressed air to the side of the regenerative heat exchanger and to a bypass side, the bypass side being the inlet side of the air turbine. The solar/air turbine generator system further includes a control device for maintaining the air temperature at the inlet of the air turbine at a constant value by adjusting the flow rate of the air turbine exhaust that flows into the regenerative heat exchanger as a heating medium.

39. Rotary core modular SMA device

Date: 2018-06-19 | ID: 10001113

Abstract: The invention provides an energy recovery device comprising a first SMA core housed in a first immersion chamber and adapted to be sequentially filled with fluid to allow heating and/or cooling of the first SMA core wherein a first shaft is adapted to be turned by the SMA core mounted concentrically around said

first shaft. The SMA core comprises a plurality of SMA elements to define a module, wherein a plurality of modules are mounted in series and whereby movement of a first module is configured to be input to a second module enabling cumulative rotation of the shaft.

40. Laborsaving rotation shaft device

Date: 2018-06-19 | ID: 10001162

Abstract: A laborsaving rotation shaft device comprises a base; a first rotation unit; a pair of second rotation units, a first rotation guiding structure is disposed between the second rotation unit and the base, and a second rotation guiding structure is disposed between the second rotation unit and the first rotation unit; a torsion unit, having a connection rod, a friction torsion mechanism is disposed between the connection rod and the first rotation unit; a slide mechanism, including a slide block pivoted to the connection rod and radially formed with at least one slide hole allowing a slide rod to be received, and a spring sleeved on the slide rod; with an energy releasing or energy storing effect provided by the spring, the slide block is able to provide a torsion, which has effects of automatically unfolding and folding assistance, to the first rotation unit.

41. Thrust magnetic bearing for bias compensation

Date: 2018-06-19 | ID: 10001165

Abstract: The present invention relates to a thrust magnetic bearing for bias compensation, and more particularly, to a thrust magnetic bearing for bias compensation in which annular permanent magnets and electromagnets are disposed to face each other with respect to a levitated member and the permanent magnets are formed to be asymmetrical in lengths thereof in an axial direction to thus exert an attractive force for compensating for a bias by the difference in the lengths of the permanent magnets in the axial direction to compensate for the bias, and a current supply for bias magnetic flux is not required, saving energy.

42. Structures subjected to thermal energy and thermal management methods therefor

Date: 2018-06-19 | ID: 10001256

Abstract: Thermal management approaches and methods for structures requiring certain optical and thermal properties, for example, components of LED-based lighting units. Such a structure is in thermal communication with a source of visible light and thermal energy, and visible light emitted by the source passes through the structure. The structure includes a portion formed of a composite material containing a polymeric matrix material and a fiber material that contributes an optical scattering effect to the visible light passing through the composite material. The fiber material is made up of individual fibers that each comprise a core material and an opaque diffusive white coating on an external surface thereof. The fiber material and its coating contribute to the thermal conductivity and an optical scattering effect of the composite material.

43. Energy-saving recyclable display system

Date: 2018-06-19 | ID: 10001264

Abstract: An energy-saving recyclable display system, comprising a display stand, a packaging container and a suspension loop; a display rod is arranged on the display stand, the packaging container and the suspension loop are mounted in a dismountable way; a suspension notch is arranged on the upper part of the suspension loop; the lower part of the suspension loop is opened and stretches into the packaging container; the suspension loop is hollow inside and mounted with a circuit board and an illuminant; an electric wire is arranged on the circuit board; a conductive contact is arranged at the end of the electric wire protruding from the inner side face of the suspension notch; the conductive contact contacts with the display rod and forms a switched-on circuit. The product in the packaging container presents a favorable luminous effect when it is displayed.

44. Apparatus and methods to measure economizer outdoor air fractions and fault detection diagnostics of airflow, cooling capacity, and heating capacity

Date: 2018-06-19 | ID: 10001289

Abstract: An apparatus and method for measuring or controlling the Outdoor Air Fraction (OAF) ratio through economizer or outdoor air dampers and cabinet to total system airflow and mixed-air humidity ratio and wetbulb temperature for HVAC equipment. An OAF exceeding the minimum regulatory requirements wastes energy and contributes to global warming. OAF is used to optimize economizer damper position either manually or automatically using an economizer Fault Detection Diagnostic controller and actuator to meet minimum outdoor airflow requirements. After the outdoor air damper position is optimized, the mixed-air humidity ratio and mixed-air wetbulb temperature are determined and used with the measured mixed-air drybulb and supply-air drybulb temperatures to evaluate evaporator airflow, cooling capacity, and heating capacity, and, if necessary, provide a visual or electronically-transmitted error code signal indicating maintenance requirements to check or correct economizer damper position, cabinet leakage, airflow, cooling or heating capacity, and/or other faults for the HVAC system.

45. Fan coil thermostat with activity sensing

Date: 2018-06-19 | ID: 10001292

Abstract: Fan coil thermostats can provide energy savings by, for example, not unnecessarily heating and/or cooling an unoccupied room or other space. Fan coil systems employing such a fan coil thermostat may be more energy efficient. A fan coil system may include a fan coil that is configured for fluid communication with a source of heated fluid and/or a source of cooled fluid, a valve that controls fluid flow through the fan coil, a

fan that blows air across the fan coil and a fan coil thermostat. The fan coil thermostat may include a controller that implements a control algorithm that may include an unoccupied temperature setting. The controller may be programmed to permit a user to enter a user-chosen temperature setting. In response, the controller may initiate a timer, and may automatically return to the unoccupied temperature setting once the timer has expired.

46. Blow through direct fired heating, A/C and ERV

Date: 2018-06-19 | ID: 10001295

Abstract: According to various aspects, exemplary embodiments are disclosed of blow through direct fired heaters including evaporator coils and/or energy recovery ventilation.

47. Free-hanging parabolic trough reflectors for solar energy conversion systems

Date: 2018-06-19 | ID: 10001297

Abstract: A parabolic trough reflector assembly consists of (1) a free-hanging, flexible rectangular sheet that is highly reflective of solar radiation and (2) support hardware which critically supports the reflecting sheet at two opposing edges. Methods are disclosed for providing linear dimensions and edge slopes for the reflecting sheet that are consistent with a parabolic trough having specific predetermined dimensions and a predetermined focal length. Methods are disclosed for providing uniform loading for a reflecting sheet when it is critically supported as a free-hanging element. The methods involve tapering the thickness of a sheet, applying variable-thickness coatings to a sheet of uniform thickness, or fabricating discreet thickness variations into a sheet of otherwise uniform thickness.

48. Methods for operating solar-thermochemical processes

Date: 2018-06-19 | ID: 10001298

Abstract: Methods for controlling or operating solar thermochemical reactions process that maximize the two-step thermochemical energy cycle efficiency by a combination of pressure and temperature swing are disclosed.

49. Blackbody thermal receiver for solar concentrators

Date: 2018-06-19 | ID: 10001299

Abstract: To overcome shortcomings of the conventional thermal receiver, embodiments of the technology disclosed herein are directed towards an improved thermal receiver. More particularly, the various embodiments of the technology disclosed herein relate to thermal receivers without a vacuum insulation, otherwise known as an approximation of a blackbody. Various embodiments of the technology disclosed

herein enable greater absorption of sunlight collected by a parabolic solar trough concentrator compared with conventional thermal receivers.

50. Electric power peak-shaving and combined heat and power waste heat recovery device and operation method thereof

Date: 2018-06-19 | ID: 10001326

Abstract: An inner power plant portion and a heat exchange station portion. The inner power plant portion includes a heat exchanger, a waste heat recovery electric heat pump, an energy-storing electric heat pump, high/low temperature water storing tanks, a heating network heater, a valve and a circulating water pump; the heat exchange station portion includes high/low temperature water storing tanks, an electric heat pump, a heat exchanger, a valve and a circulating water pump; as for the operating method of the device, the device can operate in periods of an electrical load trough, an electrical load flat and an electrical load peak respectively through combination of different valve switches, the high temperature water storing tank is used for balancing the difference between system heat supply amount and heating load, the low temperature water storing tank is used for stabilizing steam exhaust waste heat recovery amount.

51. Comparator device and method for measuring absorbed energy-momentum symmetry originating from an energy source

Date: 2018-06-19 | ID: 10001408

Abstract: A method and a device for measuring absorbed energy-momentum symmetry in which radiant energy W·sr1·m2·nm1 is compared directly against its absorbed impinging momentum kg·m·s1 in a manner that will provide an experimental basis for asymmetrical anomalies that may or may not exist within a measurable range of the electromagnetic spectrum.

52. Adaptive heat flow calorimeter

Date: 2018-06-19 | ID: 10001417

Abstract: Apparatus and methods are provided for providing flexible and repairable testing capabilities for systems that generate or absorb heat such as energy storage systems. One embodiment can include a temperature bath structure adapted to contain and maintain a fluid bath at a predetermined temperature, an outer containment structure adapted to insert into the temperature bath structure, heat sinks, thermal sensor assemblies, and an internal containment structure where the thermal sensor assemblies and heat sinks removably attach to different sections of the inner containment structure so as to measure heat flow into or out of the inner containment structure's different sections. Embodiments of the invention enable rapid

insertion/removal of samples as well as replacement of sections of the system including embodiments or parts of thermal sensor assemblies as well as enabling separate thermal measurements associated with different sections of a sample under test within the inner containment structure.

53. Leak detector

Date: 2018-06-19 | ID: 10001427

Abstract: A handheld-sized, single-hand-holdable, single-hand-operable battery-powered gas leak detector that draws in a sample of ambient air for detecting the presence of a gas by sensing changes in infrared (IR) energy between an IR emitter and an IR sensor when the gas is in the space between the IR emitter and the IR sensor. An algorithm is used that triggers detection of a gas when the change in IR energy between the IR emitter and the IR sensor is more rapid than the thermal drift of the IR sensor, and the detector design allows for IR energy within a wide range of approximately 0.4 micrometers to approximately 20 micrometers to pass into the air being sampled.

54. Light harvesting multichromophore compositions and methods of using the same

Date: 2018-06-19 | ID: 10001473

Abstract: Light harvesting luminescent multichromophores that are configured upon excitation to transfer energy to, and amplify the emission from, an acceptor signaling chromophore in energy-receiving proximity therewith are provided. Also provided are compositions for labelling a target. The labelling composition may include a donor light harvesting multichromophore and an acceptor signaling chromophore in energy-receiving proximity to the donor light harvesting multichromophore. Also provided is an aqueous composition for labelling a target, including: a donor light harvesting multichromophore; an acceptor signaling chromophore in energy-receiving proximity therewith; and a sensor biomolecule. Methods for using the subject compositions are also provided.

55. Light harvesting multichromophore compositions and methods of using the same

Date: 2018-06-19 | ID: 10001475

Abstract: Light harvesting luminescent multichromophores that are configured upon excitation to transfer energy to, and amplify the emission from, an acceptor signaling chromophore in energy-receiving proximity therewith are provided. Also provided are compositions for labelling a target. The labelling composition may include a donor light harvesting multichromophore and an acceptor signaling chromophore in energy-receiving proximity to the donor light harvesting multichromophore. Also provided is an aqueous composition for labelling a target, including: a donor light harvesting multichromophore; an acceptor signaling chromophore in energy-receiving proximity therewith; and a sensor biomolecule. Methods for using the

subject compositions are also provided.

56. X-ray detector, imaging apparatus and calibration method

Date: 2018-06-19 | ID: 10001567

Abstract: An X-ray detector comprises a directly converting semiconductor layer having a plurality of pixels for converting incident radiation into electrical measurement signals with a band gap energy characteristic of the semiconductor layer, wherein said incident radiation is x-ray radiation emitted by an x-ray source or light omitted by at least one light source. An evaluation unit calculates evaluation signals per pixel or group of pixels from first electrical measurement signals generated when light from said at least one light source at a first intensity is coupled into the semiconductor layer, and second electrical measurement signals generated when light from said at least one light source at a second intensity is coupled into the semiconductor layer. A detection unit determines detection signals from electrical measurement signals generated when x-ray radiation is incident onto the semiconductor layer, and a calibration unit calibrates the detection unit on the basis of the evaluation signals.

57. X-ray computed tomography apparatus, medical image processing apparatus and medical image processing method

Date: 2018-06-19 | ID: 10001568

Abstract: According to one embodiment, an X-ray computed tomography apparatus includes an X-ray tube, collimators including through holes respectively collimating an X-ray and diffraction bodies provided in the holes respectively, diffracting the X-ray at an angle to an X-ray energy, X-ray detection elements provided at predetermined distances from the bodies, counting circuitry counting the number of photons originating from the X-ray, storage circuitry storing statistical information, corresponding to energy bins in the X-ray, concerning a count distribution of count values with positions of the elements, classification circuitry classifying the numbers of counted photons for the bins by using the information, reconstruction circuitry reconstructing a medical image to the bins based on the number of photons classified for the bins.

58. Method for using pulsed neutron induced gamma ray measurements to determine formation properties

Date: 2018-06-19 | ID: 10001582

Abstract: A method for determining a petrophysical property of a formation includes detecting gamma rays at two different spaced apart positions from a position of emitting neutrons into the formation at an energy level sufficient to induce inelastic scatting gamma rays. The neutrons are emitted in a plurality of bursts of neutrons

into the formation, the bursts each having a first selected duration. Each burst is followed by a wait time having a second selected duration, the gamma rays detected during each of the bursts and each of the wait times. A ratio of numbers of gamma rays detected during the bursts is determined (burst ratio). A ratio of numbers of gamma rays detected during the wait times is determined (capture ratio). The burst ratio is used to correct the capture ratio. The petrophysical property is determined from the corrected capture ratio.

59. Optical fiber cable for transmission of high power laser energy over great distances

Date: 2018-06-19 | ID: 10001612

Abstract: There is provided a system and apparatus for the transmission of high power laser energy over great distances without substantial power loss and without the presence of stimulated Raman scattering. There is further provided systems and optical fiber cable configurations and optical fiber structures for the delivering high power laser energy over great distances to a tool or surface to perform an operation or work with the tool or upon the surface.

60. Torque coupler and support point

Date: 2018-06-19 | ID: 10001620

Abstract: A torque tube coupler that rigidly connects reflectors and provides for substantially 360° rotational freedom for the reflectors as well as the ability to transmit rotation from one reflector to another so that the reflectors may essentially be placed at the same angle. The torque coupler includes first and second torque tube coupler assemblies each configured to be connected to a reflector in a solar energy collection system. The torque coupler also includes a support point that supports said first torque coupler assembly and said second torque tube coupler assembly. This support point includes a shaft that facilitates the rigid connection of the first torque tube coupler assembly to the second torque tube coupler assembly and a bearing that facilitates 360° rotation of the first reflector and the second reflector.

61. Multifuncional environmental control unit

Date: 2018-06-19 | ID: 10001789

Abstract: A novel multifunctional electromechanical device to monitor and control environmental conditions within an occupied space. This device can be configured as a standard VAV Diffuser, an intelligently controlled window, or an intelligently controlled shutter. Functions include thermal control, and air quality control. The device would be built and located to optimize functionality and satisfy the aesthetic needs of occupants, designers, and architects. Energy harvesting combined with ultra-low power operation would reduce the long term operational costs. Mechanical and electronic modularity would facilitate the incorporation of new functions and to upgrade existing functions to improve performance and reduce cost.

Additionally, a gas flow damper device that would sense pressure differential integrally or remotely and intelligently control pressure differential. A self powered, energy harvesting damper could be used to balance pressures to various ones in an office space providing just enough air flow to satisfy each zone. Wireless node network would allow communication between multiple balancing dampers to create a highly collaborative network.

62. Setback controls based on out-of-room presence information obtained from mobile devices

Date: 2018-06-19 | ID: 10001791

Abstract: Methods, systems, and devices for managing energy consumption in multi-room facilities are provided. In particular, intelligent mechanisms for determining a location of a mobile device (124) associated with a room (112a, 112b . . . 112n) and then for managing energy settings, especially setback controls, of that room (112a, 112b . . . 112n) are provided. Some logic for implementing these mechanisms may be provided in a mobile device (124) and in-room device, such as a motion detector, thermostat, HVAC controller, door, lock, television, set top box, etc.

63. Pull-down circuitry for an apparatus

Date: 2018-06-19 | ID: 10001799

Abstract: Apparatus embodiments of the invention are disclosed for requesting power via a wired interface. In example embodiments, a pull-down circuit in the apparatus acting as a power consumer when there is no energy in the apparatus, is connected via a configuration line over a cable to a power provider device. The apparatus may be in a power down mode, it may have an empty battery, or it may have no battery. The pull-down circuit is configured to use energy from the configuration line to pull down a voltage on the configuration line, to signal the power provider device to provide power over another line of the cable to the apparatus.

64. Force-feedback device and method

Date: 2018-06-19 | ID: 10001804

Abstract: A force-feedback device comprising a first member; a first kinematics bond being coupled with said first member; said first kinematics bond being constructed to provide at least one degree of freedom for movements of said first member; said first kinematics bond comprising a braking device being constructed to constrain movements of the said first member in at least one of said at least one degree of freedom; and a energy storing/release device being constructed to store energy in response to a movement of said first member in at least one of said at least one degree of freedom constrained by said braking device. A method

of providing force-feedback including constraining a movement of a member of a haptic device in at least one degree of freedom; moving the member, by an externally applied force, in at least one of the at least one constraint degree of freedom; storing energy generated by the moving of the member; determining a force required to move the member in at least one of the at least one constraint degree of freedom; releasing at least a portion of the stored energy to generate at least a portion of the required force and transmitting the at least a portion of the required force to the member.

65. Signal adapter for a display system for energy conservation

Date: 2018-06-19 | ID: 10001828

Abstract: A signal adapter device for a display system which enables turning on and off the display device for energy conservation. The signal adapter has a signal input port coupled to a signal source, a signal output port coupled to a display, and an adapter port coupled to a sensor. Corresponding pins of the input and output ports are electrically connected to each other, except that the hot plug detect pin of the input port is electrically disconnected from that of the output port but is electrically connected to a hot plug detect pin of the adapter port. The sensor senses environmental conditions such as the presence of viewers within a certain distance, and generates a voltage signal for the hot plug detect pin. Based on this signal on its hot plug detect pin, the signal source determines whether to transmit multimedia data to the display device.

66. Touch-sensitive apparatus with improved spatial resolution

Date: 2018-06-19 | ID: 10001881

Abstract: A touch-sensitive apparatus comprises a first subset of components on a first end of the touch surface, and a second subset of components on a second end which is opposite to and parallel with the first end. The components include emitters and detectors, each emitter being operable for propagating a diverging energy beam (e.g. radiation) across the touch surface inside the panel, and each detector being operable for detecting transmitted energy from at least two emitters. The components in at least one of the first and second subsets are systematically arranged in spatially separate groups along at least one of the first and second ends, so as to achieve a reduced spacing and/or an increased uniformity of the transmission paths along a center line between the first and second ends compared to an equidistant arrangement of all components.

67. Method for binding site identification by molecular dynamics simulation (silcs: site identification by ligand competitive saturation)

Date: 2018-06-19 | ID: 10002228

Abstract: The invention describes an explicit solvent all-atom molecular dynamics methodology (SILCS: Site

Identification by Ligand Competitive Saturation) that uses small aliphatic and aromatic molecules plus water molecules to map the affinity pattern of a large molecule for hydrophobic groups, aromatic groups, hydrogen bond donors, and hydrogen bond acceptors. By simultaneously incorporating ligands representative of all these functionalities, the method is an in silico free energy-based competition assay that generates three-dimensional probability maps of fragment binding (FragMaps) indicating favorable fragment:large molecule interactions. The FragMaps may be used to qualitatively inform the design of small-molecule ligands or as scoring grids for high-throughput in silico docking that incorporates both an atomic-level description of solvation and the large molecule's flexibility.

68. Electron spin-based information shuttling for a computer system

Date: 2018-06-19 | ID: 10002328

Abstract: A silicon metal-oxide semiconductor device transports a spin-polarized single electron. An array of silicon quantum dot electrodes is arranged atop a silicon dioxide layer of a silicon metal-oxide semiconductor. The array comprises at least a first electrode and a second electrode adjacent to the first electrode. A transport control logic for individually controls a voltage applied to the electrodes. The transport control logic is configured to gradually decrease a voltage at the first electrode while gradually increasing a voltage at the second electrode. Localization of the single electron is adiabatically transferred from the first electrode to the second electrode while maintaining a desired energy gap between a ground state and a first excited state of the single electron.

69. Shift register unit and driving method thereof, gate driving circuit, and display device

Date: 2018-06-19 | ID: 10002558

Abstract: Provided are a shift register unit and a driving method thereof, a scan driving circuit, a display device, wherein the shift register unit comprises an input module configured to output a voltage at the signal input terminal to the first node, an energy storage module configured to store the voltage at the first node or to charge the first node, a first pull-up control module configured to output a voltage at the first voltage terminal to the pull-up control node, a second pull-up control module configured to output a voltage at the second voltage terminal to the pull-up control node, a pull-down control module configured to output a voltage at the first node to the pull-down control node. The pulse width of the signal of each stage of output terminal of the GOA circuit can be adjusted.

70. Determining the inter-channel time difference of a multi-channel audio signal

Date: 2018-06-19 | ID: 10002614

Abstract: There is provided a method and device for determining an inter-channel time difference of a

multi-channel audio signal having at least two channels. A set of local maxima of a cross-correlation function involving at least two different channels of the multi-channel audio signal is determined (S1) for positive and negative time-lags, where each local maximum is associated with a corresponding time-lag. From the set of local maxima, a local maximum for positive time-lags is selected as a so-called positive time-lag inter-channel correlation candidate and a local maximum for negative time-lags is selected as a so-called negative time-lag inter-channel correlation candidate (S2). When the absolute value of a difference in amplitude between the inter-channel correlation candidates is smaller than a first threshold, it is evaluated whether there is an energy-dominant channel (S3). When there is an energy-dominant-channel, the sign of the inter-channel time difference is identified and a current value of the inter-channel time difference is extracted based on either the time-lag corresponding to the positive time-lag inter-channel con-elation candidate or the time-lag corresponding to the negative time-lag inter-channel correlation candidate (S4).

71. Irregular pattern identification using landmark based convolution

Date: 2018-06-19 | ID: 10002622

Abstract: Pattern identification using convolution is described. In one or more implementations, a representation of a pattern is obtained that is described using data points that include frequency coordinates, time coordinates, and energy values. An identification is made as to whether sound data described using irregularly positioned data points includes the pattern, the identifying including use of a convolution of the frequency or time coordinates to determine correspondence with the representation of the pattern.

72. Pressure wave generator and controller for generating a pressure wave in a liquid medium

Date: 2018-06-19 | ID: 10002680

Abstract: An apparatus for generating a pressure wave in a liquid medium is disclosed. The apparatus includes a plurality of pressure wave generators having respective moveable pistons, the pistons having respective control rods connected thereto. The apparatus also includes a plurality of transducers coupled to the liquid medium and means for causing the pistons of respective ones of the plurality of the pressure wave generators to be accelerated toward respective ones of the plurality of transducers. The apparatus further includes means for causing restraining forces to be applied to respective control rods to cause respective pistons to impact respective transducers at respective desired times and with respective desired amounts of kinetic energy such that the respective desired amounts of kinetic energy are converted into a pressure wave in the liquid medium.

73. Embedded magnetic component transformer device

Date: 2018-06-19 | ID: 10002703

Abstract: An embedded transformer device includes first, second, and auxiliary windings, defined in an insulating substrate by conductive vias joined together by conductive traces. The positions of the conductive vias are arranged to optimize the isolation properties of the transformer, while the conductive traces are arranged to optimize the coupling between the primary and secondary side windings. The embedded transformer device provides favourable isolation and energy transfer between input side and output side windings, in a device with a small component size.

74. Energy storage capacitor having composite electrode structure

Date: 2018-06-19 | ID: 10002715

Abstract: An energy storage capacitor having a composite electrode structure includes: a case; a rolled body arranged inside the case; and an electrolyte stored inside the case. The rolled body includes: a first anode foil having a first anode lead plate connected at one side of one surface, a first cathode foil arranged to face the other surface of the first cathode foil with the one surface of the first anode foil and a first cathode lead plate connected at the other side, a second cathode foil arranged to face the other surface of the second cathode foil with one surface of the first cathode foil and having a second cathode lead plate connected at one side of one surface, a second anode foil arranged to face the one surface of the second cathode foil and a second anode lead plate connected at the other side.

75. Electron transport structure and perovskite solar cell having the same

Date: 2018-06-19 | ID: 10002716

Abstract: Differing from conventional technology utilizing double-layer electron transport layer (ETL) to improving power conversion efficiency of perovskite solar cell, the present invention discloses a novel electron transport structure comprising an interfacial diploe moment enhancing layer, an electron transport layer and an interfacial layer. After applying this electron transport structure in a perovskite solar cell, it is found that an interfacial dipole moment formed between the electron transport layer of the electron transport structure and an active layer of the perovskite solar cell is amplified, so as to give rise to an enhanced driving force for the separation of photogenerated carriers and accelerating charge extraction. Moreover, a variety of experimental data have proved that, compared with the perovskite solar cell having double-layer ETL, the perovskite solar cell using this novel electron transport structure exhibits understanding performances including short-circuit current, open-circuit voltage, filling factor, and power conversion efficiency.

76. High performance lithium-ion capacitor laminate cells

Date: 2018-06-19 | ID: 10002717

Abstract: The present invention provides for high performance lithium-ion capacitor laminate cells that include positive electrodes, negative electrodes and organic solvent electrolyte with lithium salt, and a method for making said high performance lithium-ion capacitor laminate cells. These high performance lithium-ion capacitor laminate cells of the present invention, include a negative electrode which is pre-doped with sufficient lithium ions by employing lithium sources including lithium powder known as SLMP or thin lithium films on the surface of negative electrodes, and this pre-doping with placing lithium sources on negative electrode surface results in LIC laminate cells with considerably higher performance in specific energy, specific power and cycle life.

77. Switching system for breaking a current and method of performing a current breaking operation

Date: 2018-06-19 | ID: 10002722

Abstract: A switching system for breaking a current, including a contact arrangement having a first and second terminals, a resonance circuit connectable across the contact arrangement, In the closed state the first switch enables current to flow through the resonance circuit in a first flow direction and into the contact arrangement in a direction opposite to a contact arrangement arc current flow direction. A second switch connected to the resonance circuit and to the second terminal. In the closed state the second switch enables current to flow through the resonance circuit in a second flow direction opposite to the first flow direction. A control system arranged to alternatingly set the first and second switches in the closed state and then in the open state upon a current breaking operation, until a current pulse, emanating from energy supplied by a contact arrangement arc current, flowing through the resonance circuit and into the contact arrangement reaches an amplitude which is equal to or greater than a magnitude of a contact arrangement arc current.

78. Ion beam irradiation apparatus

Date: 2018-06-19 | ID: 10002751

Abstract: An ion beam irradiation apparatus is provided. The apparatus includes an ion source, a mass separator, and an energy filter. The mass separator sorts dopant ions having a specific mass number and valence from an ion beam extracted from the ion source, and outputs the dopant ions. The energy filter is formed to define a beam passing region for allowing the ion beam to pass therethrough, and configured to have a given filter potential in response to application of a voltage thereto to separate passable ions capable of passing through the beam passing region and non-passable ions incapable of passing through the beam passing region, from each other by a difference in ion energy. The given filter potential is set such that the dopant ions are included in the passable ions, and a portion of unwanted ions which cannot be separated

from the dopant ions by the mass separator are included in the non-passable ions.

79. Systems and methods for determining the suitability of RF sources in ultraviolet systems

Date: 2018-06-19 | ID: 10002752

Abstract: A UV system for irradiating a substrate includes a RF source capable of generating RF energy, a UV lamp capable of emitting UV energy when excited by the RF energy generated by the RF source, and a monitor coupled to the RF source. The monitor includes data relating to the RF source. The UV system further includes a controller capable of communication with the monitor, and the controller determines if the RF source is suitable for operation with the UV system based on the data of the monitor and/or the end of its useful life.

80. Sputter etch material selectivity

Date: 2018-06-19 | ID: 10002764

Abstract: A method of etching a workpiece comprising two or more materials is disclosed. The method involves using physical sputtering as the etching method where the processing parameters of the sputtering process are tuned to achieve a desired etch rate selectivity. The method includes determining the etch rate of each material disposed on the workpiece as a function of various processing parameters, such as ion species, ion energy, incidence angle and temperature. Once the relationship between etch rate and these parameters is determined for each material, a set of values for these processing parameters may be chosen to achieve the desired etch rate selectivity.

81. ESC assembly including an electrically conductive gasket for uniform RF power delivery therethrough

Date: 2018-06-19 | ID: 10002782

Abstract: A substrate processing apparatus for processing substrates comprises a processing chamber in which a substrate is processed. A process gas source is adapted to supply process gas into the processing chamber. A RF energy source is adapted to energize the process gas into a plasma state in the processing chamber. A vacuum source is adapted to exhaust byproducts of the processing from the processing chamber. The processing chamber includes an electrostatic chuck assembly having a layer of ceramic material that includes an upper electrostatic clamping electrode and at least one RF electrode, a temperature controlled RF powered baseplate, and at least one annular electrically conductive gasket extending along an outer portion of an upper surface of the temperature controlled RF powered baseplate. The at least one annular electrically conductive gasket electrically couples the upper surface of the temperature controlled RF powered baseplate to the at least one RF electrode.

82. Integrated electronic components and methods of formation thereof

Date: 2018-06-19 | ID: 10002818

Abstract: Provided are integrated electronic components which include a waveguide microstructure formed by a sequential build process and an electronic device, and methods of forming such integrated electronic components. The microstructures have particular applicability to devices for transmitting electromagnetic energy and other electronic signals.

83. Fin-FET resonant body transistor

Date: 2018-06-19 | ID: 10002859

Abstract: Circuit structures including a FinFET resonant body transistor are disclosed. One circuit structure includes: a plurality of fins over a substrate and a plurality of gate structures over the plurality of fins, the plurality of gate structures including at least one voltage sensing gate and multiple driving junction gates disposed on opposing sides of the at least one voltage sensing gate; at least one phononic crystal, wherein the at least one phononic crystal is arranged to confine vibrational energy arising from electrically induced mechanical stresses in the fins disposed below the driving junction gates; and, wherein the electrically induced mechanical stresses modulate carrier mobility in the at least one voltage sensing gate to produce a current extractable by the circuit structure.

84. Silicon carbide semiconductor device

Date: 2018-06-19 | ID: 10002931

Abstract: A silicon carbide semiconductor device capable of effectively increasing a threshold voltage and a method for manufacturing the silicon carbide semiconductor device. The silicon carbide semiconductor device includes a gate insulating film formed on part of surfaces of the well regions and the source region; and a gate electrode formed on a surface of the gate insulating film so as to be opposite to an end portion of the source region and the well regions. Furthermore, the gate insulating film has, in an interface region between the well regions and the gate insulating film, defects that each form a first trap having an energy level deeper than a conduction band end of silicon carbide and that include a bond between silicon and hydrogen.

85. Atomic layer deposition of selected molecular clusters

Date: 2018-06-19 | ID: 10002938

Abstract: Energy bands of a thin film containing molecular clusters are tuned by controlling the size and the charge of the clusters during thin film deposition. Using atomic layer deposition, an ionic cluster film is formed in the gate region of a nanometer-scale transistor to adjust the threshold voltage, and a neutral cluster film is

formed in the source and drain regions to adjust contact resistance. A work function semiconductor material such as a silver bromide or a lanthanum oxide is deposited so as to include clusters of different sizes such as dimers, trimers, and tetramers, formed from isolated monomers. A type of Atomic Layer Deposition system is used to deposit on semiconductor wafers molecular clusters to form thin film junctions having selected energy gaps. A beam of ions contains different ionic clusters which are then selected for deposition by passing the beam through a filter in which different apertures select clusters based on size and orientation.

86. Solar cell

Date: 2018-06-19 | ID: 10002976

Abstract: A first finger electrode group including finger electrodes on the first principal surface. A second finger electrode group including finger electrodes on the second principal surface. The second finger electrode group is divided into divided electrode portions, the number of electrodes of the electrode portions decreasing as a distance from a central portion of the second finger electrode group increases towards outside, and a coupling portion is arranged between each adjacent ones of the divided electrode portions and electrically connects at least two of the finger electrodes of the divided electrode portion on inside with at least one of the finger electrodes of the divided electrode portion on outside. The number of finger electrodes of the divided electrode portion closest to the central portion of the second finger electrode group is larger than the number of finger electrodes of the first finger electrode group.

87. Electro-conductive paste comprising coarse inorganic oxide particles in the preparation of electrodes in MWT solar cells

Date: 2018-06-19 | ID: 10002977

Abstract: The invention relates to an electro-conductive paste comprising coarse SiO2 particles in the preparation of electrodes in solar cells, particularly in the preparation of electrodes in MWT solar cells, particularly in the preparation of the metal wrap through, or plug, electrode in such solar cells. In particular, the invention relates to a solar cell precursor, a process for preparing a solar cells, a solar cell and a module comprising solar cells.The invention relates to a solar cell precursor at least comprising as precursor parts:

88. Multi-junction solar cells

Date: 2018-06-19 | ID: 10002981

Abstract: Solar cell structures including multiple sub-cells that incorporate different materials that may have different lattice constants. In some embodiments, solar cell devices include several photovoltaic junctions.

89. Emitter for a thermo-photovoltaic system and thermo-photovoltaic system comprising at

least one such emitter

Date: 2018-06-19 | ID: 10002982

Abstract: A thermo-photovoltaic system including an infrared radiation emitter including a body including a first external surface and a second external surface, the first and second external surfaces being distinct, the first external surface facing a concentrator for receiving a concentrated solar radiation, the second external surface facing a thermo-photovoltaic cell, and the body further including at least one gas and/or liquid combustion chamber therein, and an igniter is provided for causing combustion in the combustion chamber.

90. Solar cell panel

Date: 2018-06-19 | ID: 10002984

Abstract: Disclosed is a solar cell panel including a plurality of solar cells each including a semiconductor substrate and an electrode formed on the semiconductor substrate, and a wire for interconnecting the solar cells. The electrode includes a bus-bar line having a pad portion for attachment of the wire. The wire includes a first wire portion connected to the pad portion, and a second wire portion located on a portion excluding the pad portion. The first wire portion has a thickness greater than a thickness of the second wire portion.

91. Method for manufacturing solar cell module

Date: 2018-06-19 | ID: 10002985

Abstract: A solar cell module and a method for manufacturing the same are disclosed. The solar cell module includes solar cells each including a semiconductor substrate, and first electrodes and second electrodes extending in a first direction on a surface of the semiconductor substrate, conductive lines extended in a second direction crossing the first direction on the surface of the semiconductor substrate and connected to the first electrodes or the second electrodes through a conductive adhesive, and an insulating adhesive portion extending in the first direction on at least a portion of the surface of the semiconductor substrate, on which the conductive lines are disposed, and fixing the conductive lines to the semiconductor substrate and the first and second electrodes. The insulating adhesive portion is attached up to an upper part and a side of at least a portion of each conductive line.

92. System for thermoelectric energy generation

Date: 2018-06-19 | ID: 10003000

Abstract: Embodiments of the invention provide systems and methods for generating and delivering electricity and/or hot water for combined heat and power (CHP) using one or more fuels. In many embodiments, the system can be used to provide efficient electrical, heating and cooling utilities to a residential household or group of households. Embodiments of the system can be configured for specific heat flow, while minimizing

losses and maximizing total system efficiency. Embodiments also provide for stackable energy generation modules allowing the system to be placed in or nearby a residence to provide power to the residence. Embodiments also provide a control system which can be configured to monitor household electrical usage and dynamically regulate the system to operate at maximum efficiency as well as sell power to an external grid.

93. Method and system for providing a diluted free layer magnetic junction usable in spin transfer torque applications

Date: 2018-06-19 | ID: 10003015

Abstract: A magnetic junction and method for providing the magnetic junction are described. The magnetic junction resides on a substrate and is usable in a magnetic device. The magnetic junction includes free and pinned layers separated by a nonmagnetic spacer layer. The free layer is switchable between stable magnetic states when a write current is passed through the magnetic junction. The free layer has a free layer perpendicular magnetic anisotropy energy greater than a free layer out-of-plane demagnetization energy. The free layer also includes a diluted magnetic layer having an out-of-plane demagnetization energy and a perpendicular magnetic anisotropy greater than the out-of-plane demagnetization energy. The diluted magnetic layer includes at least one magnetic material and at least one nonmagnetic material. The diluted magnetic layer has an exchange stiffness that is at least eighty percent of an exchange stiffness for the magnetic material(s).

94. Heterojunction oxide non-volatile memory device

Date: 2018-06-19 | ID: 10003020

Abstract: A memory device includes a first metal layer and a first metal oxide layer coupled to the first metal layer. The memory device includes a second metal oxide layer coupled to the first metal oxide layer and a second metal layer coupled to the second metal oxide layer. The formation of the first metal oxide layer has a Gibbs free energy that is lower than the Gibbs free energy for the formation of the second metal oxide layer.

95. System for the storage of electric energy for a vehicle with electric propulsion and presenting cylindrical chemical batteries embedded in a support matrix

Date: 2018-06-19 | ID: 10003051

Abstract: A system for the storage of electric energy for a vehicle with electric propulsion, which presents a longitudinal direction, which is parallel to the direction of the rectilinear motion, and a transverse direction, which is perpendicular to the longitudinal direction; the storage system is provided with a pack of chemical

batteries, which are connected to each other in series and in parallel and comprise respective electrochemical cells; each chemical battery has a cylindrical shape having a central symmetry axis; and a support matrix made of plastic material is provided, inside which the chemical batteries are embedded so that the chemical batteries are completely covered by the support matrix itself.

96. Power source pack

Date: 2018-06-19 | ID: 10003054

Abstract: A power source pack includes: a housing; and a power source module which is housed in the housing. The power source module includes: a cell stack including a plurality of energy storage devices each having a safety valve; and a heat insulator positioned between an inner wall of the housing and the cell stack and having an approximately flat-plate shape. The heat insulator faces the safety valves of the cell stack in an opposed manner.

97. Energy storage device and method of manufacturing energy storage device

Date: 2018-06-19 | ID: 10003061

Abstract: An energy storage device includes: an electrode assembly; a case for storing the electrode assembly therein, the case having an electrolyte solution sealing portion where an electrolyte solution pouring hole formed in the case is sealed; and at least one partition member arranged in a gap formed between the case and the electrode assembly stored in the case. The partition member partitions the gap in the winding axis direction of the electrode assembly by surrounding the electrode assembly in the winding direction of the electrode. The electrolyte solution pouring hole is arranged at a position closer to one end of the electrode assembly than the partition member close to one end of the case is in the winding axis direction.

98. Carbon nanotube-metal nanocomposites as flexible, free standing, binder free high performance anode for Li-ion battery

Date: 2018-06-19 | ID: 10003075

Abstract: The present invention relates to carbon nanotubes-metal nano composite by chemical route and the corresponding development of strong and flexible, light weight, self-supporting anode through simple vacuum filtration technique, which is favored by the high aspect ratio of the Multi-walled carbon nanotubes. The self-supported anode has an added advantage that it can be used as electrodes without binder and electrical conductor (unlike other carbonaceous powder materials) that helps us to elucidate the precise electrochemical properties. The metals used can be Sn, Si, Al, etc. The developed high capacity, free-standing anode can be used in rechargeable Li-ion batteries and is demonstrated successfully in powering solar lantern.

99. Energy signatures to represent complex current vectors

Date: 2018-06-19 | ID: 10003196

Abstract: A distributed control node enables monitoring of complex energy signatures for local loads. The control node can identify energy signatures unique to local loads. The energy signature includes a complex current vector for the load in operation identifying the primary current with a real power component and a reactive power component, and identifying one or more harmonics each with a real power component, a reactive power component, and an angular displacement relative to the primary current. Based on the energy signature, the control node can control a noise contribution of the load due to the harmonics as seen at a point of common coupling to reduce noise introduced onto the grid network from the load.

100. Energy management method and system for energy supply system

Date: 2018-06-19 | ID: 10003197

Abstract: An energy management method for an energy supply system which includes at least an energy storage, a load and a generator with power dependent efficiency is provided. The method includes: calculating two time variant parameters indicating a discharge lower limit and an upper charge limit, respectively, of the energy storage, based on optimization using different kinds of prediction; and controlling, in a real time manner, charging and discharging of the energy storage and operation of the generator, with a certain priorities given to various power sources, such that state of charge of the energy storage is controlled within a region between the discharge lower limit and the upper charge limit. When a grid power is available, blackout duration probability function is predicted and used to calculate the discharge lower limit and the upper charge limit.

101. Apparatus and method for forming three-dimensional objects using linear solidification

Date: 2018-06-19 | ID: 10000023

Abstract: An apparatus and method for making a three-dimensional object from a solidifiable material using a linear solidification device is shown and described. In certain examples, the linear solidification device includes a laser diode that projects light onto a scanning device, such as a rotating polygonal mirror or a linear scanning micromirror, which then deflects the light onto a photohardenable resin. As a result, the linear solidification device scans a line of solidification energy in a direction that is substantially orthogonal to the direction of travel of the laser diode. In other examples, the linear solidification device is a laser device array or light emitting diode array that extends in a direction substantially orthogonal to the direction of travel of the array.

102. Method for operating a press with an underneath drive and press operated according

thereto

Date: 2018-06-19 | ID: 10000032

Abstract: A method and a press are proposed for an energy-efficient drive of a press (1) with a bottom drive, in which a drive device (2) disposed in a bottom section (3), a plunger (1.1) executing a stroke (H) and receiving an upper tool part (1.2) with at least one acting tie rod (2.1.2) of a drive train (2.1) are provided and the upper tool part (2.1) corresponding to a bottom tool part (3.2) disposed in the bottom section (3) machines or forms a work piece (5). The drive device (2) is operated by at least one motor (2.1.1) and by way of a control and regulation device (4) connecting the motor (2.1.1) and the drive train (2.1). Each drive train (2.1) can be operated by its own motor (2.1.1). When using a drawing device with a holder (3.3.1), it is operated in the change and during at least a partial path of the respective stroke (H) by the drive train (2.1) while observing a shaft-type free space (3.2) provided in the bottom section (3) in a coupled or decoupled manner by a releasable rotatory or translational active connection.

103. High kinetic energy penetrator shielding and high wear resistance materials fabricated with boron nitride nanotubes (BNNTS) and BNNT polymer composites

Date: 2018-06-19 | ID: 10000036

Abstract: Boron nitride nanotubes (BNNTs), boron nitride nanoparticles (BNNPs), carbon nontubes (CNTs), graphites, or their combinations, are incorporated into matrices of polymer, ceramic or metals. Fibers, yarns, and woven or nonwoven mates of BNNTs are uses as toughening layers in penetration resistant materials to maximize energy absorption and/or high hardness layers to rebound or deform penetrators. They can be also uses as reinforcing inclusions combining with other polymer matrices to create composite layer like typical reinforcing fibers such as Kevlar®, Spectra®, ceramics and metals. Enhanced wear resistance and prolonged usage time, even under harsh conditions, are achieved by adding boron nitride nanomaterials because both hardness and toughness are increased. Such materials can be used in high temperature environments since the oxidation temperature of BNNTs exceeds 800° C. in air. Boron nitride based composite materials are useful as strong structural materials for anti-micrometeorite layers for spacecraft and space suits, ultra strong tethers, protective gear for the human body as well as for vehicles, helmets, shields and safety suits/helmets for industry.

104. Electrostatic energy generator using tire cord fabric

Date: 2018-06-19 | ID: 10000097

Abstract: An electrostatic energy generator may include one or more first tire cord fabrics each including a conductive material which is a wire-shaped electrode and a non-conductive material, the non-conductive

material configured to surround an outer peripheral surface of the conductive material, and one or more second tire cord fabrics each including a conductive material which is a wire-shaped electrode, and a material configured to surround an outer peripheral surface of the conductive material that is different from the non-conductive material of the first tire cord fabric, wherein the first tire cord fabric and the second tire cord fabric are arranged in a longitudinal direction so as to be in contact with each other and form a bundle, such that frictional electricity is generated due to a friction between the first tire cord fabric and the second tire cord fabric.

105. Pelvic load management using integrated collapsible features in door trim panel

Date: 2018-06-19 | ID: 10000112

Abstract: A door assembly for a vehicle includes a door panel and a door trim panel comprising a shaped pelvic load path energy-absorbing feature disposed on a door panel-facing surface of the door trim panel. The shaped pelvic load path energy-absorbing feature is defined by a plurality of stepped surfaces, which in turn may define as various cross-sectional shapes for the shaped pelvic load path energy-absorbing feature.

106. Method for operating parallel auxiliary converters in a rail vehicle

Date: 2018-06-19 | ID: 10000122

Abstract: In a method for supplying an electrical load of a vehicle with electrical energy by auxiliary converters connected in parallel on the alternating-voltage side, a current flow between the auxiliary converters and a grounded N conductor of an energy supply network is interrupted in the presence a ground fault. The auxiliary converters connected in parallel on the alternating-voltage side are operated with fundamental-wave and pulse synchronicity. An energy supply system of a vehicle, in particular of a rail vehicle, performs this method, with the energy supply system including at least two auxiliary converters arranged in parallel, an energy supply network for supplying electrical loads, at least one switch for interrupting a current flow between the auxiliary converters and the energy supply network.

107. Power supply apparatus and method for hybrid vehicle

Date: 2018-06-19 | ID: 10000125

Abstract: Provided are a power supply apparatus and method for a hybrid vehicle. The power supply apparatus is integrated with a power conversion device and an energy storage device in order to reduce a size and production cost of the power supply apparatus and includes a battery unit including a plurality of battery cells configured to store different levels of power and a power control unit configured to control the battery unit to integrally or selectively output the power of the plurality of battery cells based on whether an engine of the hybrid vehicle generates power.

108. Method and system for controlling fuel cell vehicle

Date: 2018-06-19 | ID: 10000141

Abstract: A method and system for controlling a fuel cell vehicle are provided. The method includes determining, by a controller, a driving pattern of a driver based on driving information including acceleration and deceleration information. A condition for activation of an idling-stop of a fuel cell is then set based on the determined driving pattern and the fuel cell is stopped from generating electric energy when the condition for activation of the idling-stop is satisfied.

109. Vehicle article carrier with integrated camera and solar powered lighting

Date: 2018-06-19 | ID: 10000160

Abstract: A vehicle article carrier system is disclosed for carrying articles above an outer body surface of a vehicle. The system may incorporate at least one support rail secured to the outer body surface. The support rail may have a support foot portion at each of its opposite ends, with each support foot portion secured to the outer body surface of the vehicle. A sensor may be mounted on the at least one support rail or one of the support feet portions for sensing a characteristic within a field of view around the vehicle and providing related information to a subsystem of the vehicle.

110. Vehicle electrical system and method for operating a vehicle electrical system

Date: 2018-06-19 | ID: 10000168

Abstract: A vehicle electrical system includes a first system branch with a first nominal voltage U1, a second system branch with a second nominal voltage U2, at least one DC/DC converter configured to transmit energy between the first and second system branches, a first actuating unit to actuate the DC/DC converter(s), a first detection unit to detect an instantaneous voltage Uact,1 of the first system branch, and a comparison unit to compare the detected instantaneous voltage Uact,1 to a first upper voltage threshold value Uo,1 and to a first lower voltage threshold value Uu,1, wherein Uu,1<U1<Uo,1. The first actuating unit actuates the DC/DC converter(s) such that energy is transmitted from the first system branch to the second system branch if Uact,1>Uo,1, and such that energy is transmitted from the second system branch to the first system branch if Uact,1<Uu,1.

111. Vehicle energy-absorbing device

Date: 2018-06-19 | ID: 10000171

Abstract: An energy-absorbing device includes a beam having a longitudinal axis and a plurality of lobes attached to and positioned sequentially along the beam. The lobes are spaced from each other, deformable relative to the beam, and configured to contact adjacent lobes when deformed. The size and spacing of the

lobes is such that if a single lobe is deformed, the lobe will not contact adjacent lobes, but if adjacent lobes are deformed, the lobes will contact each other.

112. Mild hybrid powertrain controls

Date: 2018-06-19 | ID: 10000197

Abstract: Mild hybrid powertrain controls and apparatuses, methods and systems including the same are disclosed. One exemplary embodiment is a mild-hybrid system comprising an engine, an electrical machine, power electronics, an energy storage system, and an electrical load. The system includes a controller structured to receive an electrical machine power command based upon a power allocation to the electrical machine, process the electrical machine power command with feedforward controls structured to compensate for an inaccuracy associated with the power electronics, process the electrical machine power command with proportional integral (PI) controls structured to compensate for a power loss associated with one or more electrical loads, provide a compensated machine power command based upon the processing with the feedforward controls and the processing with the PI controls, and output the compensated machine power command to control the electrical machine.

113. Systems and methods for pressure tolerant energy systems

Date: 2018-06-19 | ID: 10000260

Abstract: Systems and methods are disclosed herein for a pressure tolerant energy system. The pressure tolerant energy system may comprise a pressure tolerant cavity and an energy system enclosed in the pressure tolerant cavity configured to provide electrical power to the vehicle. The energy system may include one or more battery cells and a pressure tolerant, programmable management circuit. The pressure tolerant cavity may be filled with an electrically-inert liquid, such as mineral oil. In some embodiments, the electrically-inert liquid may be kept at a positive pressure relative to a pressure external to the pressure tolerant cavity. The energy system may further comprise a pressure venting system configured to maintain the pressure inside the pressure tolerant cavity within a range of pressures. The pressure tolerant cavity may be sealed to prevent water ingress.

114. Pushing device, moving mechanism and aircraft

Date: 2018-06-19 | ID: 10000276

Abstract: The present application relates to a pushing device, a moving mechanism and an aircraft. According to an aspect of the present application, a pushing device for a moving mechanism of an aircraft is provided, the moving mechanism including a primary moving device and an auxiliary moving device assisting the primary moving device, the pushing device including a support member and a pushing assembly

supported by the support member, and the pushing assembly including a pushing element and an energy storage element. The pushing element is adapted to push a broken part of the auxiliary moving device to an offset position from a normal working position by means of energy from the energy storage element when the auxiliary moving device breaks. According to the present application, it is possible to provide an effective fault protection to the moving mechanism of the aircraft.

115. Gas-electric propulsion system for an aircraft

Date: 2018-06-19 | ID: 10000293

Abstract: In one aspect the present subject matter is directed to a gas-electric propulsion system for an aircraft. The system may include a turbofan jet engine, an electric powered boundary layer ingestion fan that is coupled to a fuselage portion of the aircraft aft of the turbofan jet engine, and an electric generator that is electronically coupled to the turbofan jet engine and to the boundary layer ingestion fan. The electric generator converts rotational energy from the turbofan jet engine to electrical energy and provides at least a portion of the electrical energy to the boundary layer ingestion fan. In another aspect of the present subject matter, a method for propelling an aircraft via the gas-electric propulsion system is disclosed.

116. Structures and process for preventing a projection of the laser resealing structure beyond the wafer surface

Date: 2018-06-19 | ID: 10000375

Abstract: A method for manufacturing a micromechanical component including a substrate and a cap connected to the substrate and together with the substrate enclosing a first cavity, a first pressure prevailing and a first gas mixture with a first chemical composition being enclosed in the first cavity. An access opening, connecting the first cavity to surroundings of the micromechanical component, is formed in the substrate or the cap. The first pressure and/or the first chemical composition is adjusted in the first cavity. The access opening is sealed by introducing energy and heat into an absorbing part of the substrate or cap with the aid of a laser. A recess is formed in a surface of the substrate or of the cap facing away from the first cavity in the area of the access opening for accommodating a material area of the substrate or the cap converted into a liquid aggregate state.

117. Carbon monoxide shift reaction apparatus and carbon monoxide shift conversion method

Date: 2018-06-19 | ID: 10000378

Abstract: A carbon monoxide (CO) Shift reaction apparatus and a CO shift conversion method are capable of

increasing the service life of a CO shift catalyst and reducing loss of energy. The CO shift reaction apparatus includes a plurality of CO shift reaction units in which a plurality of CO shift catalysts haying mutually different active-temperature regions are arranged in a gas flow direction.

118. Method for forming of siliceous film and siliceous film formed using same

Date: 2018-06-19 | ID: 10000386

Abstract: A siliceous film having high purity and a low etching rate is formed by (a) a step for forming a siliceous film on a substrate by coating a solution composed of a polysilazane, e.g., perhydropolysilazane on a substrate and then hardening (curing) the solution in an oxidizing atmosphere, or by coating a silica solution formed by a sol-gel method on a substrate, and (b) a step for heating the siliceous film in an inert gas environment containing a nitrogen-containing compound such as an alkylamine having a base dissociation constant (pKb) no greater than 4.5, or a halogen-containing compound in which the bond energy of a halogen atom such as F2, Br2, or NF3 is no greater than 60 kcal/mol, in order to anneal the film.

119. Controlled microwave assisted synthesis of functionalized silica nanoparticles

Date: 2018-06-19 | ID: 10000390

Abstract: A method of synthesizing silica nanoparticles. The method includes hydrolyzing a silica precursor to form a plurality of monomers, each monomer of the plurality comprising a microwave reactive silicon species. The plurality of monomers is irradiated by an energy source configured to generate microwave frequency energy. Irradiation cases the plurality of monomers polymerize into a silica nanoparticle.

120. Organic-waste-processing apparatus, processing method, and control apparatus

Date: 2018-06-19 | ID: 10000403

Abstract: An organic-waste-processing apparatus reducing a moisture of, and conducting a thermal operation process to, an organic waste, includes: a moisture-reducing unit; a combustion unit; a combustion-energy-supply unit; an energy-supply-operation controller; an organic-waste-energy-estimating unit; a total-energy-consumption measuring unit; a relation-maintaining unit; a quantitative-relationship-grasping unit; and a moisture reduction controller. The moisture reduction controller controls an operation of the moisture-reducing unit so that the estimated value of the organic waste energy to be estimated by the organic-waste-energy-estimating unit is directed in a direction reducing a quantitative difference from the optimum value of the organic waste energy based on the quantitative relationship grasped by the quantitative-relationship-grasping unit between the optimum value of the organic waste energy and the latest estimated value of the organic waste energy.

121. Energy and environmentally integrated method for production of aromatic dicarboxylic acids by oxidation

Date: 2018-06-19 | ID: 10000435

Abstract: A continuous process for oxidizing a di-alkyl substituted aromatic compound with compressed air in a primary bubble column reactor; including removing a portion of the three phase reaction medium to a post-oxidation bubble column unit supplied with compressed air separating the post oxidation reaction medium to an overhead gas and an underflow slurry; collecting overhead gases from the oxidation reactors and the de-gassing unit and conducting the combined overhead gases to a water removal column (WRC); transferring the underflow slurry from the de-gassing unit to a digestion unit to effect further oxidation without addition of air to the digestion unit; removing overhead gases to the water removal column; crystallizing the final oxidation slurry; and filtering the slurry on a rotary pressure filter; wherein a portion of the energy of the off gas from the WRC is employed to drive an air compressor to supply the compressed air for oxidation.

122. Method for preparing organic vapor-phase dehydration feedstock

Date: 2018-06-19 | ID: 10000436

Abstract: The present invention relates to a method including: directly heating a fermentation broth to remove impurities, thereby preparing an organic vapor-phase dehydration feedstock; and continuously subjecting the organic vapor-phase dehydration feedstock to a vapor-phase dehydration reaction. According to the present invention, impurities in a fermentation broth, which have been removed by a multi-step process in the prior art, can be completely removed in a single-step process, and thus the time, cost and energy required for a process for preparing an organic vapor-phase dehydration feedstock from the fermentation broth can be effectively reduced, and the process for preparing the organic vapor-phase dehydration feedstock and a vapor-phase dehydration reaction can be continuously performed in an effective manner.

123. Method for producing tetraalkoxysilane

Date: 2018-06-19 | ID: 10000514

Abstract: An object of the present invention is to provide a method for producing tetraalkoxysilane while saving energy at a high yield. Tetraalkoxysilane can be produced while saving energy at a high yield by the method including a first step of reacting alcohol with carbon dioxide in the presence of a dehydrating agent and/or in a reactor provided with a dehydrating means, and a second step of reacting a reaction mixture obtained in the first step with silicon oxide.

124. Process for producing aromatic vinyl/conjugated diene copolymer and product of

hydrogenation thereof

Date: 2018-06-19 | ID: 10000585

Abstract: As a method for producing a copolymer with a high oil absorption rate by separating a solvent from a copolymer solution containing a copolymer in a simple manner with a less energy consumption, the present invention relates to a production method for obtaining a copolymer by separating a solvent from a copolymer solution, the method including the following Steps A to C.

125. Weatherable sheet for solar cell module, product obtained using the sheet, and process for producing the weatherable sheet for solar cell module

Date: 2018-06-19 | ID: 10000616

Abstract: The present invention provides a weather-resistant sheet for a solar cell module, which has better adhesion to a water impermeable sheet, better blocking resistance against the water impermeable sheet, and better adhesion to EVA that is a sealant; a weather-resistant sheet for a solar cell module in which a cured coating film layer thereof can suppress UV transmission significantly; a product including the sheet; and a process for producing the sheet. The weather-resistant sheet for a solar cell module includes, on a water impermeable sheet, a cured coating film layer made of a crosslinked product of a coating composition that includes a hydroxyl group-containing fluoropolymer, wherein in a pressure-resistance test performed when a crosslinking degree of the cured coating film layer is 80 to 99%, the cured coating film layer and the water impermeable sheet without a cured coating film layer formed thereon are not adhered to each other after a load has been applied to the cured coating film layer and the water impermeable sheet being stacked.

126. Methods of forming solar cells with fired multilayer film stacks

Date: 2018-06-19 | ID: 10000645

Abstract: A method of forming a fired multilayer stack are described. The method involves the steps of a) applying a wet metal particle layer on at least a portion of a surface of a substrate, b) drying the wet metal particle layer to form a dried metal particle layer, c) applying a wet intercalation layer directly on at least a portion of the dried metal particle layer to form a multilayer stack, d) drying the multilayer stack, and e) co-firing the multilayer stack to form the fired multilayer stack. The intercalating layer may include one or more of low temperature base metal particles, crystalline metal oxide particles, and glass frit particles. The wet metal particle layer may include aluminum, copper, iron, nickel, molybdenum, tungsten, tantalum, titanium, steel or combinations thereof.

127. Active energy ray-curable inkjet ink composition

Date: 2018-06-19 | ID: 10000649

Abstract: The disclosure relates to an active energy ray-curable inkjet ink composition comprising at least a monomer and a pigment, wherein the monomer comprises at least 2-(2-vinyloxyethoxy)ethyl acrylate and dipropylene glycol diacrylate. A content of 2-(2-vinyloxyethoxy)ethyl acrylate is 36 to 65% by weight in a total weight of the ink. A content of dipropylene glycol diacrylate is 31 to 63% by weight in the total weight of the ink. A content of the pigment is 1 to c % by weight in the total weight of the ink, wherein the c is the pigment concentration at which the average absorbance at 320-380 nm in 2,000-fold dilution of the ink composition with dipropylene glycol diacrylate is 1.

128. Electrically conductive adhesives comprising at least one metal precursor

Date: 2018-06-19 | ID: 10000671

Abstract: The present invention relates to thermally curable adhesives that are suitable for use as electrically conductive materials in the fabrication of electronic devices, integrated circuits, semiconductor devices, passive components, solar cells, solar modules, and/or light emitting diodes. The thermally curable adhesives comprise at least one thermosetting resin, electrically conductive particles having an average particle size of 1 m to 50 m, and at least one metal precursor, wherein the metal precursor decomposes substantially to the corresponding metal during the thermal curing of the thermally curable adhesive.

129. Magnesium alumosilicate-based phosphor

Date: 2018-06-19 | ID: 10000697

Abstract: The invention relates to co-activated magnesium alumosilicate based phosphors, to a process of its preparation, the use of these phosphors in electronic and electro optical devices, such as light emitting diodes (LEDs) and solar cells and especially to illumination units comprising said magnesium alumosilicate-based phosphors.

130. Method for employing corn plant material comprising cobs in the manufacture of ethanol

Date: 2018-06-19 | ID: 10000777

Abstract: Ear corn is picked from corn fields by ear corn harvesters and transported to a central shelling station associated with an ethanol manufacturing facility. Shelled corn from the central shelling station is processed into ethanol at the ethanol manufacturing facility, and corn cobs from the central shelling station are burned to provide process heat for the ethanol manufacturing process. Energy is conserved and costs are reduced during the picking and shelling of the ear corn and by the burning of cobs for process heat.

131. Titanium alloys exhibiting resistance to impact or shock loading

Date: 2018-06-19 | ID: 10000838

Abstract: Titanium alloys formed into a part or component used in applications where a key design criterion is the energy absorbed during deformation of the part when exposed to impact, explosive blast, and/or other forms of shock loading is described. The titanium alloys generally comprise a titanium base with added amounts of aluminum, an isomorphous beta stabilizing element such as vanadium, a eutectoid beta stabilizing element such as silicon and iron, and incidental impurities. The titanium alloys exhibit up to 70% or more improvement in ductility and up to a 16% improvement in ballistic impact resistance over a Ti-6Al-4V alloy, as well as absorbing up to 50% more energy than the Ti-6Al-4V alloy in Charpy impact tests. A method of forming a part that incorporates the titanium alloys and uses a combination of recycled materials and new materials is also described.

132. Multi-stack electrochemical compressor system and method for operating

Date: 2018-06-19 | ID: 10000855

Abstract: A multi-stack electrochemical hydrogen compressor (EHC) system is provided. The EHC system may have two or more EHC stacks, wherein each EHC stack includes at least one electrochemical cell and a power supply. The EHC system may also have a controller in communication with the power supply of each EHC stack, wherein the controller is configured to reduce total energy consumption of the EHC system by independently controlling the power supply of each EHC stack.

133. Rotary piston engine with operationally adjustable compression

Date: 2018-06-19 | ID: 10001011

Abstract: Axially protruding and centrally cool able pistons rotate within a cylindrical main chamber. Each piston is individually kinetically linked to a flywheel. As the pistons are individually accelerated and decelerated along their continuous rotating path, rotating volumes between them angularly expand and contract. Inlets and outlets communicate fluid in correspondence with expansion and contraction phases of the rotating volumes. A low number of moving parts, area sealed volumes, no valves, balanced mass forces, smooth rotation and short force transmission paths between opposing mass forces provide for lightweight construction and high rotational speeds. Radial sliding secondary pistons of the kinetic linkage modulate secondary rotating volumes adjacent the main chamber for a dual stage thermodynamically efficient engine operation with intermittent fluid cooling or heating. Inlets and/or outlets may be angularly changed for variable compression and/or combustion engine peak pressures, expansion end pressure, for brake energy recycling and burst mode engine operation.

134. Combined electricity, heat, and chill generation for a Rankine engine

Date: 2018-06-19 | ID: 10001025

Abstract: A generator uses a working fluid in a single-cycle Rankine engine for up to three purposes: generation of electricity; generation of hot water from heat exchanger; and generation of chill by the evaporation of liquefied working fluid. The working fluid, which may be carbon dioxide, goes through a single Rankine cycle for both heat engine and heat pump. Instead of using a pump to liquefy the working fluid, the working fluid experiences cryogenic liquefaction method under controlled pressure. The Hui turbine is used for electricity generation. Heat source for the combined heat pump and heat engine could come from concentrated solar power or from burning a fossil fuel.

135. Gas valve

Date: 2018-06-19 | ID: 10001102

Abstract: A gas valve 1, in particular a dosing valve for a gaseous medium, having a valve seat body 3, which is arranged on a valve housing 2, and a closing body 7, which can perform a stroke motion relative to the valve seat body 3 and to an opening stroke stop 17 interacting with the valve housing 2. According to the invention, a gas valve 1 is provided which is improved as regards its durability. This is achieved by virtue of the fact that the gas valve 1 has an impact body which reduces the impact speed and/or impact energy of the closing body 7 on the valve seat body 3 and/or on the opening stroke stop 17.

136. Energy conversion system and method

Date: 2018-06-19 | ID: 10001107

Abstract: A method, a system, and a device are disclosed which are capable of using moving liquid to create energy in the form of compressed air. The method, system, and/or device does not harm or consume the liquid to operate. The compressed air can be used to operate anything from vehicles to electric generators.

137. Multifunctional wind power green-energy apparatus

Date: 2018-06-19 | ID: 10001109

Abstract: A multifunctional wind power green-energy apparatus generally includes a carrying base, a plurality of wind power generation devices mounted on the carrying base and includes a plurality of blade sections, and at least one electricity accumulation device, water pumping motor, and the air storage device arranged at one side of the carrying base and electrically connected with the wind power generation devices. With such a structural arrangement, through simple combination of the carrying base and the wind power generation devices, terrain limitation conditions for availability of wind power green energy can be reduced to the least for applications to diversified environments. Through operations in combination with the electricity

accumulation device, the water pumping motor, and the air storage device, accumulation of electrical energy or direct use of the energy can be available. As such, the utilization of the wind power generation devices can be improved.

138. Solar/air turbine generator system

Date: 2018-06-19 | ID: 10001112

Abstract: The invention provides a solar/air turbine generator system that reduces construction and power generating costs and does not require the use of fossil fuel.A solar/air turbine generator system comprises: a compressor for drawing in and compressing air; a solar receiver for heating the air compressed by the compressor with the use of solar heat collected by a solar collector; an air turbine for driving the compressor and a generator by receiving the compressed air heated by the solar receiver; a regenerative heat exchanger, located between the compressor and the solar receiver, for heating the air compressed by the compressor using the exhaust of the air turbine as a heating medium; and a distribution device, located between the compressor and the regenerative heat exchanger, for distributing the compressed air to the side of the regenerative heat exchanger and to a bypass side, the bypass side being the inlet side of the air turbine. The solar/air turbine generator system further includes a control device for maintaining the air temperature at the inlet of the air turbine at a constant value by adjusting the flow rate of the air turbine exhaust that flows into the regenerative heat exchanger as a heating medium.

139. Rotary core modular SMA device

Date: 2018-06-19 | ID: 10001113

Abstract: The invention provides an energy recovery device comprising a first SMA core housed in a first immersion chamber and adapted to be sequentially filled with fluid to allow heating and/or cooling of the first SMA core wherein a first shaft is adapted to be turned by the SMA core mounted concentrically around said first shaft. The SMA core comprises a plurality of SMA elements to define a module, wherein a plurality of modules are mounted in series and whereby movement of a first module is configured to be input to a second module enabling cumulative rotation of the shaft.

140. Laborsaving rotation shaft device

Date: 2018-06-19 | ID: 10001162

Abstract: A laborsaving rotation shaft device comprises a base; a first rotation unit; a pair of second rotation units, a first rotation guiding structure is disposed between the second rotation unit and the base, and a second rotation guiding structure is disposed between the second rotation unit and the first rotation unit; a torsion unit, having a connection rod, a friction torsion mechanism is disposed between the connection rod

and the first rotation unit; a slide mechanism, including a slide block pivoted to the connection rod and radially formed with at least one slide hole allowing a slide rod to be received, and a spring sleeved on the slide rod; with an energy releasing or energy storing effect provided by the spring, the slide block is able to provide a torsion, which has effects of automatically unfolding and folding assistance, to the first rotation unit.

141. Thrust magnetic bearing for bias compensation

Date: 2018-06-19 | ID: 10001165

Abstract: The present invention relates to a thrust magnetic bearing for bias compensation, and more particularly, to a thrust magnetic bearing for bias compensation in which annular permanent magnets and electromagnets are disposed to face each other with respect to a levitated member and the permanent magnets are formed to be asymmetrical in lengths thereof in an axial direction to thus exert an attractive force for compensating for a bias by the difference in the lengths of the permanent magnets in the axial direction to compensate for the bias, and a current supply for bias magnetic flux is not required, saving energy.

142. Structures subjected to thermal energy and thermal management methods therefor

Date: 2018-06-19 | ID: 10001256

Abstract: Thermal management approaches and methods for structures requiring certain optical and thermal properties, for example, components of LED-based lighting units. Such a structure is in thermal communication with a source of visible light and thermal energy, and visible light emitted by the source passes through the structure. The structure includes a portion formed of a composite material containing a polymeric matrix material and a fiber material that contributes an optical scattering effect to the visible light passing through the composite material. The fiber material is made up of individual fibers that each comprise a core material and an opaque diffusive white coating on an external surface thereof. The fiber material and its coating contribute to the thermal conductivity and an optical scattering effect of the composite material.

143. Energy-saving recyclable display system

Date: 2018-06-19 | ID: 10001264

Abstract: An energy-saving recyclable display system, comprising a display stand, a packaging container and a suspension loop; a display rod is arranged on the display stand, the packaging container and the suspension loop are mounted in a dismountable way; a suspension notch is arranged on the upper part of the suspension loop; the lower part of the suspension loop is opened and stretches into the packaging container; the suspension loop is hollow inside and mounted with a circuit board and an illuminant; an electric wire is arranged on the circuit board; a conductive contact is arranged at the end of the electric wire protruding from the inner side face of the suspension notch; the conductive contact contacts with the display rod and forms a

switched-on circuit. The product in the packaging container presents a favorable luminous effect when it is displayed.

144. Apparatus and methods to measure economizer outdoor air fractions and fault detection diagnostics of airflow, cooling capacity, and heating capacity

Date: 2018-06-19 | ID: 10001289

Abstract: An apparatus and method for measuring or controlling the Outdoor Air Fraction (OAF) ratio through economizer or outdoor air dampers and cabinet to total system airflow and mixed-air humidity ratio and wetbulb temperature for HVAC equipment. An OAF exceeding the minimum regulatory requirements wastes energy and contributes to global warming. OAF is used to optimize economizer damper position either manually or automatically using an economizer Fault Detection Diagnostic controller and actuator to meet minimum outdoor airflow requirements. After the outdoor air damper position is optimized, the mixed-air humidity ratio and mixed-air wetbulb temperature are determined and used with the measured mixed-air drybulb and supply-air drybulb temperatures to evaluate evaporator airflow, cooling capacity, and heating capacity, and, if necessary, provide a visual or electronically-transmitted error code signal indicating maintenance requirements to check or correct economizer damper position, cabinet leakage, airflow, cooling or heating capacity, and/or other faults for the HVAC system.

145. Fan coil thermostat with activity sensing

Date: 2018-06-19 | ID: 10001292

Abstract: Fan coil thermostats can provide energy savings by, for example, not unnecessarily heating and/or cooling an unoccupied room or other space. Fan coil systems employing such a fan coil thermostat may be more energy efficient. A fan coil system may include a fan coil that is configured for fluid communication with a source of heated fluid and/or a source of cooled fluid, a valve that controls fluid flow through the fan coil, a fan that blows air across the fan coil and a fan coil thermostat. The fan coil thermostat may include a controller that implements a control algorithm that may include an unoccupied temperature setting. The controller may be programmed to permit a user to enter a user-chosen temperature setting. In response, the controller may initiate a timer, and may automatically return to the unoccupied temperature setting once the timer has expired.

146. Blow through direct fired heating, A/C and ERV

Date: 2018-06-19 | ID: 10001295

Abstract: According to various aspects, exemplary embodiments are disclosed of blow through direct fired heaters including evaporator coils and/or energy recovery ventilation.

147. Free-hanging parabolic trough reflectors for solar energy conversion systems

Date: 2018-06-19 | ID: 10001297

Abstract: A parabolic trough reflector assembly consists of (1) a free-hanging, flexible rectangular sheet that is highly reflective of solar radiation and (2) support hardware which critically supports the reflecting sheet at two opposing edges. Methods are disclosed for providing linear dimensions and edge slopes for the reflecting sheet that are consistent with a parabolic trough having specific predetermined dimensions and a predetermined focal length. Methods are disclosed for providing uniform loading for a reflecting sheet when it is critically supported as a free-hanging element. The methods involve tapering the thickness of a sheet, applying variable-thickness coatings to a sheet of uniform thickness, or fabricating discreet thickness variations into a sheet of otherwise uniform thickness.

148. Methods for operating solar-thermochemical processes

Date: 2018-06-19 | ID: 10001298

Abstract: Methods for controlling or operating solar thermochemical reactions process that maximize the two-step thermochemical energy cycle efficiency by a combination of pressure and temperature swing are disclosed.

149. Blackbody thermal receiver for solar concentrators

Date: 2018-06-19 | ID: 10001299

Abstract: To overcome shortcomings of the conventional thermal receiver, embodiments of the technology disclosed herein are directed towards an improved thermal receiver. More particularly, the various embodiments of the technology disclosed herein relate to thermal receivers without a vacuum insulation, otherwise known as an approximation of a blackbody. Various embodiments of the technology disclosed herein enable greater absorption of sunlight collected by a parabolic solar trough concentrator compared with conventional thermal receivers.

150. Electric power peak-shaving and combined heat and power waste heat recovery device and operation method thereof

Date: 2018-06-19 | ID: 10001326

Abstract: An inner power plant portion and a heat exchange station portion. The inner power plant portion includes a heat exchanger, a waste heat recovery electric heat pump, an energy-storing electric heat pump, high/low temperature water storing tanks, a heating network heater, a valve and a circulating water pump; the heat exchange station portion includes high/low temperature water storing tanks, an electric heat pump, a

heat exchanger, a valve and a circulating water pump; as for the operating method of the device, the device can operate in periods of an electrical load trough, an electrical load flat and an electrical load peak respectively through combination of different valve switches, the high temperature water storing tank is used for balancing the difference between system heat supply amount and heating load, the low temperature water storing tank is used for stabilizing steam exhaust waste heat recovery amount.

151. Comparator device and method for measuring absorbed energy-momentum symmetry originating from an energy source

Date: 2018-06-19 | ID: 10001408

Abstract: A method and a device for measuring absorbed energy-momentum symmetry in which radiant energy W·sr1·m2·nm1 is compared directly against its absorbed impinging momentum kg·m·s1 in a manner that will provide an experimental basis for asymmetrical anomalies that may or may not exist within a measurable range of the electromagnetic spectrum.

152. Adaptive heat flow calorimeter

Date: 2018-06-19 | ID: 10001417

Abstract: Apparatus and methods are provided for providing flexible and repairable testing capabilities for systems that generate or absorb heat such as energy storage systems. One embodiment can include a temperature bath structure adapted to contain and maintain a fluid bath at a predetermined temperature, an outer containment structure adapted to insert into the temperature bath structure, heat sinks, thermal sensor assemblies, and an internal containment structure where the thermal sensor assemblies and heat sinks removably attach to different sections of the inner containment structure so as to measure heat flow into or out of the inner containment structure's different sections. Embodiments of the invention enable rapid insertion/removal of samples as well as replacement of sections of the system including embodiments or parts of thermal sensor assemblies as well as enabling separate thermal measurements associated with different sections of a sample under test within the inner containment structure.

153. Leak detector

Date: 2018-06-19 | ID: 10001427

Abstract: A handheld-sized, single-hand-holdable, single-hand-operable battery-powered gas leak detector that draws in a sample of ambient air for detecting the presence of a gas by sensing changes in infrared (IR) energy between an IR emitter and an IR sensor when the gas is in the space between the IR emitter and the IR sensor. An algorithm is used that triggers detection of a gas when the change in IR energy between the IR emitter and the IR sensor is more rapid than the thermal drift of the IR sensor, and the detector design allows

for IR energy within a wide range of approximately 0.4 micrometers to approximately 20 micrometers to pass into the air being sampled.

154. Light harvesting multichromophore compositions and methods of using the same

Date: 2018-06-19 | ID: 10001473

Abstract: Light harvesting luminescent multichromophores that are configured upon excitation to transfer energy to, and amplify the emission from, an acceptor signaling chromophore in energy-receiving proximity therewith are provided. Also provided are compositions for labelling a target. The labelling composition may include a donor light harvesting multichromophore and an acceptor signaling chromophore in energy-receiving proximity to the donor light harvesting multichromophore. Also provided is an aqueous composition for labelling a target, including: a donor light harvesting multichromophore; an acceptor signaling chromophore in energy-receiving proximity therewith; and a sensor biomolecule. Methods for using the subject compositions are also provided.

155. Light harvesting multichromophore compositions and methods of using the same

Date: 2018-06-19 | ID: 10001475

Abstract: Light harvesting luminescent multichromophores that are configured upon excitation to transfer energy to, and amplify the emission from, an acceptor signaling chromophore in energy-receiving proximity therewith are provided. Also provided are compositions for labelling a target. The labelling composition may include a donor light harvesting multichromophore and an acceptor signaling chromophore in energy-receiving proximity to the donor light harvesting multichromophore. Also provided is an aqueous composition for labelling a target, including: a donor light harvesting multichromophore; an acceptor signaling chromophore in energy-receiving proximity therewith; and a sensor biomolecule. Methods for using the subject compositions are also provided.

156. X-ray detector, imaging apparatus and calibration method

Date: 2018-06-19 | ID: 10001567

Abstract: An X-ray detector comprises a directly converting semiconductor layer having a plurality of pixels for converting incident radiation into electrical measurement signals with a band gap energy characteristic of the semiconductor layer, wherein said incident radiation is x-ray radiation emitted by an x-ray source or light omitted by at least one light source. An evaluation unit calculates evaluation signals per pixel or group of pixels from first electrical measurement signals generated when light from said at least one light source at a first intensity is coupled into the semiconductor layer, and second electrical measurement signals generated when light from said at least one light source at a second intensity is coupled into the semiconductor layer. A

detection unit determines detection signals from electrical measurement signals generated when x-ray radiation is incident onto the semiconductor layer, and a calibration unit calibrates the detection unit on the basis of the evaluation signals.

157. X-ray computed tomography apparatus, medical image processing apparatus and medical image processing method

Date: 2018-06-19 | ID: 10001568

Abstract: According to one embodiment, an X-ray computed tomography apparatus includes an X-ray tube, collimators including through holes respectively collimating an X-ray and diffraction bodies provided in the holes respectively, diffracting the X-ray at an angle to an X-ray energy, X-ray detection elements provided at predetermined distances from the bodies, counting circuitry counting the number of photons originating from the X-ray, storage circuitry storing statistical information, corresponding to energy bins in the X-ray, concerning a count distribution of count values with positions of the elements, classification circuitry classifying the numbers of counted photons for the bins by using the information, reconstruction circuitry reconstructing a medical image to the bins based on the number of photons classified for the bins.

158. Method for using pulsed neutron induced gamma ray measurements to determine formation properties

Date: 2018-06-19 | ID: 10001582

Abstract: A method for determining a petrophysical property of a formation includes detecting gamma rays at two different spaced apart positions from a position of emitting neutrons into the formation at an energy level sufficient to induce inelastic scatting gamma rays. The neutrons are emitted in a plurality of bursts of neutrons into the formation, the bursts each having a first selected duration. Each burst is followed by a wait time having a second selected duration, the gamma rays detected during each of the bursts and each of the wait times. A ratio of numbers of gamma rays detected during the bursts is determined (burst ratio). A ratio of numbers of gamma rays detected during the wait times is determined (capture ratio). The burst ratio is used to correct the capture ratio. The petrophysical property is determined from the corrected capture ratio.

159. Optical fiber cable for transmission of high power laser energy over great distances

Date: 2018-06-19 | ID: 10001612

Abstract: There is provided a system and apparatus for the transmission of high power laser energy over great distances without substantial power loss and without the presence of stimulated Raman scattering. There is further provided systems and optical fiber cable configurations and optical fiber structures for the

delivering high power laser energy over great distances to a tool or surface to perform an operation or work with the tool or upon the surface.

160. Torque coupler and support point

Date: 2018-06-19 | ID: 10001620

Abstract: A torque tube coupler that rigidly connects reflectors and provides for substantially 360° rotational freedom for the reflectors as well as the ability to transmit rotation from one reflector to another so that the reflectors may essentially be placed at the same angle. The torque coupler includes first and second torque tube coupler assemblies each configured to be connected to a reflector in a solar energy collection system. The torque coupler also includes a support point that supports said first torque coupler assembly and said second torque tube coupler assembly. This support point includes a shaft that facilitates the rigid connection of the first torque tube coupler assembly to the second torque tube coupler assembly and a bearing that facilitates 360° rotation of the first reflector and the second reflector.

161. Multifuncional environmental control unit

Date: 2018-06-19 | ID: 10001789

Abstract: A novel multifunctional electromechanical device to monitor and control environmental conditions within an occupied space. This device can be configured as a standard VAV Diffuser, an intelligently controlled window, or an intelligently controlled shutter. Functions include thermal control, and air quality control. The device would be built and located to optimize functionality and satisfy the aesthetic needs of occupants, designers, and architects. Energy harvesting combined with ultra-low power operation would reduce the long term operational costs. Mechanical and electronic modularity would facilitate the incorporation of new functions and to upgrade existing functions to improve performance and reduce cost. Additionally, a gas flow damper device that would sense pressure differential integrally or remotely and intelligently control pressure differential. A self powered, energy harvesting damper could be used to balance pressures to various ones in an office space providing just enough air flow to satisfy each zone. Wireless node network would allow communication between multiple balancing dampers to create a highly collaborative network.

162. Setback controls based on out-of-room presence information obtained from mobile devices

Date: 2018-06-19 | ID: 10001791

Abstract: Methods, systems, and devices for managing energy consumption in multi-room facilities are provided. In particular, intelligent mechanisms for determining a location of a mobile device (124) associated

with a room (112a, 112b . . . 112n) and then for managing energy settings, especially setback controls, of that room (112a, 112b . . . 112n) are provided. Some logic for implementing these mechanisms may be provided in a mobile device (124) and in-room device, such as a motion detector, thermostat, HVAC controller, door, lock, television, set top box, etc.

163. Pull-down circuitry for an apparatus

Date: 2018-06-19 | ID: 10001799

Abstract: Apparatus embodiments of the invention are disclosed for requesting power via a wired interface. In example embodiments, a pull-down circuit in the apparatus acting as a power consumer when there is no energy in the apparatus, is connected via a configuration line over a cable to a power provider device. The apparatus may be in a power down mode, it may have an empty battery, or it may have no battery. The pull-down circuit is configured to use energy from the configuration line to pull down a voltage on the configuration line, to signal the power provider device to provide power over another line of the cable to the apparatus.

164. Force-feedback device and method

Date: 2018-06-19 | ID: 10001804

Abstract: A force-feedback device comprising a first member; a first kinematics bond being coupled with said first member; said first kinematics bond being constructed to provide at least one degree of freedom for movements of said first member; said first kinematics bond comprising a braking device being constructed to constrain movements of the said first member in at least one of said at least one degree of freedom; and a energy storing/release device being constructed to store energy in response to a movement of said first member in at least one of said at least one degree of freedom constrained by said braking device. A method of providing force-feedback including constraining a movement of a member of a haptic device in at least one degree of freedom; moving the member, by an externally applied force, in at least one of the at least one constraint degree of freedom; storing energy generated by the moving of the member; determining a force required to move the member in at least one of the at least one constraint degree of freedom; releasing at least a portion of the stored energy to generate at least a portion of the required force and transmitting the at least a portion of the required force to the member.

165. Signal adapter for a display system for energy conservation

Date: 2018-06-19 | ID: 10001828

Abstract: A signal adapter device for a display system which enables turning on and off the display device for energy conservation. The signal adapter has a signal input port coupled to a signal source, a signal output

port coupled to a display, and an adapter port coupled to a sensor. Corresponding pins of the input and output ports are electrically connected to each other, except that the hot plug detect pin of the input port is electrically disconnected from that of the output port but is electrically connected to a hot plug detect pin of the adapter port. The sensor senses environmental conditions such as the presence of viewers within a certain distance, and generates a voltage signal for the hot plug detect pin. Based on this signal on its hot plug detect pin, the signal source determines whether to transmit multimedia data to the display device.

166. Touch-sensitive apparatus with improved spatial resolution

Date: 2018-06-19 | ID: 10001881

Abstract: A touch-sensitive apparatus comprises a first subset of components on a first end of the touch surface, and a second subset of components on a second end which is opposite to and parallel with the first end. The components include emitters and detectors, each emitter being operable for propagating a diverging energy beam (e.g. radiation) across the touch surface inside the panel, and each detector being operable for detecting transmitted energy from at least two emitters. The components in at least one of the first and second subsets are systematically arranged in spatially separate groups along at least one of the first and second ends, so as to achieve a reduced spacing and/or an increased uniformity of the transmission paths along a center line between the first and second ends compared to an equidistant arrangement of all components.

167. Method for binding site identification by molecular dynamics simulation (silcs: site identification by ligand competitive saturation)

Date: 2018-06-19 | ID: 10002228

Abstract: The invention describes an explicit solvent all-atom molecular dynamics methodology (SILCS: Site Identification by Ligand Competitive Saturation) that uses small aliphatic and aromatic molecules plus water molecules to map the affinity pattern of a large molecule for hydrophobic groups, aromatic groups, hydrogen bond donors, and hydrogen bond acceptors. By simultaneously incorporating ligands representative of all these functionalities, the method is an in silico free energy-based competition assay that generates three-dimensional probability maps of fragment binding (FragMaps) indicating favorable fragment:large molecule interactions. The FragMaps may be used to qualitatively inform the design of small-molecule ligands or as scoring grids for high-throughput in silico docking that incorporates both an atomic-level description of solvation and the large molecule's flexibility.

168. Electron spin-based information shuttling for a computer system

Date: 2018-06-19 | ID: 10002328

Abstract: A silicon metal-oxide semiconductor device transports a spin-polarized single electron. An array of silicon quantum dot electrodes is arranged atop a silicon dioxide layer of a silicon metal-oxide semiconductor. The array comprises at least a first electrode and a second electrode adjacent to the first electrode. A transport control logic for individually controls a voltage applied to the electrodes. The transport control logic is configured to gradually decrease a voltage at the first electrode while gradually increasing a voltage at the second electrode. Localization of the single electron is adiabatically transferred from the first electrode to the second electrode while maintaining a desired energy gap between a ground state and a first excited state of the single electron.

169. Shift register unit and driving method thereof, gate driving circuit, and display device

Date: 2018-06-19 | ID: 10002558

Abstract: Provided are a shift register unit and a driving method thereof, a scan driving circuit, a display device, wherein the shift register unit comprises an input module configured to output a voltage at the signal input terminal to the first node, an energy storage module configured to store the voltage at the first node or to charge the first node, a first pull-up control module configured to output a voltage at the first voltage terminal to the pull-up control node, a second pull-up control module configured to output a voltage at the second voltage terminal to the pull-up control node, a pull-down control module configured to output a voltage at the first node to the pull-down control node. The pulse width of the signal of each stage of output terminal of the GOA circuit can be adjusted.

170. Determining the inter-channel time difference of a multi-channel audio signal

Date: 2018-06-19 | ID: 10002614

Abstract: There is provided a method and device for determining an inter-channel time difference of a multi-channel audio signal having at least two channels. A set of local maxima of a cross-correlation function involving at least two different channels of the multi-channel audio signal is determined (S1) for positive and negative time-lags, where each local maximum is associated with a corresponding time-lag. From the set of local maxima, a local maximum for positive time-lags is selected as a so-called positive time-lag inter-channel correlation candidate and a local maximum for negative time-lags is selected as a so-called negative time-lag inter-channel correlation candidate (S2). When the absolute value of a difference in amplitude between the inter-channel correlation candidates is smaller than a first threshold, it is evaluated whether there is an energy-dominant channel (S3). When there is an energy-dominant-channel, the sign of the inter-channel time difference is identified and a current value of the inter-channel time difference is extracted based on either the time-lag corresponding to the positive time-lag inter-channel con-elation candidate or the time-lag corresponding to the negative time-lag inter-channel correlation candidate (S4).

171. Irregular pattern identification using landmark based convolution

Date: 2018-06-19 | ID: 10002622

Abstract: Pattern identification using convolution is described. In one or more implementations, a representation of a pattern is obtained that is described using data points that include frequency coordinates, time coordinates, and energy values. An identification is made as to whether sound data described using irregularly positioned data points includes the pattern, the identifying including use of a convolution of the frequency or time coordinates to determine correspondence with the representation of the pattern.

172. Pressure wave generator and controller for generating a pressure wave in a liquid medium

Date: 2018-06-19 | ID: 10002680

Abstract: An apparatus for generating a pressure wave in a liquid medium is disclosed. The apparatus includes a plurality of pressure wave generators having respective moveable pistons, the pistons having respective control rods connected thereto. The apparatus also includes a plurality of transducers coupled to the liquid medium and means for causing the pistons of respective ones of the plurality of the pressure wave generators to be accelerated toward respective ones of the plurality of transducers. The apparatus further includes means for causing restraining forces to be applied to respective control rods to cause respective pistons to impact respective transducers at respective desired times and with respective desired amounts of kinetic energy such that the respective desired amounts of kinetic energy are converted into a pressure wave in the liquid medium.

173. Embedded magnetic component transformer device

Date: 2018-06-19 | ID: 10002703

Abstract: An embedded transformer device includes first, second, and auxiliary windings, defined in an insulating substrate by conductive vias joined together by conductive traces. The positions of the conductive vias are arranged to optimize the isolation properties of the transformer, while the conductive traces are arranged to optimize the coupling between the primary and secondary side windings. The embedded transformer device provides favourable isolation and energy transfer between input side and output side windings, in a device with a small component size.

174. Energy storage capacitor having composite electrode structure

Date: 2018-06-19 | ID: 10002715

Abstract: An energy storage capacitor having a composite electrode structure includes: a case; a rolled body

arranged inside the case; and an electrolyte stored inside the case. The rolled body includes: a first anode foil having a first anode lead plate connected at one side of one surface, a first cathode foil arranged to face the other surface of the first cathode foil with the one surface of the first anode foil and a first cathode lead plate connected at the other side, a second cathode foil arranged to face the other surface of the second cathode foil with one surface of the first cathode foil and having a second cathode lead plate connected at one side of one surface, a second anode foil arranged to face the one surface of the second cathode foil and a second anode lead plate connected at the other side.

175. Electron transport structure and perovskite solar cell having the same

Date: 2018-06-19 | ID: 10002716

Abstract: Differing from conventional technology utilizing double-layer electron transport layer (ETL) to improving power conversion efficiency of perovskite solar cell, the present invention discloses a novel electron transport structure comprising an interfacial diploe moment enhancing layer, an electron transport layer and an interfacial layer. After applying this electron transport structure in a perovskite solar cell, it is found that an interfacial dipole moment formed between the electron transport layer of the electron transport structure and an active layer of the perovskite solar cell is amplified, so as to give rise to an enhanced driving force for the separation of photogenerated carriers and accelerating charge extraction. Moreover, a variety of experimental data have proved that, compared with the perovskite solar cell having double-layer ETL, the perovskite solar cell using this novel electron transport structure exhibits understanding performances including short-circuit current, open-circuit voltage, filling factor, and power conversion efficiency.

176. High performance lithium-ion capacitor laminate cells

Date: 2018-06-19 | ID: 10002717

Abstract: The present invention provides for high performance lithium-ion capacitor laminate cells that include positive electrodes, negative electrodes and organic solvent electrolyte with lithium salt, and a method for making said high performance lithium-ion capacitor laminate cells. These high performance lithium-ion capacitor laminate cells of the present invention, include a negative electrode which is pre-doped with sufficient lithium ions by employing lithium sources including lithium powder known as SLMP or thin lithium films on the surface of negative electrodes, and this pre-doping with placing lithium sources on negative electrode surface results in LIC laminate cells with considerably higher performance in specific energy, specific power and cycle life.

177. Switching system for breaking a current and method of performing a current breaking operation

Date: 2018-06-19 | ID: 10002722

Abstract: A switching system for breaking a current, including a contact arrangement having a first and second terminals, a resonance circuit connectable across the contact arrangement, In the closed state the first switch enables current to flow through the resonance circuit in a first flow direction and into the contact arrangement in a direction opposite to a contact arrangement arc current flow direction. A second switch connected to the resonance circuit and to the second terminal. In the closed state the second switch enables current to flow through the resonance circuit in a second flow direction opposite to the first flow direction. A control system arranged to alternatingly set the first and second switches in the closed state and then in the open state upon a current breaking operation, until a current pulse, emanating from energy supplied by a contact arrangement arc current, flowing through the resonance circuit and into the contact arrangement reaches an amplitude which is equal to or greater than a magnitude of a contact arrangement arc current.

178. Ion beam irradiation apparatus

Date: 2018-06-19 | ID: 10002751

Abstract: An ion beam irradiation apparatus is provided. The apparatus includes an ion source, a mass separator, and an energy filter. The mass separator sorts dopant ions having a specific mass number and valence from an ion beam extracted from the ion source, and outputs the dopant ions. The energy filter is formed to define a beam passing region for allowing the ion beam to pass therethrough, and configured to have a given filter potential in response to application of a voltage thereto to separate passable ions capable of passing through the beam passing region and non-passable ions incapable of passing through the beam passing region, from each other by a difference in ion energy. The given filter potential is set such that the dopant ions are included in the passable ions, and a portion of unwanted ions which cannot be separated from the dopant ions by the mass separator are included in the non-passable ions.

179. Systems and methods for determining the suitability of RF sources in ultraviolet systems

Date: 2018-06-19 | ID: 10002752

Abstract: A UV system for irradiating a substrate includes a RF source capable of generating RF energy, a UV lamp capable of emitting UV energy when excited by the RF energy generated by the RF source, and a monitor coupled to the RF source. The monitor includes data relating to the RF source. The UV system further includes a controller capable of communication with the monitor, and the controller determines if the RF source is suitable for operation with the UV system based on the data of the monitor and/or the end of its useful life.

180. Sputter etch material selectivity

Date: 2018-06-19 | ID: 10002764

Abstract: A method of etching a workpiece comprising two or more materials is disclosed. The method involves using physical sputtering as the etching method where the processing parameters of the sputtering process are tuned to achieve a desired etch rate selectivity. The method includes determining the etch rate of each material disposed on the workpiece as a function of various processing parameters, such as ion species, ion energy, incidence angle and temperature. Once the relationship between etch rate and these parameters is determined for each material, a set of values for these processing parameters may be chosen to achieve the desired etch rate selectivity.

181. ESC assembly including an electrically conductive gasket for uniform RF power delivery therethrough

Date: 2018-06-19 | ID: 10002782

Abstract: A substrate processing apparatus for processing substrates comprises a processing chamber in which a substrate is processed. A process gas source is adapted to supply process gas into the processing chamber. A RF energy source is adapted to energize the process gas into a plasma state in the processing chamber. A vacuum source is adapted to exhaust byproducts of the processing from the processing chamber. The processing chamber includes an electrostatic chuck assembly having a layer of ceramic material that includes an upper electrostatic clamping electrode and at least one RF electrode, a temperature controlled RF powered baseplate, and at least one annular electrically conductive gasket extending along an outer portion of an upper surface of the temperature controlled RF powered baseplate. The at least one annular electrically conductive gasket electrically couples the upper surface of the temperature controlled RF powered baseplate to the at least one RF electrode.

182. Integrated electronic components and methods of formation thereof

Date: 2018-06-19 | ID: 10002818

Abstract: Provided are integrated electronic components which include a waveguide microstructure formed by a sequential build process and an electronic device, and methods of forming such integrated electronic components. The microstructures have particular applicability to devices for transmitting electromagnetic energy and other electronic signals.

183. Fin-FET resonant body transistor

Date: 2018-06-19 | ID: 10002859

Abstract: Circuit structures including a FinFET resonant body transistor are disclosed. One circuit structure includes: a plurality of fins over a substrate and a plurality of gate structures over the plurality of fins, the plurality of gate structures including at least one voltage sensing gate and multiple driving junction gates disposed on opposing sides of the at least one voltage sensing gate; at least one phononic crystal, wherein the at least one phononic crystal is arranged to confine vibrational energy arising from electrically induced mechanical stresses in the fins disposed below the driving junction gates; and, wherein the electrically induced mechanical stresses modulate carrier mobility in the at least one voltage sensing gate to produce a current extractable by the circuit structure.

184. Silicon carbide semiconductor device

Date: 2018-06-19 | ID: 10002931

Abstract: A silicon carbide semiconductor device capable of effectively increasing a threshold voltage and a method for manufacturing the silicon carbide semiconductor device. The silicon carbide semiconductor device includes a gate insulating film formed on part of surfaces of the well regions and the source region; and a gate electrode formed on a surface of the gate insulating film so as to be opposite to an end portion of the source region and the well regions. Furthermore, the gate insulating film has, in an interface region between the well regions and the gate insulating film, defects that each form a first trap having an energy level deeper than a conduction band end of silicon carbide and that include a bond between silicon and hydrogen.

185. Atomic layer deposition of selected molecular clusters

Date: 2018-06-19 | ID: 10002938

Abstract: Energy bands of a thin film containing molecular clusters are tuned by controlling the size and the charge of the clusters during thin film deposition. Using atomic layer deposition, an ionic cluster film is formed in the gate region of a nanometer-scale transistor to adjust the threshold voltage, and a neutral cluster film is formed in the source and drain regions to adjust contact resistance. A work function semiconductor material such as a silver bromide or a lanthanum oxide is deposited so as to include clusters of different sizes such as dimers, trimers, and tetramers, formed from isolated monomers. A type of Atomic Layer Deposition system is used to deposit on semiconductor wafers molecular clusters to form thin film junctions having selected energy gaps. A beam of ions contains different ionic clusters which are then selected for deposition by passing the beam through a filter in which different apertures select clusters based on size and orientation.

186. Solar cell

Date: 2018-06-19 | ID: 10002976

Abstract: A first finger electrode group including finger electrodes on the first principal surface. A second finger electrode group including finger electrodes on the second principal surface. The second finger electrode group is divided into divided electrode portions, the number of electrodes of the electrode portions decreasing as a distance from a central portion of the second finger electrode group increases towards outside, and a coupling portion is arranged between each adjacent ones of the divided electrode portions and electrically connects at least two of the finger electrodes of the divided electrode portion on inside with at least one of the finger electrodes of the divided electrode portion on outside. The number of finger electrodes of the divided electrode portion closest to the central portion of the second finger electrode group is larger than the number of finger electrodes of the first finger electrode group.

187. Electro-conductive paste comprising coarse inorganic oxide particles in the preparation of electrodes in MWT solar cells

Date: 2018-06-19 | ID: 10002977

Abstract: The invention relates to an electro-conductive paste comprising coarse SiO2 particles in the preparation of electrodes in solar cells, particularly in the preparation of electrodes in MWT solar cells, particularly in the preparation of the metal wrap through, or plug, electrode in such solar cells. In particular, the invention relates to a solar cell precursor, a process for preparing a solar cells, a solar cell and a module comprising solar cells.The invention relates to a solar cell precursor at least comprising as precursor parts:

188. Multi-junction solar cells

Date: 2018-06-19 | ID: 10002981

Abstract: Solar cell structures including multiple sub-cells that incorporate different materials that may have different lattice constants. In some embodiments, solar cell devices include several photovoltaic junctions.

189. Emitter for a thermo-photovoltaic system and thermo-photovoltaic system comprising at least one such emitter

Date: 2018-06-19 | ID: 10002982

Abstract: A thermo-photovoltaic system including an infrared radiation emitter including a body including a first external surface and a second external surface, the first and second external surfaces being distinct, the first external surface facing a concentrator for receiving a concentrated solar radiation, the second external surface facing a thermo-photovoltaic cell, and the body further including at least one gas and/or liquid combustion chamber therein, and an igniter is provided for causing combustion in the combustion chamber.

190. Solar cell panel

Date: 2018-06-19 | ID: 10002984

Abstract: Disclosed is a solar cell panel including a plurality of solar cells each including a semiconductor substrate and an electrode formed on the semiconductor substrate, and a wire for interconnecting the solar cells. The electrode includes a bus-bar line having a pad portion for attachment of the wire. The wire includes a first wire portion connected to the pad portion, and a second wire portion located on a portion excluding the pad portion. The first wire portion has a thickness greater than a thickness of the second wire portion.

191. Method for manufacturing solar cell module

Date: 2018-06-19 | ID: 10002985

Abstract: A solar cell module and a method for manufacturing the same are disclosed. The solar cell module includes solar cells each including a semiconductor substrate, and first electrodes and second electrodes extending in a first direction on a surface of the semiconductor substrate, conductive lines extended in a second direction crossing the first direction on the surface of the semiconductor substrate and connected to the first electrodes or the second electrodes through a conductive adhesive, and an insulating adhesive portion extending in the first direction on at least a portion of the surface of the semiconductor substrate, on which the conductive lines are disposed, and fixing the conductive lines to the semiconductor substrate and the first and second electrodes. The insulating adhesive portion is attached up to an upper part and a side of at least a portion of each conductive line.

192. System for thermoelectric energy generation

Date: 2018-06-19 | ID: 10003000

Abstract: Embodiments of the invention provide systems and methods for generating and delivering electricity and/or hot water for combined heat and power (CHP) using one or more fuels. In many embodiments, the system can be used to provide efficient electrical, heating and cooling utilities to a residential household or group of households. Embodiments of the system can be configured for specific heat flow, while minimizing losses and maximizing total system efficiency. Embodiments also provide for stackable energy generation modules allowing the system to be placed in or nearby a residence to provide power to the residence. Embodiments also provide a control system which can be configured to monitor household electrical usage and dynamically regulate the system to operate at maximum efficiency as well as sell power to an external grid.

193. Method and system for providing a diluted free layer magnetic junction usable in spin

transfer torque applications

Date: 2018-06-19 | ID: 10003015

Abstract: A magnetic junction and method for providing the magnetic junction are described. The magnetic junction resides on a substrate and is usable in a magnetic device. The magnetic junction includes free and pinned layers separated by a nonmagnetic spacer layer. The free layer is switchable between stable magnetic states when a write current is passed through the magnetic junction. The free layer has a free layer perpendicular magnetic anisotropy energy greater than a free layer out-of-plane demagnetization energy. The free layer also includes a diluted magnetic layer having an out-of-plane demagnetization energy and a perpendicular magnetic anisotropy greater than the out-of-plane demagnetization energy. The diluted magnetic layer includes at least one magnetic material and at least one nonmagnetic material. The diluted magnetic layer has an exchange stiffness that is at least eighty percent of an exchange stiffness for the magnetic material(s).

194. Heterojunction oxide non-volatile memory device

Date: 2018-06-19 | ID: 10003020

Abstract: A memory device includes a first metal layer and a first metal oxide layer coupled to the first metal layer. The memory device includes a second metal oxide layer coupled to the first metal oxide layer and a second metal layer coupled to the second metal oxide layer. The formation of the first metal oxide layer has a Gibbs free energy that is lower than the Gibbs free energy for the formation of the second metal oxide layer.

195. System for the storage of electric energy for a vehicle with electric propulsion and presenting cylindrical chemical batteries embedded in a support matrix

Date: 2018-06-19 | ID: 10003051

Abstract: A system for the storage of electric energy for a vehicle with electric propulsion, which presents a longitudinal direction, which is parallel to the direction of the rectilinear motion, and a transverse direction, which is perpendicular to the longitudinal direction; the storage system is provided with a pack of chemical batteries, which are connected to each other in series and in parallel and comprise respective electrochemical cells; each chemical battery has a cylindrical shape having a central symmetry axis; and a support matrix made of plastic material is provided, inside which the chemical batteries are embedded so that the chemical batteries are completely covered by the support matrix itself.

196. Power source pack

Date: 2018-06-19 | ID: 10003054

Abstract: A power source pack includes: a housing; and a power source module which is housed in the housing. The power source module includes: a cell stack including a plurality of energy storage devices each having a safety valve; and a heat insulator positioned between an inner wall of the housing and the cell stack and having an approximately flat-plate shape. The heat insulator faces the safety valves of the cell stack in an opposed manner.

197. Energy storage device and method of manufacturing energy storage device

Date: 2018-06-19 | ID: 10003061

Abstract: An energy storage device includes: an electrode assembly; a case for storing the electrode assembly therein, the case having an electrolyte solution sealing portion where an electrolyte solution pouring hole formed in the case is sealed; and at least one partition member arranged in a gap formed between the case and the electrode assembly stored in the case. The partition member partitions the gap in the winding axis direction of the electrode assembly by surrounding the electrode assembly in the winding direction of the electrode. The electrolyte solution pouring hole is arranged at a position closer to one end of the electrode assembly than the partition member close to one end of the case is in the winding axis direction.

198. Carbon nanotube-metal nanocomposites as flexible, free standing, binder free high performance anode for Li-ion battery

Date: 2018-06-19 | ID: 10003075

Abstract: The present invention relates to carbon nanotubes-metal nano composite by chemical route and the corresponding development of strong and flexible, light weight, self-supporting anode through simple vacuum filtration technique, which is favored by the high aspect ratio of the Multi-walled carbon nanotubes. The self-supported anode has an added advantage that it can be used as electrodes without binder and electrical conductor (unlike other carbonaceous powder materials) that helps us to elucidate the precise electrochemical properties. The metals used can be Sn, Si, Al, etc. The developed high capacity, free-standing anode can be used in rechargeable Li-ion batteries and is demonstrated successfully in powering solar lantern.

199. Energy signatures to represent complex current vectors

Date: 2018-06-19 | ID: 10003196

Abstract: A distributed control node enables monitoring of complex energy signatures for local loads. The control node can identify energy signatures unique to local loads. The energy signature includes a complex current vector for the load in operation identifying the primary current with a real power component and a reactive power component, and identifying one or more harmonics each with a real power component, a

reactive power component, and an angular displacement relative to the primary current. Based on the energy signature, the control node can control a noise contribution of the load due to the harmonics as seen at a point of common coupling to reduce noise introduced onto the grid network from the load.

200. Energy management method and system for energy supply system

Date: 2018-06-19 | ID: 10003197

Abstract: An energy management method for an energy supply system which includes at least an energy storage, a load and a generator with power dependent efficiency is provided. The method includes: calculating two time variant parameters indicating a discharge lower limit and an upper charge limit, respectively, of the energy storage, based on optimization using different kinds of prediction; and controlling, in a real time manner, charging and discharging of the energy storage and operation of the generator, with a certain priorities given to various power sources, such that state of charge of the energy storage is controlled within a region between the discharge lower limit and the upper charge limit. When a grid power is available, blackout duration probability function is predicted and used to calculate the discharge lower limit and the upper charge limit.

201. Apparatus and method for forming three-dimensional objects using linear solidification

Date: 2018-06-19 | ID: 10000023

Abstract: An apparatus and method for making a three-dimensional object from a solidifiable material using a linear solidification device is shown and described. In certain examples, the linear solidification device includes a laser diode that projects light onto a scanning device, such as a rotating polygonal mirror or a linear scanning micromirror, which then deflects the light onto a photohardenable resin. As a result, the linear solidification device scans a line of solidification energy in a direction that is substantially orthogonal to the direction of travel of the laser diode. In other examples, the linear solidification device is a laser device array or light emitting diode array that extends in a direction substantially orthogonal to the direction of travel of the array.

202. Method for operating a press with an underneath drive and press operated according thereto

Date: 2018-06-19 | ID: 10000032

Abstract: A method and a press are proposed for an energy-efficient drive of a press (1) with a bottom drive, in which a drive device (2) disposed in a bottom section (3), a plunger (1.1) executing a stroke (H) and receiving an upper tool part (1.2) with at least one acting tie rod (2.1.2) of a drive train (2.1) are provided and the upper tool part (2.1) corresponding to a bottom tool part (3.2) disposed in the bottom section (3) machines

or forms a work piece (5). The drive device (2) is operated by at least one motor (2.1.1) and by way of a control and regulation device (4) connecting the motor (2.1.1) and the drive train (2.1). Each drive train (2.1) can be operated by its own motor (2.1.1). When using a drawing device with a holder (3.3.1), it is operated in the change and during at least a partial path of the respective stroke (H) by the drive train (2.1) while observing a shaft-type free space (3.2) provided in the bottom section (3) in a coupled or decoupled manner by a releasable rotatory or translational active connection.

203. High kinetic energy penetrator shielding and high wear resistance materials fabricated with boron nitride nanotubes (BNNTS) and BNNT polymer composites

Date: 2018-06-19 | ID: 10000036

Abstract: Boron nitride nanotubes (BNNTs), boron nitride nanoparticles (BNNPs), carbon nontubes (CNTs), graphites, or their combinations, are incorporated into matrices of polymer, ceramic or metals. Fibers, yarns, and woven or nonwoven mates of BNNTs are uses as toughening layers in penetration resistant materials to maximize energy absorption and/or high hardness layers to rebound or deform penetrators. They can be also uses as reinforcing inclusions combining with other polymer matrices to create composite layer like typical reinforcing fibers such as Kevlar®, Spectra®, ceramics and metals. Enhanced wear resistance and prolonged usage time, even under harsh conditions, are achieved by adding boron nitride nanomaterials because both hardness and toughness are increased. Such materials can be used in high temperature environments since the oxidation temperature of BNNTs exceeds 800° C. in air. Boron nitride based composite materials are useful as strong structural materials for anti-micrometeorite layers for spacecraft and space suits, ultra strong tethers, protective gear for the human body as well as for vehicles, helmets, shields and safety suits/helmets for industry.

204. Electrostatic energy generator using tire cord fabric

Date: 2018-06-19 | ID: 10000097

Abstract: An electrostatic energy generator may include one or more first tire cord fabrics each including a conductive material which is a wire-shaped electrode and a non-conductive material, the non-conductive material configured to surround an outer peripheral surface of the conductive material, and one or more second tire cord fabrics each including a conductive material which is a wire-shaped electrode, and a material configured to surround an outer peripheral surface of the conductive material that is different from the non-conductive material of the first tire cord fabric, wherein the first tire cord fabric and the second tire cord fabric are arranged in a longitudinal direction so as to be in contact with each other and form a bundle, such that frictional electricity is generated due to a friction between the first tire cord fabric and the second tire cord

fabric.

205. Pelvic load management using integrated collapsible features in door trim panel

Date: 2018-06-19 | ID: 10000112

Abstract: A door assembly for a vehicle includes a door panel and a door trim panel comprising a shaped pelvic load path energy-absorbing feature disposed on a door panel-facing surface of the door trim panel. The shaped pelvic load path energy-absorbing feature is defined by a plurality of stepped surfaces, which in turn may define as various cross-sectional shapes for the shaped pelvic load path energy-absorbing feature.

206. Method for operating parallel auxiliary converters in a rail vehicle

Date: 2018-06-19 | ID: 10000122

Abstract: In a method for supplying an electrical load of a vehicle with electrical energy by auxiliary converters connected in parallel on the alternating-voltage side, a current flow between the auxiliary converters and a grounded N conductor of an energy supply network is interrupted in the presence a ground fault. The auxiliary converters connected in parallel on the alternating-voltage side are operated with fundamental-wave and pulse synchronicity. An energy supply system of a vehicle, in particular of a rail vehicle, performs this method, with the energy supply system including at least two auxiliary converters arranged in parallel, an energy supply network for supplying electrical loads, at least one switch for interrupting a current flow between the auxiliary converters and the energy supply network.

207. Power supply apparatus and method for hybrid vehicle

Date: 2018-06-19 | ID: 10000125

Abstract: Provided are a power supply apparatus and method for a hybrid vehicle. The power supply apparatus is integrated with a power conversion device and an energy storage device in order to reduce a size and production cost of the power supply apparatus and includes a battery unit including a plurality of battery cells configured to store different levels of power and a power control unit configured to control the battery unit to integrally or selectively output the power of the plurality of battery cells based on whether an engine of the hybrid vehicle generates power.

208. Method and system for controlling fuel cell vehicle

Date: 2018-06-19 | ID: 10000141

Abstract: A method and system for controlling a fuel cell vehicle are provided. The method includes determining, by a controller, a driving pattern of a driver based on driving information including acceleration and deceleration information. A condition for activation of an idling-stop of a fuel cell is then set based on the

determined driving pattern and the fuel cell is stopped from generating electric energy when the condition for activation of the idling-stop is satisfied.

209. Vehicle article carrier with integrated camera and solar powered lighting

Date: 2018-06-19 | ID: 10000160

Abstract: A vehicle article carrier system is disclosed for carrying articles above an outer body surface of a vehicle. The system may incorporate at least one support rail secured to the outer body surface. The support rail may have a support foot portion at each of its opposite ends, with each support foot portion secured to the outer body surface of the vehicle. A sensor may be mounted on the at least one support rail or one of the support feet portions for sensing a characteristic within a field of view around the vehicle and providing related information to a subsystem of the vehicle.

210. Vehicle electrical system and method for operating a vehicle electrical system

Date: 2018-06-19 | ID: 10000168

Abstract: A vehicle electrical system includes a first system branch with a first nominal voltage U1, a second system branch with a second nominal voltage U2, at least one DC/DC converter configured to transmit energy between the first and second system branches, a first actuating unit to actuate the DC/DC converter(s), a first detection unit to detect an instantaneous voltage Uact,1 of the first system branch, and a comparison unit to compare the detected instantaneous voltage Uact,1 to a first upper voltage threshold value Uo,1 and to a first lower voltage threshold value Uu,1, wherein Uu,1<U1<Uo,1. The first actuating unit actuates the DC/DC converter(s) such that energy is transmitted from the first system branch to the second system branch if Uact,1>Uo,1, and such that energy is transmitted from the second system branch to the first system branch if Uact,1<Uu,1.

211. Vehicle energy-absorbing device

Date: 2018-06-19 | ID: 10000171

Abstract: An energy-absorbing device includes a beam having a longitudinal axis and a plurality of lobes attached to and positioned sequentially along the beam. The lobes are spaced from each other, deformable relative to the beam, and configured to contact adjacent lobes when deformed. The size and spacing of the lobes is such that if a single lobe is deformed, the lobe will not contact adjacent lobes, but if adjacent lobes are deformed, the lobes will contact each other.

212. Mild hybrid powertrain controls

Date: 2018-06-19 | ID: 10000197

Abstract: Mild hybrid powertrain controls and apparatuses, methods and systems including the same are disclosed. One exemplary embodiment is a mild-hybrid system comprising an engine, an electrical machine, power electronics, an energy storage system, and an electrical load. The system includes a controller structured to receive an electrical machine power command based upon a power allocation to the electrical machine, process the electrical machine power command with feedforward controls structured to compensate for an inaccuracy associated with the power electronics, process the electrical machine power command with proportional integral (PI) controls structured to compensate for a power loss associated with one or more electrical loads, provide a compensated machine power command based upon the processing with the feedforward controls and the processing with the PI controls, and output the compensated machine power command to control the electrical machine.

213. Systems and methods for pressure tolerant energy systems

Date: 2018-06-19 | ID: 10000260

Abstract: Systems and methods are disclosed herein for a pressure tolerant energy system. The pressure tolerant energy system may comprise a pressure tolerant cavity and an energy system enclosed in the pressure tolerant cavity configured to provide electrical power to the vehicle. The energy system may include one or more battery cells and a pressure tolerant, programmable management circuit. The pressure tolerant cavity may be filled with an electrically-inert liquid, such as mineral oil. In some embodiments, the electrically-inert liquid may be kept at a positive pressure relative to a pressure external to the pressure tolerant cavity. The energy system may further comprise a pressure venting system configured to maintain the pressure inside the pressure tolerant cavity within a range of pressures. The pressure tolerant cavity may be sealed to prevent water ingress.

214. Pushing device, moving mechanism and aircraft

Date: 2018-06-19 | ID: 10000276

Abstract: The present application relates to a pushing device, a moving mechanism and an aircraft. According to an aspect of the present application, a pushing device for a moving mechanism of an aircraft is provided, the moving mechanism including a primary moving device and an auxiliary moving device assisting the primary moving device, the pushing device including a support member and a pushing assembly supported by the support member, and the pushing assembly including a pushing element and an energy storage element. The pushing element is adapted to push a broken part of the auxiliary moving device to an offset position from a normal working position by means of energy from the energy storage element when the auxiliary moving device breaks. According to the present application, it is possible to provide an effective fault protection to the moving mechanism of the aircraft.

215. Gas-electric propulsion system for an aircraft

Date: 2018-06-19 | ID: 10000293

Abstract: In one aspect the present subject matter is directed to a gas-electric propulsion system for an aircraft. The system may include a turbofan jet engine, an electric powered boundary layer ingestion fan that is coupled to a fuselage portion of the aircraft aft of the turbofan jet engine, and an electric generator that is electronically coupled to the turbofan jet engine and to the boundary layer ingestion fan. The electric generator converts rotational energy from the turbofan jet engine to electrical energy and provides at least a portion of the electrical energy to the boundary layer ingestion fan. In another aspect of the present subject matter, a method for propelling an aircraft via the gas-electric propulsion system is disclosed.

216. Structures and process for preventing a projection of the laser resealing structure beyond the wafer surface

Date: 2018-06-19 | ID: 10000375

Abstract: A method for manufacturing a micromechanical component including a substrate and a cap connected to the substrate and together with the substrate enclosing a first cavity, a first pressure prevailing and a first gas mixture with a first chemical composition being enclosed in the first cavity. An access opening, connecting the first cavity to surroundings of the micromechanical component, is formed in the substrate or the cap. The first pressure and/or the first chemical composition is adjusted in the first cavity. The access opening is sealed by introducing energy and heat into an absorbing part of the substrate or cap with the aid of a laser. A recess is formed in a surface of the substrate or of the cap facing away from the first cavity in the area of the access opening for accommodating a material area of the substrate or the cap converted into a liquid aggregate state.

217. Carbon monoxide shift reaction apparatus and carbon monoxide shift conversion method

Date: 2018-06-19 | ID: 10000378

Abstract: A carbon monoxide (CO) Shift reaction apparatus and a CO shift conversion method are capable of increasing the service life of a CO shift catalyst and reducing loss of energy. The CO shift reaction apparatus includes a plurality of CO shift reaction units in which a plurality of CO shift catalysts haying mutually different active-temperature regions are arranged in a gas flow direction.

218. Method for forming of siliceous film and siliceous film formed using same

Date: 2018-06-19 | ID: 10000386

Abstract: A siliceous film having high purity and a low etching rate is formed by (a) a step for forming a siliceous film on a substrate by coating a solution composed of a polysilazane, e.g., perhydropolysilazane on a substrate and then hardening (curing) the solution in an oxidizing atmosphere, or by coating a silica solution formed by a sol-gel method on a substrate, and (b) a step for heating the siliceous film in an inert gas environment containing a nitrogen-containing compound such as an alkylamine having a base dissociation constant (pKb) no greater than 4.5, or a halogen-containing compound in which the bond energy of a halogen atom such as F2, Br2, or NF3 is no greater than 60 kcal/mol, in order to anneal the film.

219. Controlled microwave assisted synthesis of functionalized silica nanoparticles

Date: 2018-06-19 | ID: 10000390

Abstract: A method of synthesizing silica nanoparticles. The method includes hydrolyzing a silica precursor to form a plurality of monomers, each monomer of the plurality comprising a microwave reactive silicon species. The plurality of monomers is irradiated by an energy source configured to generate microwave frequency energy. Irradiation cases the plurality of monomers polymerize into a silica nanoparticle.

220. Organic-waste-processing apparatus, processing method, and control apparatus

Date: 2018-06-19 | ID: 10000403

Abstract: An organic-waste-processing apparatus reducing a moisture of, and conducting a thermal operation process to, an organic waste, includes: a moisture-reducing unit; a combustion unit; a combustion-energy-supply unit; an energy-supply-operation controller; an organic-waste-energy-estimating unit; a total-energy-consumption measuring unit; a relation-maintaining unit; a quantitative-relationship-grasping unit; and a moisture reduction controller. The moisture reduction controller controls an operation of the moisture-reducing unit so that the estimated value of the organic waste energy to be estimated by the organic-waste-energy-estimating unit is directed in a direction reducing a quantitative difference from the optimum value of the organic waste energy based on the quantitative relationship grasped by the quantitative-relationship-grasping unit between the optimum value of the organic waste energy and the latest estimated value of the organic waste energy.

221. Energy and environmentally integrated method for production of aromatic dicarboxylic acids by oxidation

Date: 2018-06-19 | ID: 10000435

Abstract: A continuous process for oxidizing a di-alkyl substituted aromatic compound with compressed air in a primary bubble column reactor; including removing a portion of the three phase reaction medium to a post-oxidation bubble column unit supplied with compressed air separating the post oxidation reaction

medium to an overhead gas and an underflow slurry; collecting overhead gases from the oxidation reactors and the de-gassing unit and conducting the combined overhead gases to a water removal column (WRC); transferring the underflow slurry from the de-gassing unit to a digestion unit to effect further oxidation without addition of air to the digestion unit; removing overhead gases to the water removal column; crystallizing the final oxidation slurry; and filtering the slurry on a rotary pressure filter; wherein a portion of the energy of the off gas from the WRC is employed to drive an air compressor to supply the compressed air for oxidation.

222. Method for preparing organic vapor-phase dehydration feedstock

Date: 2018-06-19 | ID: 10000436

Abstract: The present invention relates to a method including: directly heating a fermentation broth to remove impurities, thereby preparing an organic vapor-phase dehydration feedstock; and continuously subjecting the organic vapor-phase dehydration feedstock to a vapor-phase dehydration reaction. According to the present invention, impurities in a fermentation broth, which have been removed by a multi-step process in the prior art, can be completely removed in a single-step process, and thus the time, cost and energy required for a process for preparing an organic vapor-phase dehydration feedstock from the fermentation broth can be effectively reduced, and the process for preparing the organic vapor-phase dehydration feedstock and a vapor-phase dehydration reaction can be continuously performed in an effective manner.

223. Method for producing tetraalkoxysilane

Date: 2018-06-19 | ID: 10000514

Abstract: An object of the present invention is to provide a method for producing tetraalkoxysilane while saving energy at a high yield. Tetraalkoxysilane can be produced while saving energy at a high yield by the method including a first step of reacting alcohol with carbon dioxide in the presence of a dehydrating agent and/or in a reactor provided with a dehydrating means, and a second step of reacting a reaction mixture obtained in the first step with silicon oxide.

224. Process for producing aromatic vinyl/conjugated diene copolymer and product of hydrogenation thereof

Date: 2018-06-19 | ID: 10000585

Abstract: As a method for producing a copolymer with a high oil absorption rate by separating a solvent from a copolymer solution containing a copolymer in a simple manner with a less energy consumption, the present invention relates to a production method for obtaining a copolymer by separating a solvent from a copolymer solution, the method including the following Steps A to C.

225. Weatherable sheet for solar cell module, product obtained using the sheet, and process for producing the weatherable sheet for solar cell module

Date: 2018-06-19 | ID: 10000616

Abstract: The present invention provides a weather-resistant sheet for a solar cell module, which has better adhesion to a water impermeable sheet, better blocking resistance against the water impermeable sheet, and better adhesion to EVA that is a sealant; a weather-resistant sheet for a solar cell module in which a cured coating film layer thereof can suppress UV transmission significantly; a product including the sheet; and a process for producing the sheet. The weather-resistant sheet for a solar cell module includes, on a water impermeable sheet, a cured coating film layer made of a crosslinked product of a coating composition that includes a hydroxyl group-containing fluoropolymer, wherein in a pressure-resistance test performed when a crosslinking degree of the cured coating film layer is 80 to 99%, the cured coating film layer and the water impermeable sheet without a cured coating film layer formed thereon are not adhered to each other after a load has been applied to the cured coating film layer and the water impermeable sheet being stacked.

226. Methods of forming solar cells with fired multilayer film stacks

Date: 2018-06-19 | ID: 10000645

Abstract: A method of forming a fired multilayer stack are described. The method involves the steps of a) applying a wet metal particle layer on at least a portion of a surface of a substrate, b) drying the wet metal particle layer to form a dried metal particle layer, c) applying a wet intercalation layer directly on at least a portion of the dried metal particle layer to form a multilayer stack, d) drying the multilayer stack, and e) co-firing the multilayer stack to form the fired multilayer stack. The intercalating layer may include one or more of low temperature base metal particles, crystalline metal oxide particles, and glass frit particles. The wet metal particle layer may include aluminum, copper, iron, nickel, molybdenum, tungsten, tantalum, titanium, steel or combinations thereof.

227. Active energy ray-curable inkjet ink composition

Date: 2018-06-19 | ID: 10000649

Abstract: The disclosure relates to an active energy ray-curable inkjet ink composition comprising at least a monomer and a pigment, wherein the monomer comprises at least 2-(2-vinyloxyethoxy)ethyl acrylate and dipropylene glycol diacrylate. A content of 2-(2-vinyloxyethoxy)ethyl acrylate is 36 to 65% by weight in a total weight of the ink. A content of dipropylene glycol diacrylate is 31 to 63% by weight in the total weight of the ink. A content of the pigment is 1 to c % by weight in the total weight of the ink, wherein the c is the pigment concentration at which the average absorbance at 320-380 nm in 2,000-fold dilution of the ink composition

with dipropylene glycol diacrylate is 1.

228. Electrically conductive adhesives comprising at least one metal precursor

Date: 2018-06-19 | ID: 10000671

Abstract: The present invention relates to thermally curable adhesives that are suitable for use as electrically conductive materials in the fabrication of electronic devices, integrated circuits, semiconductor devices, passive components, solar cells, solar modules, and/or light emitting diodes. The thermally curable adhesives comprise at least one thermosetting resin, electrically conductive particles having an average particle size of 1 m to 50 m, and at least one metal precursor, wherein the metal precursor decomposes substantially to the corresponding metal during the thermal curing of the thermally curable adhesive.

229. Magnesium alumosilicate-based phosphor

Date: 2018-06-19 | ID: 10000697

Abstract: The invention relates to co-activated magnesium alumosilicate based phosphors, to a process of its preparation, the use of these phosphors in electronic and electro optical devices, such as light emitting diodes (LEDs) and solar cells and especially to illumination units comprising said magnesium alumosilicate-based phosphors.

230. Method for employing corn plant material comprising cobs in the manufacture of ethanol

Date: 2018-06-19 | ID: 10000777

Abstract: Ear corn is picked from corn fields by ear corn harvesters and transported to a central shelling station associated with an ethanol manufacturing facility. Shelled corn from the central shelling station is processed into ethanol at the ethanol manufacturing facility, and corn cobs from the central shelling station are burned to provide process heat for the ethanol manufacturing process. Energy is conserved and costs are reduced during the picking and shelling of the ear corn and by the burning of cobs for process heat.

231. Titanium alloys exhibiting resistance to impact or shock loading

Date: 2018-06-19 | ID: 10000838

Abstract: Titanium alloys formed into a part or component used in applications where a key design criterion is the energy absorbed during deformation of the part when exposed to impact, explosive blast, and/or other forms of shock loading is described. The titanium alloys generally comprise a titanium base with added amounts of aluminum, an isomorphous beta stabilizing element such as vanadium, a eutectoid beta stabilizing element such as silicon and iron, and incidental impurities. The titanium alloys exhibit up to 70% or

more improvement in ductility and up to a 16% improvement in ballistic impact resistance over a Ti-6Al-4V alloy, as well as absorbing up to 50% more energy than the Ti-6Al-4V alloy in Charpy impact tests. A method of forming a part that incorporates the titanium alloys and uses a combination of recycled materials and new materials is also described.

232. Multi-stack electrochemical compressor system and method for operating

Date: 2018-06-19 | ID: 10000855

Abstract: A multi-stack electrochemical hydrogen compressor (EHC) system is provided. The EHC system may have two or more EHC stacks, wherein each EHC stack includes at least one electrochemical cell and a power supply. The EHC system may also have a controller in communication with the power supply of each EHC stack, wherein the controller is configured to reduce total energy consumption of the EHC system by independently controlling the power supply of each EHC stack.

233. Rotary piston engine with operationally adjustable compression

Date: 2018-06-19 | ID: 10001011

Abstract: Axially protruding and centrally cool able pistons rotate within a cylindrical main chamber. Each piston is individually kinetically linked to a flywheel. As the pistons are individually accelerated and decelerated along their continuous rotating path, rotating volumes between them angularly expand and contract. Inlets and outlets communicate fluid in correspondence with expansion and contraction phases of the rotating volumes. A low number of moving parts, area sealed volumes, no valves, balanced mass forces, smooth rotation and short force transmission paths between opposing mass forces provide for lightweight construction and high rotational speeds. Radial sliding secondary pistons of the kinetic linkage modulate secondary rotating volumes adjacent the main chamber for a dual stage thermodynamically efficient engine operation with intermittent fluid cooling or heating. Inlets and/or outlets may be angularly changed for variable compression and/or combustion engine peak pressures, expansion end pressure, for brake energy recycling and burst mode engine operation.

234. Combined electricity, heat, and chill generation for a Rankine engine

Date: 2018-06-19 | ID: 10001025

Abstract: A generator uses a working fluid in a single-cycle Rankine engine for up to three purposes: generation of electricity; generation of hot water from heat exchanger; and generation of chill by the evaporation of liquefied working fluid. The working fluid, which may be carbon dioxide, goes through a single Rankine cycle for both heat engine and heat pump. Instead of using a pump to liquefy the working fluid, the working fluid experiences cryogenic liquefaction method under controlled pressure. The Hui turbine is used

for electricity generation. Heat source for the combined heat pump and heat engine could come from concentrated solar power or from burning a fossil fuel.

235. Gas valve

Date: 2018-06-19 | ID: 10001102

Abstract: A gas valve 1, in particular a dosing valve for a gaseous medium, having a valve seat body 3, which is arranged on a valve housing 2, and a closing body 7, which can perform a stroke motion relative to the valve seat body 3 and to an opening stroke stop 17 interacting with the valve housing 2. According to the invention, a gas valve 1 is provided which is improved as regards its durability. This is achieved by virtue of the fact that the gas valve 1 has an impact body which reduces the impact speed and/or impact energy of the closing body 7 on the valve seat body 3 and/or on the opening stroke stop 17.

236. Energy conversion system and method

Date: 2018-06-19 | ID: 10001107

Abstract: A method, a system, and a device are disclosed which are capable of using moving liquid to create energy in the form of compressed air. The method, system, and/or device does not harm or consume the liquid to operate. The compressed air can be used to operate anything from vehicles to electric generators.

237. Multifunctional wind power green-energy apparatus

Date: 2018-06-19 | ID: 10001109

Abstract: A multifunctional wind power green-energy apparatus generally includes a carrying base, a plurality of wind power generation devices mounted on the carrying base and includes a plurality of blade sections, and at least one electricity accumulation device, water pumping motor, and the air storage device arranged at one side of the carrying base and electrically connected with the wind power generation devices. With such a structural arrangement, through simple combination of the carrying base and the wind power generation devices, terrain limitation conditions for availability of wind power green energy can be reduced to the least for applications to diversified environments. Through operations in combination with the electricity accumulation device, the water pumping motor, and the air storage device, accumulation of electrical energy or direct use of the energy can be available. As such, the utilization of the wind power generation devices can be improved.

238. Solar/air turbine generator system

Date: 2018-06-19 | ID: 10001112

Abstract: The invention provides a solar/air turbine generator system that reduces construction and power

generating costs and does not require the use of fossil fuel.A solar/air turbine generator system comprises: a compressor for drawing in and compressing air; a solar receiver for heating the air compressed by the compressor with the use of solar heat collected by a solar collector; an air turbine for driving the compressor and a generator by receiving the compressed air heated by the solar receiver; a regenerative heat exchanger, located between the compressor and the solar receiver, for heating the air compressed by the compressor using the exhaust of the air turbine as a heating medium; and a distribution device, located between the compressor and the regenerative heat exchanger, for distributing the compressed air to the side of the regenerative heat exchanger and to a bypass side, the bypass side being the inlet side of the air turbine. The solar/air turbine generator system further includes a control device for maintaining the air temperature at the inlet of the air turbine at a constant value by adjusting the flow rate of the air turbine exhaust that flows into the regenerative heat exchanger as a heating medium.

239. Rotary core modular SMA device

Date: 2018-06-19 | ID: 10001113

Abstract: The invention provides an energy recovery device comprising a first SMA core housed in a first immersion chamber and adapted to be sequentially filled with fluid to allow heating and/or cooling of the first SMA core wherein a first shaft is adapted to be turned by the SMA core mounted concentrically around said first shaft. The SMA core comprises a plurality of SMA elements to define a module, wherein a plurality of modules are mounted in series and whereby movement of a first module is configured to be input to a second module enabling cumulative rotation of the shaft.

240. Laborsaving rotation shaft device

Date: 2018-06-19 | ID: 10001162

Abstract: A laborsaving rotation shaft device comprises a base; a first rotation unit; a pair of second rotation units, a first rotation guiding structure is disposed between the second rotation unit and the base, and a second rotation guiding structure is disposed between the second rotation unit and the first rotation unit; a torsion unit, having a connection rod, a friction torsion mechanism is disposed between the connection rod and the first rotation unit; a slide mechanism, including a slide block pivoted to the connection rod and radially formed with at least one slide hole allowing a slide rod to be received, and a spring sleeved on the slide rod; with an energy releasing or energy storing effect provided by the spring, the slide block is able to provide a torsion, which has effects of automatically unfolding and folding assistance, to the first rotation unit.

241. Thrust magnetic bearing for bias compensation

Date: 2018-06-19 | ID: 10001165

Abstract: The present invention relates to a thrust magnetic bearing for bias compensation, and more particularly, to a thrust magnetic bearing for bias compensation in which annular permanent magnets and electromagnets are disposed to face each other with respect to a levitated member and the permanent magnets are formed to be asymmetrical in lengths thereof in an axial direction to thus exert an attractive force for compensating for a bias by the difference in the lengths of the permanent magnets in the axial direction to compensate for the bias, and a current supply for bias magnetic flux is not required, saving energy.

242. Structures subjected to thermal energy and thermal management methods therefor

Date: 2018-06-19 | ID: 10001256

Abstract: Thermal management approaches and methods for structures requiring certain optical and thermal properties, for example, components of LED-based lighting units. Such a structure is in thermal communication with a source of visible light and thermal energy, and visible light emitted by the source passes through the structure. The structure includes a portion formed of a composite material containing a polymeric matrix material and a fiber material that contributes an optical scattering effect to the visible light passing through the composite material. The fiber material is made up of individual fibers that each comprise a core material and an opaque diffusive white coating on an external surface thereof. The fiber material and its coating contribute to the thermal conductivity and an optical scattering effect of the composite material.

243. Energy-saving recyclable display system

Date: 2018-06-19 | ID: 10001264

Abstract: An energy-saving recyclable display system, comprising a display stand, a packaging container and a suspension loop; a display rod is arranged on the display stand, the packaging container and the suspension loop are mounted in a dismountable way; a suspension notch is arranged on the upper part of the suspension loop; the lower part of the suspension loop is opened and stretches into the packaging container; the suspension loop is hollow inside and mounted with a circuit board and an illuminant; an electric wire is arranged on the circuit board; a conductive contact is arranged at the end of the electric wire protruding from the inner side face of the suspension notch; the conductive contact contacts with the display rod and forms a switched-on circuit. The product in the packaging container presents a favorable luminous effect when it is displayed.

244. Apparatus and methods to measure economizer outdoor air fractions and fault detection diagnostics of airflow, cooling capacity, and heating capacity

Date: 2018-06-19 | ID: 10001289

Abstract: An apparatus and method for measuring or controlling the Outdoor Air Fraction (OAF) ratio through

economizer or outdoor air dampers and cabinet to total system airflow and mixed-air humidity ratio and wetbulb temperature for HVAC equipment. An OAF exceeding the minimum regulatory requirements wastes energy and contributes to global warming. OAF is used to optimize economizer damper position either manually or automatically using an economizer Fault Detection Diagnostic controller and actuator to meet minimum outdoor airflow requirements. After the outdoor air damper position is optimized, the mixed-air humidity ratio and mixed-air wetbulb temperature are determined and used with the measured mixed-air drybulb and supply-air drybulb temperatures to evaluate evaporator airflow, cooling capacity, and heating capacity, and, if necessary, provide a visual or electronically-transmitted error code signal indicating maintenance requirements to check or correct economizer damper position, cabinet leakage, airflow, cooling or heating capacity, and/or other faults for the HVAC system.

245. Fan coil thermostat with activity sensing

Date: 2018-06-19 | ID: 10001292

Abstract: Fan coil thermostats can provide energy savings by, for example, not unnecessarily heating and/or cooling an unoccupied room or other space. Fan coil systems employing such a fan coil thermostat may be more energy efficient. A fan coil system may include a fan coil that is configured for fluid communication with a source of heated fluid and/or a source of cooled fluid, a valve that controls fluid flow through the fan coil, a fan that blows air across the fan coil and a fan coil thermostat. The fan coil thermostat may include a controller that implements a control algorithm that may include an unoccupied temperature setting. The controller may be programmed to permit a user to enter a user-chosen temperature setting. In response, the controller may initiate a timer, and may automatically return to the unoccupied temperature setting once the timer has expired.

246. Blow through direct fired heating, A/C and ERV

Date: 2018-06-19 | ID: 10001295

Abstract: According to various aspects, exemplary embodiments are disclosed of blow through direct fired heaters including evaporator coils and/or energy recovery ventilation.

247. Free-hanging parabolic trough reflectors for solar energy conversion systems

Date: 2018-06-19 | ID: 10001297

Abstract: A parabolic trough reflector assembly consists of (1) a free-hanging, flexible rectangular sheet that is highly reflective of solar radiation and (2) support hardware which critically supports the reflecting sheet at two opposing edges. Methods are disclosed for providing linear dimensions and edge slopes for the reflecting sheet that are consistent with a parabolic trough having specific predetermined dimensions and a

predetermined focal length. Methods are disclosed for providing uniform loading for a reflecting sheet when it is critically supported as a free-hanging element. The methods involve tapering the thickness of a sheet, applying variable-thickness coatings to a sheet of uniform thickness, or fabricating discreet thickness variations into a sheet of otherwise uniform thickness.

248. Methods for operating solar-thermochemical processes

Date: 2018-06-19 | ID: 10001298

Abstract: Methods for controlling or operating solar thermochemical reactions process that maximize the two-step thermochemical energy cycle efficiency by a combination of pressure and temperature swing are disclosed.

249. Blackbody thermal receiver for solar concentrators

Date: 2018-06-19 | ID: 10001299

Abstract: To overcome shortcomings of the conventional thermal receiver, embodiments of the technology disclosed herein are directed towards an improved thermal receiver. More particularly, the various embodiments of the technology disclosed herein relate to thermal receivers without a vacuum insulation, otherwise known as an approximation of a blackbody. Various embodiments of the technology disclosed herein enable greater absorption of sunlight collected by a parabolic solar trough concentrator compared with conventional thermal receivers.

250. Electric power peak-shaving and combined heat and power waste heat recovery device and operation method thereof

Date: 2018-06-19 | ID: 10001326

Abstract: An inner power plant portion and a heat exchange station portion. The inner power plant portion includes a heat exchanger, a waste heat recovery electric heat pump, an energy-storing electric heat pump, high/low temperature water storing tanks, a heating network heater, a valve and a circulating water pump; the heat exchange station portion includes high/low temperature water storing tanks, an electric heat pump, a heat exchanger, a valve and a circulating water pump; as for the operating method of the device, the device can operate in periods of an electrical load trough, an electrical load flat and an electrical load peak respectively through combination of different valve switches, the high temperature water storing tank is used for balancing the difference between system heat supply amount and heating load, the low temperature water storing tank is used for stabilizing steam exhaust waste heat recovery amount.

251. Comparator device and method for measuring absorbed energy-momentum symmetry

originating from an energy source

Date: 2018-06-19 | ID: 10001408

Abstract: A method and a device for measuring absorbed energy-momentum symmetry in which radiant energy W·sr1·m2·nm1 is compared directly against its absorbed impinging momentum kg·m·s1 in a manner that will provide an experimental basis for asymmetrical anomalies that may or may not exist within a measurable range of the electromagnetic spectrum.

252. Adaptive heat flow calorimeter

Date: 2018-06-19 | ID: 10001417

Abstract: Apparatus and methods are provided for providing flexible and repairable testing capabilities for systems that generate or absorb heat such as energy storage systems. One embodiment can include a temperature bath structure adapted to contain and maintain a fluid bath at a predetermined temperature, an outer containment structure adapted to insert into the temperature bath structure, heat sinks, thermal sensor assemblies, and an internal containment structure where the thermal sensor assemblies and heat sinks removably attach to different sections of the inner containment structure so as to measure heat flow into or out of the inner containment structure's different sections. Embodiments of the invention enable rapid insertion/removal of samples as well as replacement of sections of the system including embodiments or parts of thermal sensor assemblies as well as enabling separate thermal measurements associated with different sections of a sample under test within the inner containment structure.

253. Leak detector

Date: 2018-06-19 | ID: 10001427

Abstract: A handheld-sized, single-hand-holdable, single-hand-operable battery-powered gas leak detector that draws in a sample of ambient air for detecting the presence of a gas by sensing changes in infrared (IR) energy between an IR emitter and an IR sensor when the gas is in the space between the IR emitter and the IR sensor. An algorithm is used that triggers detection of a gas when the change in IR energy between the IR emitter and the IR sensor is more rapid than the thermal drift of the IR sensor, and the detector design allows for IR energy within a wide range of approximately 0.4 micrometers to approximately 20 micrometers to pass into the air being sampled.

254. Light harvesting multichromophore compositions and methods of using the same

Date: 2018-06-19 | ID: 10001473

Abstract: Light harvesting luminescent multichromophores that are configured upon excitation to transfer energy to, and amplify the emission from, an acceptor signaling chromophore in energy-receiving proximity

therewith are provided. Also provided are compositions for labelling a target. The labelling composition may include a donor light harvesting multichromophore and an acceptor signaling chromophore in energy-receiving proximity to the donor light harvesting multichromophore. Also provided is an aqueous composition for labelling a target, including: a donor light harvesting multichromophore; an acceptor signaling chromophore in energy-receiving proximity therewith; and a sensor biomolecule. Methods for using the subject compositions are also provided.

255. Light harvesting multichromophore compositions and methods of using the same

Date: 2018-06-19 | ID: 10001475

Abstract: Light harvesting luminescent multichromophores that are configured upon excitation to transfer energy to, and amplify the emission from, an acceptor signaling chromophore in energy-receiving proximity therewith are provided. Also provided are compositions for labelling a target. The labelling composition may include a donor light harvesting multichromophore and an acceptor signaling chromophore in energy-receiving proximity to the donor light harvesting multichromophore. Also provided is an aqueous composition for labelling a target, including: a donor light harvesting multichromophore; an acceptor signaling chromophore in energy-receiving proximity therewith; and a sensor biomolecule. Methods for using the subject compositions are also provided.

256. X-ray detector, imaging apparatus and calibration method

Date: 2018-06-19 | ID: 10001567

Abstract: An X-ray detector comprises a directly converting semiconductor layer having a plurality of pixels for converting incident radiation into electrical measurement signals with a band gap energy characteristic of the semiconductor layer, wherein said incident radiation is x-ray radiation emitted by an x-ray source or light omitted by at least one light source. An evaluation unit calculates evaluation signals per pixel or group of pixels from first electrical measurement signals generated when light from said at least one light source at a first intensity is coupled into the semiconductor layer, and second electrical measurement signals generated when light from said at least one light source at a second intensity is coupled into the semiconductor layer. A detection unit determines detection signals from electrical measurement signals generated when x-ray radiation is incident onto the semiconductor layer, and a calibration unit calibrates the detection unit on the basis of the evaluation signals.

257. X-ray computed tomography apparatus, medical image processing apparatus and medical image processing method

Date: 2018-06-19 | ID: 10001568

Abstract: According to one embodiment, an X-ray computed tomography apparatus includes an X-ray tube, collimators including through holes respectively collimating an X-ray and diffraction bodies provided in the holes respectively, diffracting the X-ray at an angle to an X-ray energy, X-ray detection elements provided at predetermined distances from the bodies, counting circuitry counting the number of photons originating from the X-ray, storage circuitry storing statistical information, corresponding to energy bins in the X-ray, concerning a count distribution of count values with positions of the elements, classification circuitry classifying the numbers of counted photons for the bins by using the information, reconstruction circuitry reconstructing a medical image to the bins based on the number of photons classified for the bins.

258. Method for using pulsed neutron induced gamma ray measurements to determine formation properties

Date: 2018-06-19 | ID: 10001582

Abstract: A method for determining a petrophysical property of a formation includes detecting gamma rays at two different spaced apart positions from a position of emitting neutrons into the formation at an energy level sufficient to induce inelastic scatting gamma rays. The neutrons are emitted in a plurality of bursts of neutrons into the formation, the bursts each having a first selected duration. Each burst is followed by a wait time having a second selected duration, the gamma rays detected during each of the bursts and each of the wait times. A ratio of numbers of gamma rays detected during the bursts is determined (burst ratio). A ratio of numbers of gamma rays detected during the wait times is determined (capture ratio). The burst ratio is used to correct the capture ratio. The petrophysical property is determined from the corrected capture ratio.

259. Optical fiber cable for transmission of high power laser energy over great distances

Date: 2018-06-19 | ID: 10001612

Abstract: There is provided a system and apparatus for the transmission of high power laser energy over great distances without substantial power loss and without the presence of stimulated Raman scattering. There is further provided systems and optical fiber cable configurations and optical fiber structures for the delivering high power laser energy over great distances to a tool or surface to perform an operation or work with the tool or upon the surface.

260. Torque coupler and support point

Date: 2018-06-19 | ID: 10001620

Abstract: A torque tube coupler that rigidly connects reflectors and provides for substantially 360° rotational freedom for the reflectors as well as the ability to transmit rotation from one reflector to another so that the reflectors may essentially be placed at the same angle. The torque coupler includes first and second torque

tube coupler assemblies each configured to be connected to a reflector in a solar energy collection system. The torque coupler also includes a support point that supports said first torque coupler assembly and said second torque tube coupler assembly. This support point includes a shaft that facilitates the rigid connection of the first torque tube coupler assembly to the second torque tube coupler assembly and a bearing that facilitates 360° rotation of the first reflector and the second reflector.

261. Multifuncional environmental control unit

Date: 2018-06-19 | ID: 10001789

Abstract: A novel multifunctional electromechanical device to monitor and control environmental conditions within an occupied space. This device can be configured as a standard VAV Diffuser, an intelligently controlled window, or an intelligently controlled shutter. Functions include thermal control, and air quality control. The device would be built and located to optimize functionality and satisfy the aesthetic needs of occupants, designers, and architects. Energy harvesting combined with ultra-low power operation would reduce the long term operational costs. Mechanical and electronic modularity would facilitate the incorporation of new functions and to upgrade existing functions to improve performance and reduce cost. Additionally, a gas flow damper device that would sense pressure differential integrally or remotely and intelligently control pressure differential. A self powered, energy harvesting damper could be used to balance pressures to various ones in an office space providing just enough air flow to satisfy each zone. Wireless node network would allow communication between multiple balancing dampers to create a highly collaborative network.

262. Setback controls based on out-of-room presence information obtained from mobile devices

Date: 2018-06-19 | ID: 10001791

Abstract: Methods, systems, and devices for managing energy consumption in multi-room facilities are provided. In particular, intelligent mechanisms for determining a location of a mobile device (124) associated with a room (112a, 112b . . . 112n) and then for managing energy settings, especially setback controls, of that room (112a, 112b . . . 112n) are provided. Some logic for implementing these mechanisms may be provided in a mobile device (124) and in-room device, such as a motion detector, thermostat, HVAC controller, door, lock, television, set top box, etc.

263. Pull-down circuitry for an apparatus

Date: 2018-06-19 | ID: 10001799

Abstract: Apparatus embodiments of the invention are disclosed for requesting power via a wired interface. In

example embodiments, a pull-down circuit in the apparatus acting as a power consumer when there is no energy in the apparatus, is connected via a configuration line over a cable to a power provider device. The apparatus may be in a power down mode, it may have an empty battery, or it may have no battery. The pull-down circuit is configured to use energy from the configuration line to pull down a voltage on the configuration line, to signal the power provider device to provide power over another line of the cable to the apparatus.

264. Force-feedback device and method

Date: 2018-06-19 | ID: 10001804

Abstract: A force-feedback device comprising a first member; a first kinematics bond being coupled with said first member; said first kinematics bond being constructed to provide at least one degree of freedom for movements of said first member; said first kinematics bond comprising a braking device being constructed to constrain movements of the said first member in at least one of said at least one degree of freedom; and a energy storing/release device being constructed to store energy in response to a movement of said first member in at least one of said at least one degree of freedom constrained by said braking device. A method of providing force-feedback including constraining a movement of a member of a haptic device in at least one degree of freedom; moving the member, by an externally applied force, in at least one of the at least one constraint degree of freedom; storing energy generated by the moving of the member; determining a force required to move the member in at least one of the at least one constraint degree of freedom; releasing at least a portion of the stored energy to generate at least a portion of the required force and transmitting the at least a portion of the required force to the member.

265. Signal adapter for a display system for energy conservation

Date: 2018-06-19 | ID: 10001828

Abstract: A signal adapter device for a display system which enables turning on and off the display device for energy conservation. The signal adapter has a signal input port coupled to a signal source, a signal output port coupled to a display, and an adapter port coupled to a sensor. Corresponding pins of the input and output ports are electrically connected to each other, except that the hot plug detect pin of the input port is electrically disconnected from that of the output port but is electrically connected to a hot plug detect pin of the adapter port. The sensor senses environmental conditions such as the presence of viewers within a certain distance, and generates a voltage signal for the hot plug detect pin. Based on this signal on its hot plug detect pin, the signal source determines whether to transmit multimedia data to the display device.

266. Touch-sensitive apparatus with improved spatial resolution

Date: 2018-06-19 | ID: 10001881

Abstract: A touch-sensitive apparatus comprises a first subset of components on a first end of the touch surface, and a second subset of components on a second end which is opposite to and parallel with the first end. The components include emitters and detectors, each emitter being operable for propagating a diverging energy beam (e.g. radiation) across the touch surface inside the panel, and each detector being operable for detecting transmitted energy from at least two emitters. The components in at least one of the first and second subsets are systematically arranged in spatially separate groups along at least one of the first and second ends, so as to achieve a reduced spacing and/or an increased uniformity of the transmission paths along a center line between the first and second ends compared to an equidistant arrangement of all components.

267. Method for binding site identification by molecular dynamics simulation (silcs: site identification by ligand competitive saturation)

Date: 2018-06-19 | ID: 10002228

Abstract: The invention describes an explicit solvent all-atom molecular dynamics methodology (SILCS: Site Identification by Ligand Competitive Saturation) that uses small aliphatic and aromatic molecules plus water molecules to map the affinity pattern of a large molecule for hydrophobic groups, aromatic groups, hydrogen bond donors, and hydrogen bond acceptors. By simultaneously incorporating ligands representative of all these functionalities, the method is an in silico free energy-based competition assay that generates three-dimensional probability maps of fragment binding (FragMaps) indicating favorable fragment:large molecule interactions. The FragMaps may be used to qualitatively inform the design of small-molecule ligands or as scoring grids for high-throughput in silico docking that incorporates both an atomic-level description of solvation and the large molecule's flexibility.

268. Electron spin-based information shuttling for a computer system

Date: 2018-06-19 | ID: 10002328

Abstract: A silicon metal-oxide semiconductor device transports a spin-polarized single electron. An array of silicon quantum dot electrodes is arranged atop a silicon dioxide layer of a silicon metal-oxide semiconductor. The array comprises at least a first electrode and a second electrode adjacent to the first electrode. A transport control logic for individually controls a voltage applied to the electrodes. The transport control logic is configured to gradually decrease a voltage at the first electrode while gradually increasing a voltage at the second electrode. Localization of the single electron is adiabatically transferred from the first electrode to the second electrode while maintaining a desired energy gap between a ground state and a first excited state of

the single electron.

269. Shift register unit and driving method thereof, gate driving circuit, and display device

Date: 2018-06-19 | ID: 10002558

Abstract: Provided are a shift register unit and a driving method thereof, a scan driving circuit, a display device, wherein the shift register unit comprises an input module configured to output a voltage at the signal input terminal to the first node, an energy storage module configured to store the voltage at the first node or to charge the first node, a first pull-up control module configured to output a voltage at the first voltage terminal to the pull-up control node, a second pull-up control module configured to output a voltage at the second voltage terminal to the pull-up control node, a pull-down control module configured to output a voltage at the first node to the pull-down control node. The pulse width of the signal of each stage of output terminal of the GOA circuit can be adjusted.

270. Determining the inter-channel time difference of a multi-channel audio signal

Date: 2018-06-19 | ID: 10002614

Abstract: There is provided a method and device for determining an inter-channel time difference of a multi-channel audio signal having at least two channels. A set of local maxima of a cross-correlation function involving at least two different channels of the multi-channel audio signal is determined (S1) for positive and negative time-lags, where each local maximum is associated with a corresponding time-lag. From the set of local maxima, a local maximum for positive time-lags is selected as a so-called positive time-lag inter-channel correlation candidate and a local maximum for negative time-lags is selected as a so-called negative time-lag inter-channel correlation candidate (S2). When the absolute value of a difference in amplitude between the inter-channel correlation candidates is smaller than a first threshold, it is evaluated whether there is an energy-dominant channel (S3). When there is an energy-dominant-channel, the sign of the inter-channel time difference is identified and a current value of the inter-channel time difference is extracted based on either the time-lag corresponding to the positive time-lag inter-channel con-elation candidate or the time-lag corresponding to the negative time-lag inter-channel correlation candidate (S4).

271. Irregular pattern identification using landmark based convolution

Date: 2018-06-19 | ID: 10002622

Abstract: Pattern identification using convolution is described. In one or more implementations, a representation of a pattern is obtained that is described using data points that include frequency coordinates, time coordinates, and energy values. An identification is made as to whether sound data described using irregularly positioned data points includes the pattern, the identifying including use of a convolution of the

frequency or time coordinates to determine correspondence with the representation of the pattern.

272. Pressure wave generator and controller for generating a pressure wave in a liquid medium

Date: 2018-06-19 | ID: 10002680

Abstract: An apparatus for generating a pressure wave in a liquid medium is disclosed. The apparatus includes a plurality of pressure wave generators having respective moveable pistons, the pistons having respective control rods connected thereto. The apparatus also includes a plurality of transducers coupled to the liquid medium and means for causing the pistons of respective ones of the plurality of the pressure wave generators to be accelerated toward respective ones of the plurality of transducers. The apparatus further includes means for causing restraining forces to be applied to respective control rods to cause respective pistons to impact respective transducers at respective desired times and with respective desired amounts of kinetic energy such that the respective desired amounts of kinetic energy are converted into a pressure wave in the liquid medium.

273. Embedded magnetic component transformer device

Date: 2018-06-19 | ID: 10002703

Abstract: An embedded transformer device includes first, second, and auxiliary windings, defined in an insulating substrate by conductive vias joined together by conductive traces. The positions of the conductive vias are arranged to optimize the isolation properties of the transformer, while the conductive traces are arranged to optimize the coupling between the primary and secondary side windings. The embedded transformer device provides favourable isolation and energy transfer between input side and output side windings, in a device with a small component size.

274. Energy storage capacitor having composite electrode structure

Date: 2018-06-19 | ID: 10002715

Abstract: An energy storage capacitor having a composite electrode structure includes: a case; a rolled body arranged inside the case; and an electrolyte stored inside the case. The rolled body includes: a first anode foil having a first anode lead plate connected at one side of one surface, a first cathode foil arranged to face the other surface of the first cathode foil with the one surface of the first anode foil and a first cathode lead plate connected at the other side, a second cathode foil arranged to face the other surface of the second cathode foil with one surface of the first cathode foil and having a second cathode lead plate connected at one side of one surface, a second anode foil arranged to face the one surface of the second cathode foil and a second anode lead plate connected at the other side.

275. Electron transport structure and perovskite solar cell having the same

Date: 2018-06-19 | ID: 10002716

Abstract: Differing from conventional technology utilizing double-layer electron transport layer (ETL) to improving power conversion efficiency of perovskite solar cell, the present invention discloses a novel electron transport structure comprising an interfacial diploe moment enhancing layer, an electron transport layer and an interfacial layer. After applying this electron transport structure in a perovskite solar cell, it is found that an interfacial dipole moment formed between the electron transport layer of the electron transport structure and an active layer of the perovskite solar cell is amplified, so as to give rise to an enhanced driving force for the separation of photogenerated carriers and accelerating charge extraction. Moreover, a variety of experimental data have proved that, compared with the perovskite solar cell having double-layer ETL, the perovskite solar cell using this novel electron transport structure exhibits understanding performances including short-circuit current, open-circuit voltage, filling factor, and power conversion efficiency.

276. High performance lithium-ion capacitor laminate cells

Date: 2018-06-19 | ID: 10002717

Abstract: The present invention provides for high performance lithium-ion capacitor laminate cells that include positive electrodes, negative electrodes and organic solvent electrolyte with lithium salt, and a method for making said high performance lithium-ion capacitor laminate cells. These high performance lithium-ion capacitor laminate cells of the present invention, include a negative electrode which is pre-doped with sufficient lithium ions by employing lithium sources including lithium powder known as SLMP or thin lithium films on the surface of negative electrodes, and this pre-doping with placing lithium sources on negative electrode surface results in LIC laminate cells with considerably higher performance in specific energy, specific power and cycle life.

277. Switching system for breaking a current and method of performing a current breaking operation

Date: 2018-06-19 | ID: 10002722

Abstract: A switching system for breaking a current, including a contact arrangement having a first and second terminals, a resonance circuit connectable across the contact arrangement, In the closed state the first switch enables current to flow through the resonance circuit in a first flow direction and into the contact arrangement in a direction opposite to a contact arrangement arc current flow direction. A second switch connected to the resonance circuit and to the second terminal. In the closed state the second switch enables current to flow through the resonance circuit in a second flow direction opposite to the first flow direction. A

control system arranged to alternatingly set the first and second switches in the closed state and then in the open state upon a current breaking operation, until a current pulse, emanating from energy supplied by a contact arrangement arc current, flowing through the resonance circuit and into the contact arrangement reaches an amplitude which is equal to or greater than a magnitude of a contact arrangement arc current.

278. Ion beam irradiation apparatus

Date: 2018-06-19 | ID: 10002751

Abstract: An ion beam irradiation apparatus is provided. The apparatus includes an ion source, a mass separator, and an energy filter. The mass separator sorts dopant ions having a specific mass number and valence from an ion beam extracted from the ion source, and outputs the dopant ions. The energy filter is formed to define a beam passing region for allowing the ion beam to pass therethrough, and configured to have a given filter potential in response to application of a voltage thereto to separate passable ions capable of passing through the beam passing region and non-passable ions incapable of passing through the beam passing region, from each other by a difference in ion energy. The given filter potential is set such that the dopant ions are included in the passable ions, and a portion of unwanted ions which cannot be separated from the dopant ions by the mass separator are included in the non-passable ions.

279. Systems and methods for determining the suitability of RF sources in ultraviolet systems

Date: 2018-06-19 | ID: 10002752

Abstract: A UV system for irradiating a substrate includes a RF source capable of generating RF energy, a UV lamp capable of emitting UV energy when excited by the RF energy generated by the RF source, and a monitor coupled to the RF source. The monitor includes data relating to the RF source. The UV system further includes a controller capable of communication with the monitor, and the controller determines if the RF source is suitable for operation with the UV system based on the data of the monitor and/or the end of its useful life.

280. Sputter etch material selectivity

Date: 2018-06-19 | ID: 10002764

Abstract: A method of etching a workpiece comprising two or more materials is disclosed. The method involves using physical sputtering as the etching method where the processing parameters of the sputtering process are tuned to achieve a desired etch rate selectivity. The method includes determining the etch rate of each material disposed on the workpiece as a function of various processing parameters, such as ion species, ion energy, incidence angle and temperature. Once the relationship between etch rate and these

parameters is determined for each material, a set of values for these processing parameters may be chosen to achieve the desired etch rate selectivity.

281. ESC assembly including an electrically conductive gasket for uniform RF power delivery therethrough

Date: 2018-06-19 | ID: 10002782

Abstract: A substrate processing apparatus for processing substrates comprises a processing chamber in which a substrate is processed. A process gas source is adapted to supply process gas into the processing chamber. A RF energy source is adapted to energize the process gas into a plasma state in the processing chamber. A vacuum source is adapted to exhaust byproducts of the processing from the processing chamber. The processing chamber includes an electrostatic chuck assembly having a layer of ceramic material that includes an upper electrostatic clamping electrode and at least one RF electrode, a temperature controlled RF powered baseplate, and at least one annular electrically conductive gasket extending along an outer portion of an upper surface of the temperature controlled RF powered baseplate. The at least one annular electrically conductive gasket electrically couples the upper surface of the temperature controlled RF powered baseplate to the at least one RF electrode.

282. Integrated electronic components and methods of formation thereof

Date: 2018-06-19 | ID: 10002818

Abstract: Provided are integrated electronic components which include a waveguide microstructure formed by a sequential build process and an electronic device, and methods of forming such integrated electronic components. The microstructures have particular applicability to devices for transmitting electromagnetic energy and other electronic signals.

283. Fin-FET resonant body transistor

Date: 2018-06-19 | ID: 10002859

Abstract: Circuit structures including a FinFET resonant body transistor are disclosed. One circuit structure includes: a plurality of fins over a substrate and a plurality of gate structures over the plurality of fins, the plurality of gate structures including at least one voltage sensing gate and multiple driving junction gates disposed on opposing sides of the at least one voltage sensing gate; at least one phononic crystal, wherein the at least one phononic crystal is arranged to confine vibrational energy arising from electrically induced mechanical stresses in the fins disposed below the driving junction gates; and, wherein the electrically induced mechanical stresses modulate carrier mobility in the at least one voltage sensing gate to produce a current extractable by the circuit structure.

284. Silicon carbide semiconductor device

Date: 2018-06-19 | ID: 10002931

Abstract: A silicon carbide semiconductor device capable of effectively increasing a threshold voltage and a method for manufacturing the silicon carbide semiconductor device. The silicon carbide semiconductor device includes a gate insulating film formed on part of surfaces of the well regions and the source region; and a gate electrode formed on a surface of the gate insulating film so as to be opposite to an end portion of the source region and the well regions. Furthermore, the gate insulating film has, in an interface region between the well regions and the gate insulating film, defects that each form a first trap having an energy level deeper than a conduction band end of silicon carbide and that include a bond between silicon and hydrogen.

285. Atomic layer deposition of selected molecular clusters

Date: 2018-06-19 | ID: 10002938

Abstract: Energy bands of a thin film containing molecular clusters are tuned by controlling the size and the charge of the clusters during thin film deposition. Using atomic layer deposition, an ionic cluster film is formed in the gate region of a nanometer-scale transistor to adjust the threshold voltage, and a neutral cluster film is formed in the source and drain regions to adjust contact resistance. A work function semiconductor material such as a silver bromide or a lanthanum oxide is deposited so as to include clusters of different sizes such as dimers, trimers, and tetramers, formed from isolated monomers. A type of Atomic Layer Deposition system is used to deposit on semiconductor wafers molecular clusters to form thin film junctions having selected energy gaps. A beam of ions contains different ionic clusters which are then selected for deposition by passing the beam through a filter in which different apertures select clusters based on size and orientation.

286. Solar cell

Date: 2018-06-19 | ID: 10002976

Abstract: A first finger electrode group including finger electrodes on the first principal surface. A second finger electrode group including finger electrodes on the second principal surface. The second finger electrode group is divided into divided electrode portions, the number of electrodes of the electrode portions decreasing as a distance from a central portion of the second finger electrode group increases towards outside, and a coupling portion is arranged between each adjacent ones of the divided electrode portions and electrically connects at least two of the finger electrodes of the divided electrode portion on inside with at least one of the finger electrodes of the divided electrode portion on outside. The number of finger electrodes of the divided electrode portion closest to the central portion of the second finger electrode group is larger

than the number of finger electrodes of the first finger electrode group.

287. Electro-conductive paste comprising coarse inorganic oxide particles in the preparation of electrodes in MWT solar cells

Date: 2018-06-19 | ID: 10002977

Abstract: The invention relates to an electro-conductive paste comprising coarse SiO2 particles in the preparation of electrodes in solar cells, particularly in the preparation of electrodes in MWT solar cells, particularly in the preparation of the metal wrap through, or plug, electrode in such solar cells. In particular, the invention relates to a solar cell precursor, a process for preparing a solar cells, a solar cell and a module comprising solar cells.The invention relates to a solar cell precursor at least comprising as precursor parts:

288. Multi-junction solar cells

Date: 2018-06-19 | ID: 10002981

Abstract: Solar cell structures including multiple sub-cells that incorporate different materials that may have different lattice constants. In some embodiments, solar cell devices include several photovoltaic junctions.

289. Emitter for a thermo-photovoltaic system and thermo-photovoltaic system comprising at least one such emitter

Date: 2018-06-19 | ID: 10002982

Abstract: A thermo-photovoltaic system including an infrared radiation emitter including a body including a first external surface and a second external surface, the first and second external surfaces being distinct, the first external surface facing a concentrator for receiving a concentrated solar radiation, the second external surface facing a thermo-photovoltaic cell, and the body further including at least one gas and/or liquid combustion chamber therein, and an igniter is provided for causing combustion in the combustion chamber.

290. Solar cell panel

Date: 2018-06-19 | ID: 10002984

Abstract: Disclosed is a solar cell panel including a plurality of solar cells each including a semiconductor substrate and an electrode formed on the semiconductor substrate, and a wire for interconnecting the solar cells. The electrode includes a bus-bar line having a pad portion for attachment of the wire. The wire includes a first wire portion connected to the pad portion, and a second wire portion located on a portion excluding the pad portion. The first wire portion has a thickness greater than a thickness of the second wire portion.

291. Method for manufacturing solar cell module

Date: 2018-06-19 | ID: 10002985

Abstract: A solar cell module and a method for manufacturing the same are disclosed. The solar cell module includes solar cells each including a semiconductor substrate, and first electrodes and second electrodes extending in a first direction on a surface of the semiconductor substrate, conductive lines extended in a second direction crossing the first direction on the surface of the semiconductor substrate and connected to the first electrodes or the second electrodes through a conductive adhesive, and an insulating adhesive portion extending in the first direction on at least a portion of the surface of the semiconductor substrate, on which the conductive lines are disposed, and fixing the conductive lines to the semiconductor substrate and the first and second electrodes. The insulating adhesive portion is attached up to an upper part and a side of at least a portion of each conductive line.

292. System for thermoelectric energy generation

Date: 2018-06-19 | ID: 10003000

Abstract: Embodiments of the invention provide systems and methods for generating and delivering electricity and/or hot water for combined heat and power (CHP) using one or more fuels. In many embodiments, the system can be used to provide efficient electrical, heating and cooling utilities to a residential household or group of households. Embodiments of the system can be configured for specific heat flow, while minimizing losses and maximizing total system efficiency. Embodiments also provide for stackable energy generation modules allowing the system to be placed in or nearby a residence to provide power to the residence. Embodiments also provide a control system which can be configured to monitor household electrical usage and dynamically regulate the system to operate at maximum efficiency as well as sell power to an external grid.

293. Method and system for providing a diluted free layer magnetic junction usable in spin transfer torque applications

Date: 2018-06-19 | ID: 10003015

Abstract: A magnetic junction and method for providing the magnetic junction are described. The magnetic junction resides on a substrate and is usable in a magnetic device. The magnetic junction includes free and pinned layers separated by a nonmagnetic spacer layer. The free layer is switchable between stable magnetic states when a write current is passed through the magnetic junction. The free layer has a free layer perpendicular magnetic anisotropy energy greater than a free layer out-of-plane demagnetization energy. The free layer also includes a diluted magnetic layer having an out-of-plane demagnetization energy and a perpendicular magnetic anisotropy greater than the out-of-plane demagnetization energy. The diluted

magnetic layer includes at least one magnetic material and at least one nonmagnetic material. The diluted magnetic layer has an exchange stiffness that is at least eighty percent of an exchange stiffness for the magnetic material(s).

294. Heterojunction oxide non-volatile memory device

Date: 2018-06-19 | ID: 10003020

Abstract: A memory device includes a first metal layer and a first metal oxide layer coupled to the first metal layer. The memory device includes a second metal oxide layer coupled to the first metal oxide layer and a second metal layer coupled to the second metal oxide layer. The formation of the first metal oxide layer has a Gibbs free energy that is lower than the Gibbs free energy for the formation of the second metal oxide layer.

295. System for the storage of electric energy for a vehicle with electric propulsion and presenting cylindrical chemical batteries embedded in a support matrix

Date: 2018-06-19 | ID: 10003051

Abstract: A system for the storage of electric energy for a vehicle with electric propulsion, which presents a longitudinal direction, which is parallel to the direction of the rectilinear motion, and a transverse direction, which is perpendicular to the longitudinal direction; the storage system is provided with a pack of chemical batteries, which are connected to each other in series and in parallel and comprise respective electrochemical cells; each chemical battery has a cylindrical shape having a central symmetry axis; and a support matrix made of plastic material is provided, inside which the chemical batteries are embedded so that the chemical batteries are completely covered by the support matrix itself.

296. Power source pack

Date: 2018-06-19 | ID: 10003054

Abstract: A power source pack includes: a housing; and a power source module which is housed in the housing. The power source module includes: a cell stack including a plurality of energy storage devices each having a safety valve; and a heat insulator positioned between an inner wall of the housing and the cell stack and having an approximately flat-plate shape. The heat insulator faces the safety valves of the cell stack in an opposed manner.

297. Energy storage device and method of manufacturing energy storage device

Date: 2018-06-19 | ID: 10003061

Abstract: An energy storage device includes: an electrode assembly; a case for storing the electrode assembly therein, the case having an electrolyte solution sealing portion where an electrolyte solution pouring

hole formed in the case is sealed; and at least one partition member arranged in a gap formed between the case and the electrode assembly stored in the case. The partition member partitions the gap in the winding axis direction of the electrode assembly by surrounding the electrode assembly in the winding direction of the electrode. The electrolyte solution pouring hole is arranged at a position closer to one end of the electrode assembly than the partition member close to one end of the case is in the winding axis direction.

298. Carbon nanotube-metal nanocomposites as flexible, free standing, binder free high performance anode for Li-ion battery

Date: 2018-06-19 | ID: 10003075

Abstract: The present invention relates to carbon nanotubes-metal nano composite by chemical route and the corresponding development of strong and flexible, light weight, self-supporting anode through simple vacuum filtration technique, which is favored by the high aspect ratio of the Multi-walled carbon nanotubes. The self-supported anode has an added advantage that it can be used as electrodes without binder and electrical conductor (unlike other carbonaceous powder materials) that helps us to elucidate the precise electrochemical properties. The metals used can be Sn, Si, Al, etc. The developed high capacity, free-standing anode can be used in rechargeable Li-ion batteries and is demonstrated successfully in powering solar lantern.

299. Energy signatures to represent complex current vectors

Date: 2018-06-19 | ID: 10003196

Abstract: A distributed control node enables monitoring of complex energy signatures for local loads. The control node can identify energy signatures unique to local loads. The energy signature includes a complex current vector for the load in operation identifying the primary current with a real power component and a reactive power component, and identifying one or more harmonics each with a real power component, a reactive power component, and an angular displacement relative to the primary current. Based on the energy signature, the control node can control a noise contribution of the load due to the harmonics as seen at a point of common coupling to reduce noise introduced onto the grid network from the load.

300. Energy management method and system for energy supply system

Date: 2018-06-19 | ID: 10003197

Abstract: An energy management method for an energy supply system which includes at least an energy storage, a load and a generator with power dependent efficiency is provided. The method includes: calculating two time variant parameters indicating a discharge lower limit and an upper charge limit, respectively, of the energy storage, based on optimization using different kinds of prediction; and controlling,

in a real time manner, charging and discharging of the energy storage and operation of the generator, with a certain priorities given to various power sources, such that state of charge of the energy storage is controlled within a region between the discharge lower limit and the upper charge limit. When a grid power is available, blackout duration probability function is predicted and used to calculate the discharge lower limit and the upper charge limit.