rexresearch.com

Igor SMIRNOV
EM Radiation Shield

Doped fractal polymer generates probiotic frequencies, reduces mobile phone SAR (radiation absorption) values by up to 40%.

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http://www.waverider.sg/store/c1/Featured_Products.html

We have the solution to protect you from EMR exposure. The WaveRider is a patented invention of Dr. Igor Smirnov who invented the Molecular Resonance Effect Technology (MRET) that has helped thousands of people to stay healthy. Since its launch in January 2014, many users have benefited from its use.

WaveRider is a well-tested device that has been validated by reputed laboratories across the United Sates and has been proven to show its effectiveness against EMR exposure within a lab-tested distance of 9 metres spherically.

This small and elegant device can be placed in your home, school, workplace or almost anywhere, where protection is needed from the harmful effects of today's modern-day wireless environment. Since its global launch in January 2014, many users from all over the world have benefited by having WaveRider in their homes and workplaces. WaveRider's latest ground-breaking resonance technology uses its own proprietary frequencies (molecular resonance effect technology) to provide healing effects to the body and protects it from the effects that EMR field does to living cells...

WHAT BENEFITS CAN YOU SEE AFTER USING THE WAVERIDER?

WaveRider affects different people differently. Every individual has a different set of health and physical characteristics and needs. Users of WaveRider mostly report that upon using the WaveRider, they are able to sleep better, more deeply, and longer. Many report that they wake up feeling more refreshed.

A common feedback is that they feel more mentally alert, less fatigued and clearer in their thinking.

All these, despite not reducing their workload or time at the computer or cell phone calls.

According to Dr. Igor Smirnov, the beneficial and health frequencies in the WaveRider will lead to a gradual general improvement in our health over a period of time. There is likely to be an increase in energy levels and a boost to the immune system over time.

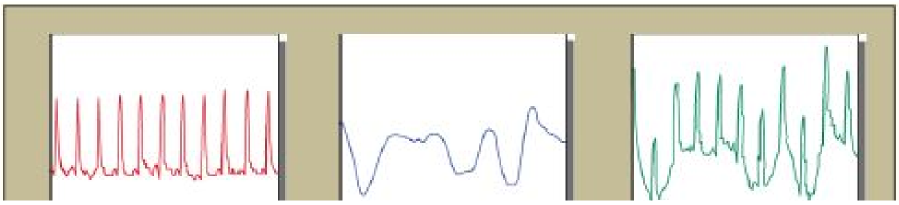
Dr. Smirnov has put into the WaveRider a package of frequencies that causes a positive resonance for the brain. This is likely to reduce lethargy, increase motivation to solve problems and enable the brain to function more effectively.

The WaveRider also has frequencies targeted at improving the immune system. When our immune system improves, we can expect that some diseases and illnesses will diminish over time. One user of the WaveRider who had prematurely menopaused, reported that her menstruation started again after she started using the WaveRider. This is an indication that the body is returning back to its natural and normal state...

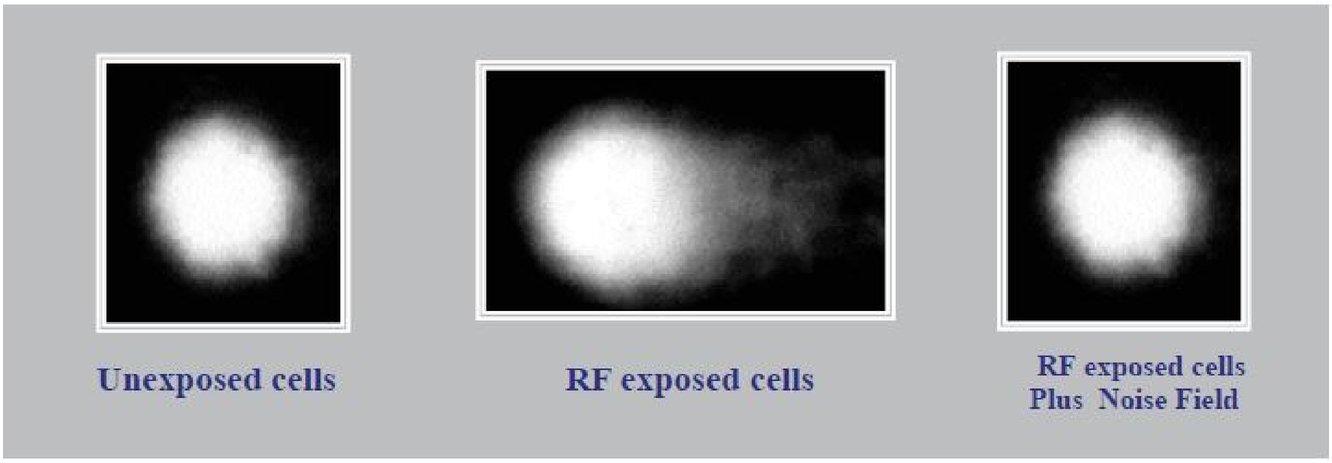
The WaveRider technology's efficacy has been tested and certified by independent laboratories in the US, including MET laboratories whose certificates are widely accepted by more than 30 countries worldwide. Their scope of testing includes most cellular and PCS handsets that require Specific Absorption Rate (SAR) testing. WaveRider has been shown to absorb up to 40% of SAR on your mobile phone. Thus using WaveRider to be part of your daily life will mean less stress to your body with the use of mobile phones...

The WaveRider technology is the brainchild of Dr Igor Smirnov who is also an early pioneer in the exploration of electromagnetic radiation and its affect on the human body. A brilliant scientist-inventor with a background in nuclear physics and nuclear engineering, Dr Smirnov specializes in advanced research on the influence of low frequency electromagnetic oscillations on human cellular physiology. Dr Smirnov is most well-known for his pioneering invention of the Molecular Resonance Effect Technology (MRET). His MRET technology has helped heal people suffering from a wide range of diseases, from cancer, diabetes, Alzheimer disease, to psoriasis and chronic fatigue syndrome. Dr Smirnov is a nuclear engineering graduate from St Petersburg Naval Academy, where he also obtained a MSc in Mechanical and Bioengineering. He received a PhD in Clinical Psychology from St Petersburg State University. Dr Smirnov has written for many international scientific publications including European Journal of Scientific Research, International Journal of Biophysics, Journal of Research in Biology, among others.

The Noise-Field Technology



DNA Patterns (Lai et. al. University of Washington)



Noise Field Research References

University And R&D Team	Biological System Tested	Biological Condition Tested	Biological Effect Induced by EMR	Effectiveness Of Noise Field Technology
Catholic University of America (Krause & Co.)	Mouse cells	Activity of Ornithine Decarboxylase (ODC): Enzyme related to growth & Cancer	EMF cause a two-fold increase in enzyme activity relative to natural level – a condition related to cancer	Natural condition restored: Enzyme activity brought back to normal
Catholic University of America (Krause & Co.)	Human lymphoma cells	Activity of ODC	Significant increase	Natural condition restored
Catholic University of America (Doynov & Co.)	Chicken embryos	Ratio of truncal abnormalities in embryo	EMF cause more than a doubling in abnormality ratio	Abnormality ratio brought back to natural level
Catholic University of America (Farrell & Co.)	Chicken embryos	Activity of ODC	Significant distortion from natural level	Natural condition restored
University of Western Ontario (Martin & Co.)	Chicken embryos	Activity of Nucleotidase – Enzyme related to DNA production	EMF suppress enzyme activity compared to natural level	Natural condition restored: Enzyme activity brought back to normal
University of Western Ontario (Martin & Co.)	Hatched chickens	Activity of Nucleotidase (cerebellum)	Enzyme activity suppressed compared to normal	Natural condition restored: Activity normalized
Columbia University, New York (Lin & Co.)	Human leukemia cells	Transcription of c-myc proto-oncogene (cancer related gene)	Over- expression of c- myc proto-oncogene compared to normal level – increased Cancer Risk	Natural condition restored: Proto-oncogene expression brought back to normal level
Columbia University,New York (Goodman & Co.)	Human breast cancer cells	HSP90 stress protein	EMF cause the on-set of stress protein production	Cells released from stress condition

University And R&D Team	Biological System Tested	Biological Condition Tested	Biological Effect Induced by EMR	Effectiveness Of Noise Field Technology
Columbia University, New York (Opler & Co.)	PC-12 cells	Dopamine. Hormone related to Parkinson's Disease.	EMF cause a decrease in the level of dopamine compared to normal condition	Natural condition restored
Catholic University of America (Litovitz & Co.)	L929 Murine (mouse) cells	ODC activity	Cellular phone EMF signals : Increase activity from normal level	Natural condition restored: Enzyme activity normalized
Aalborg and Aarhus Universities, Denmark (Raskmark and Kwee)	Human epithelial amnion cells	Cell proliferation rate	EMF increase cell proliferation rate by 20% compared to natural level	Condition normalized: Cell proliferation rate brought back to natural level
Catholic University of America (DiCarlo et Al)	Chicken Embryos	Activation of HSP70 Heat shock protein and Cytoprotection level (Potential cancer promotor)	Long term exposure to EMF causes significant decline in HSP70 & Csytoprotection level	Normal condition restored & brought back to normal
University of Washington (Henry Lai & P. Singh)	Rat Brain Cells	Level of DNA- single and double strand breaks (Potential cancer promotor)	Significant Increase in the level of DNA single and double strand breaks	Normal condition restored & brought back to normal
University of Washington (Henry Lai & P. Singh)	Rats	Spatial learning	Significant deficit in learning	Normal condition restored & brought back to normal
Zhejiang University, China (Zeng, Chiang Et Al)	Mouse Fibroblast Cells	Cap-Junction intercellular communicator GJIC (Potential cancer promotor)	Significant Inhibition of GJIC	Normal condition restored & brought back to normal
Zhejiang University, China (Zeng, Chiang Et Al)	Hamster Lung CHL cells	Level of Sapk Phosphorylation (SAPK)	Significant Increase in the SAPK Phosphorylation	Normal condition restored & brought back to normal

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Research Article

MRET Wave Rider Technology

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Abstract

This article is related to the experimental data revealing the ability of Wave Rider (WR) device (MRET noise field generator) to mitigate unwanted biological effects of technologically originated electromagnetic radiation (EMR). A number of publications in the scientific literature have raised concern about the individual and public health impact of adverse non-ionizing radiation from EMR exposure emanating from certain electrical and wireless devices commonly found in the home, workplace, school and community. Despite the many challenges in establishing irrefutable scientific proof of harm and the various gaps in elucidating the precise mechanisms of harm, epidemiological analyses continue to suggest considerable potential for injury and affliction as a result of non-ionizing radiation exposure. It would be a desirable to develop a technology that can mitigate such health risks. Wave Rider technology was recently developed to prevent health risks associated with the exposure to EMR. The core part of Wave Rider is MRET polymer compound. Due to the fractal geometry structure of MRET polymer compound and the phenomenon of piezoelectricity, this polymer generates subtle, low frequency, non-coherent electromagnetic oscillations (composite noise field) when exposed to electromagnetic field of 7.8 Hz and 14.5 Hz frequency oscillating in a repeating sequence for 5 seconds each time. MRET

(Molecular Resonance Effect Technology) polymer compound is driven by the solenoid that encapsulates this polymer material. The composite noise field can modify RF signals as a result of superposition phenomenon. The superposition of composite noise field generated by WR on RF microwave signals leads to amplitude modulation of RF signals where random low frequency signal generated by WR is a modulating signal and original microwave signal is a modulated one.

The experiment conducted at MET Laboratory (A leading independent electrical testing & certification lab [1] (USA) shows that at the close proximity to Wave Rider there was found significant increase of the noise field spectrum content level in the range of 4 Hz to 50 kHz. Test conducted at NEMKO laboratory (Electromagnetic Compatibility & Telecommunications lab (USA) [2] confirmed that measured at the distance of 30 feet (9 meters) intensity of noise field spectrum generated by WR is several orders higher compared to the magnetic field intensity of human brain electroencephalographic activity in the range of Delta (1 Hz) and Alfa (10 Hz) frequencies. It allows concluding that WR noise field signals may affect/resonate with brain wave signals and as a result normalize brain activity when human subject is exposed to man-made EMR.

To realize such assumption there was arrange a study at RF Exposure Laboratory. The protocol was designed to find out the effect of WR noise field spectrum on SAR (specific absorption rate) values of mobile phones. Another *in vitro* study was conducted at Molecular Diagnostic Services Inc. (USA) to verify the effect of WR noise field on metabolic activity of human Astrocytes exposed to microwave radiation of mobile phone. The results of both experiments clearly confirm WR preventive effect against unwanted biological effects of EMR.

PATENTS

US8044376
Devices and methods for protection against exposure to electromagnetic radiation

The present invention provides devices and methods that protect against exposure to remote sources of electromagnetic radiation (EMR). As such, the devices provide protection against a plurality of electrical equipment used in ordinary households and employment settings. The device includes a housing, a solenoid operably connected to a driver and a polymer. The solenoid generates incident radiation which results in the polymer emitting electromagnetic oscillations at frequencies that counter adverse effects associated with the subject's exposure to the electromagnetic radiation

TECHNICAL FIELD

[0001] The present invention relates to devices and methods for protection against exposure to electromagnetic radiation and more specifically to a stand alone device that generates protective frequencies by inducing the oscillation of a polymer at frequencies that counter adverse effects associated with electromagnetic radiation.

BACKGROUND OF THE INVENTION

[0002] Every operating electrical and electronic device emits electromagnetic radiation (EMR). The power of this emission varies depending on the size and electrical strength of the device and the electrical current it carries. High voltage power lines are significant emitters, and their field strength is sufficiently high to cause adverse effects on humans, animals and plants even hundreds of feet away. Smaller devices, such as computers, television sets, cellular phones and microwaves, emit lesser quantities of EMR, but the effect on humans can still be significant because people are in much closer proximity to such devices.

[0003] Adverse effects on the health of humans that have been reported as attributable to long-term EMR exposure include occurrence of certain cancers, multiple sclerosis, headache, and sleep disruption, impairment of short term memory, autism, and significant increases in the frequency of seizures in epileptic children. Reported adverse effects on animals have included stillbirths of young and reduction of milk production in cattle.

[0004] Although the effects of electromagnetic radiation on human health are not always easily quantifiable it is the desire of many prudent people to eliminate or reduce their exposure to EMR. There exist various methods of protecting from EMR that rely on reducing the magnitude (or strength) of the radiation that enters human body. Most commonly these utilize some sort of protective shield that enclosures the emitting apparatus hereby reducing the energy that is radiated by the EMR emitting device. Alternative approach is disclosed by Smirnov (U.S. Pat. No. 6,369,399), which describes an EMR shielding material that is composed of an electromagnetic radiation optimum neutralized polymer (MRET-Shield). MRET-Shield material does not reduce the power of electromagnetic fields. It “shields” the cellular structures of the body against the harmful biological effects of EMR. The radiation is still entering the body but the neutralizing effect of MRET-Shield material reduces the adverse effects associated with exposure. However, MRET-Shield required the design of a protective shell that encloses the EMR emitting device. While personal communications devices, such as cell phone or Blackberry, can be easily adapted to fit into such protective shell as a part of their design, enclosing larger electric appliances (inter alia personal computers, game consoles) is often impractical. Further, replacement of current EMR sources such as power lines would be cost prohibitive. Therefore, there remains a need to protect against EMR emitted from devices that do not provide a protective shell.

SUMMARY OF THE INVENTION

[0005] The present invention addresses deficiencies in current methods for the protection against electromagnetic radiation and provides related benefits. In one aspect of the present invention a device for protecting a subject against exposure to electromagnetic radiation emitted from a remote source is provided. The device includes a housing, a solenoid operably connected to a driver and a polymer. The solenoid generates incident radiation which results in the polymer emitting electromagnetic oscillations at frequencies that counter adverse effects associated with the subject's exposure to the electromagnetic radiation. In one embodiment, the polymer includes a polar matrix, an oxidated hydrocarbon emulsifier, a galvanic salt, a dye or stain, and a polysaccharide. The solenoid is provided in various configurations. In some embodiments, the solenoid includes a two frequency mode that generates at least one carrier frequency of incident radiation. In other embodiments, the solenoid includes a two frequency mode that generates two carrier frequencies of incident radiation, wherein the carrier frequencies are at higher frequencies than the oscillation frequencies. Carrier frequencies may independently or collectively induce oscillation of the polymer materials. In some embodiments, the solenoid is positioned circumferentially around an inner cylinder that houses the polymer.

[0006] The device of the present invention will have particular utility for the protection against radiation emitted from electronic devices such as a computer, a computer peripheral, a cellular telephone, a television, an audio system, a household appliance, and the like. Further, the device may protect against any intentional or unintentional sources of electromagnetic radiation with Effective Radiation Power (ERP) limited in compliance with FCC regulations.

[0007] In another aspect of the invention, methods of protecting a subject against exposure to electromagnetic radiation from a remote source are provided. The methods include providing a device as provided by the present disclosure within an effective radius of the subject, and operating the device, such as by activating the solenoid driver. In some embodiments, the device is positioned within a same room as the subject. In other embodiments the device is placed from about five feet to about twenty feet from the subject. In other embodiments, a plurality of devices is provided within a plurality of locations.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] FIG. 1A is a cutaway view of an exemplary embodiment shown in FIG. 1B, including housing 10, a solenoid 20 operably connected to a driver 30, a polymer 40 and a power adapter 60.

[0009] FIG. 2 depicts one exemplary circuit schematic diagram for the generation of incident radiation including carrier frequencies according to the present invention.

[0010] FIG. 3A depicts pictorial images of EIS analysis of the brain and displays the corresponding data tables from EIS testing of a representative subject:
Control 1 and after exposure to electromagnetic radiation from a cellular telephone placed in close proximity to the subject's right ear without the protective apparatus of the present invention. FIG. 3B provides representative data from the same subject: Control 2 and after exposure to electromagnetic radiation from a cellular telephone placed in close proximity to the subject's right ear in combination with the protective apparatus of the present invention. As seen pictorially in FIG. 3A (following the exposure to RF phone without the protective apparatus of the present invention (labeled TREO—NO MARNF), the subject's right frontal lobe showed abnormal values along with the abnormal values from hypothalamus, and they were pictorially displayed as yellow and blue colors respectively. Yellow color corresponds to elevated conductivity, reduced viscosity or acute inflammation and blue color corresponds to decreased conductivity, increased resistance, increased viscosity, organ hypoxia or chronic inflammation. The comparison with experimental data for Control 1 showed that after the exposure to electromagnetic radiation of a cellular phone all parameters deteriorated. However, when using the protective device MARNF of the present invention in combination with the cellular telephone (labeled TREO—with MARNF) the positive effects were identified at the right temporal lobe and more significantly the right frontal lobe (FIG. 3B). After the 15

minutes rest period the second control scan was taken (left image, Control 2). The values of all parameters drifted to the normal state, but did not reach the normal ranges. Following the 10 minutes exposure to RF phone in combination with MARNF (right image, TREO—with MARNF additional positive effects were detected in blood pressure, blood viscosity, ATP values and mitochondrial activity, oxygen levels, carbon dioxide levels and all parameters normalized. FIG. 3C depicts a pictorial images of EIS analysis of the cardiovascular system and displays the corresponding data tables from EIS testing of a representative subject: Control 1 and after exposure to electromagnetic radiation from a cellular telephone placed in close proximity to the subject's right ear without the protective apparatus of the present invention. FIG. 3D provides representative data from the same subject: Control 2 and after exposure to electromagnetic radiation from a cellular telephone placed in close proximity to the subject's right ear in combination with the protective apparatus of the present invention. As seen pictorially in FIG. 3C (Control 1) the subject's heart has reduced function in the inferior vena cava and depressed venous pressure. All other cardiac tissue appear remaining normal. After exposure to RF phone, proximal to the subject's right temporal lobe, mean arterial pressure (MAP) rose above normal range activating the baroreceptor reflex, as shown in yellow and blue color (right image, TREO—NO MARNF) and cardiac rate frequency dropped by 25%. However, the positive effects were identified when using the protective device MARNF of the present invention in combination with the cellular telephone (labeled TREO—with MARNF, FIG. 3D). After the fifteen minutes rest period the second control scan was taken (left image, Control 2). The baroreceptor reflex returned to normal values and all cardiac tissue except for the inferior vena cava appear normal. After the ten minutes exposure to RF phone in combination with MRET Random Field Generator (right image, TREO—with MARNF) the mean arterial pressure remained stable and identical to control 2 scan, and cardiac rate frequency dropped insignificantly by 7.5% (compare to 25% drop without MARNF protection).

[0011] FIGS. 4A and 4B depict heat maps (hot spots) in the “phantom head” during the study which detected SAR (Specific Absorption rate) values of electromagnetic radiation from cellular phone in combination with and without the apparatus of the present invention. FIG. 4A displays the results from the control test, where the phantom head is exposed to EMR of cellular phone without the MRET Random Field Generator. FIG. 4B displays the test results where the phantom head is exposed to EMR of cellular phone in combination with protective MRET Random Field Generator. A ‘hot spot’, characterized by the elevated amplitude depicted by darker red, is clearly present in both scans (FIGS. 4A and 4B). Comparing FIGS. 4A and 4B, it is clear that the presence of the protective device does not alter or redistribute the location of the hot spot within the phantom head. However, the amplitudes within the hot spot are decreased in about 80% of data points. About 65% of data points showed significant reduction of SAR values in the range of about 10% to 40%. Thus, the presence of MRET Random Field Generator protective device leaded to the reduction of the majority of SAR values.

DETAILED DESCRIPTION OF THE INVENTION

[0012] The present invention addresses deficiencies in current technologies for the protection against electromagnetic radiation and provides related benefits. It is an object of the present invention to provide a device that protects against exposure to electromagnetic radiation. It is another object of the present invention to provide a device that is portable, which allows placement in an area that includes an increased or deleterious amount of EMR. Thus the device may be continuously operated for continued protection against EMR from remote sources.

[0013] The present invention protects against remote sources of EMR and is therefore protective against any EMR emitting device operating in frequencies as devices disclosed herein. Non-limiting examples include a computer, a computer peripheral, a cellular telephone, a personal communications device, a television, an audio system, or any household appliance that may intentionally and/or unintentionally emit electromagnetic radiation. The term “remote source” refers to a source of EMR that is remote from the device of the present invention. The present invention may protect against EMR emitted from indoor or outdoor power lines. Accordingly, the device of the present invention may be placed in proximity to the user when operating or exposed to devices that emit EMR. In some embodiments, the device is positioned within the same room as the EMR emitting device and in some embodiments the device protects against EMR emitting devices from different rooms or outdoors. In some embodiments, the device is positioned within about twenty feet from the subject requiring protection; however, the protective distance can be significantly higher when using carrier frequencies discussed herein and the like. Though operable outdoors, the present invention may have particular use indoors to provide protection within an indoor room, such as within a 12×12 square foot room or a 40×20 square foot room. The number of subjects that may be protected with the present device is only limited by the protected area. Thus, a single device may protect a plurality of subjects within the operating area. The area of operation can be increased by increasing the amplitude of the emitted frequencies.

[0014] The present invention operates by generating incident radiation, which induces oscillation of a polymer. The oscillation frequencies emitted by the polymer are demonstrated herein to protect users against remote sources of EMR. These emitted protective frequencies prevent or reduce the ordinarily deleterious effect from EMR exposure, such as high frequency EMR, on biological processes. Among the deleterious effects protected against may include changes in viscosity, pressure or water content of bodily fluids such as interstitial fluid, blood, and the like. The present invention may also protect against changes in body pH, oxygen content, hydration, mitochondrial activity, hormone levels and the like. The present invention may prevent or reduce the accumulation of free radicals in response to exposure to EMR. The incident radiation acts as a carrier frequency, which carries oscillations emitted by the polymer; thus delivering protective frequencies to the intended recipient. Alternatively, protective frequencies are generated separate from the incident radiation.

[0015] In one aspect of the present invention a device for protecting a subject against exposure to electromagnetic radiation emitted from a remote source is illustrated in FIGS. 1A and 1B. The MRET Random Field Generator device 5 comprises a housing 10 constructed of a plastic material permeable to appropriate frequencies; a solenoid 20 operably connected to a driver circuit 30 and capable of generating incident radiation; and a polymer 40 that upon exposure to the incident radiation emits electromagnetic oscillation frequencies that counter adverse effects associated with the subject's exposure to the electromagnetic radiation. Preferably, the polymer 40 is provided in cylindrical form, such as within a cylindrical shell 50 constructed of a material, preferably plastic, permeable to appropriate frequencies that fits inside the inner circumference of the solenoid 20 as illustrated in FIG. 1A. Although the amount of polymer is non-limiting, a range from about 5 g to about 100 g may be desirable. In a preferred embodiment 34 g of polymer was used. Preferably, the MRET Random Field Generator device is powered by a 12V wall DC power supply 60 as shown in FIG. 1B; however, one skilled in the present art would be able to substitute a suitable power source or power supply.

[0016] Referring to FIG. 1A, the solenoid 20 operates at an appropriate current rating to provide suitable incident radiation. As an exemplary embodiment, a solenoid may be constructed from multiple turns of thin wire and in some embodiments may have a current rating of about 300 mA and may have a frequency response adequate for operating in the frequency range between about 7.0 Hz and 15.0 Hz. The experimental data provide evidence of the peak interference spectra for Calcium and Sodium ion transportation for the following applied frequency “windows” of 7.8 Hz and 15 Hz. The housing 10 is constructed of a plastic material permeable to the appropriate incident frequencies.

[0017] The protective features of the device 5 may act by targeting or affecting Calcium and/or Sodium ions in the user's body by emitting and optionally carrying the protective frequencies. The device 5 and methods may affect localization of Calcium and/or Sodium ions in the body; ion pumps and/or ion channels; chemical or biological reactions involving the interaction, binding or transfer of Calcium and/or Sodium; and the like. Calcium is very important for the function of the organism. Ca<2+> ions contribute to the activity of many enzymes, synaptic transfer, secretion, muscular contraction, proliferation, growth and development by interaction with cells or proteins, such as calmodulin and troponin. Sodium ions (Na<+>) provide for a naturally balanced acid-alkaline medium in the organism and excitation signal transfer processes along the nerve cells. Na<+> ions are involved in the function of the “ion pumps” that produce an electrical potential difference across the cell membranes by increasing the density of Sodium in the extracellular medium. The protective effects of the instant invention may affect the localization of ions such as Sodium or Calcium, activity of ion pumps or ion channels, and the like.

[0018] The protective features of the device 5 may act by affecting or organizing clathrate structures of the cellular fluids within the body that leads to support of normal biochemistry of intracellular water. By affecting or organizing clathrate structures the instant invention prevents adverse reactions from exposure to EMR.

[0019] The solenoid driver 30 is a microprocessor controlled drive circuit, such as illustrated in FIG. 2, which provides voltage of varying amplitude and frequency to the Solenoid Polymer Assembly. The circuit 30 comprises a microcontroller 100, nonvolatile memory module 105 for storing the operating code, triple DIP switch 110 that controls functions of the solenoid driver, pre amplifier 115, dual power amplifiers 125 and 130 that are operably connected to a driver to solenoid 20, power mode feedback control circuit 120, and status three color LED 150.

[0020] The user controls the operation of the solenoid driver 30 preferably by setting individual switches in triple-row DIP switch bank 110. The switch functions are as follows.

[0021] The first row of DIP switch 110 has two states RUN and RESET. The RESET is the initial startup mode to ensure the proper initialization of the Solenoid Driver circuit. This function is also used to reset the internal Time of life counter. To reset the counter typically the unit is powered down and powered back up with the switch #1 of the DIP switch bank 110 in the RESET position.

[0022] RUN is the normal operation mode and is enabled by setting the switch # 1 into RUN position. Once the unit is taken out of the RESET and put into RUN mode the microcontroller will ignore the RESET switch state, except during the power-up period.

[0023] The second row of the DIP switch 110 controls current draw of the unit. The LO and the HI switch states correspond to the 140 mA low-current draw and 280 mA high current draw settings respectively. To ensure proper operation of the unit this switch must be left in its state during operation. If current mode change is desired typically the unit is first powered down in order to change the switch state.

[0024] The third row of the DIP switch 110 controls frequency mode of operation. The 2F setting denotes the dual-frequency mode of operation. When dual-frequency mode of operation is selected the LOW and the MID frequency components of the incident radiation are being generated by the driver circuit.

[0025] In the preferred embodiment, the solenoid driver module features a LED assembly 150; comprising of the three color RGB LED 155, green LED 160 and red LED 165 for providing visual feedback during its operation to the user.

[0026] The RGB LED 155 operates as follows: green color indicates that the low frequency of the incident radiation is being generated; yellow color indicates that the MID frequency of the incident radiation is being generated. Red color state of the RGB LED 155 indicates calibration failure. During the power up stage the microcontroller performs calibration procedure where it checks, inter alia, the presence of solenoid, power mode and frequency mode switch settings. If calibration failure occurs, the unit is typically powered down and reset. Once the unit has successfully passes the calibration sequence, the green LED 160 is illuminated for the duration of the unit operation.

[0027] The microcontroller records the period of time that the solenoid driver circuit is in operation in a ‘Time of Life’ counter. The lifetime of useful operation will vary depending on factors such as the particular polymer used and the like. As general guidance, it is estimated that the lifetime of useful operation of the MRET-Shield polymer is approximately 17,000 hours. Accordingly, upon the completion of 17,000 hours the microcontroller may issue a warning to the user by flashing (periodically turning on and turning off) the red LED 165. After an additional 200 hours of operation the red LED may stop blinking and stay illuminated. This indicates ‘end of life’ of the MRET-Shield polymer and the circuit will stop operating. The times provided are exemplary only.

[0028] In the preferred embodiment the polymer of the present invention is the MRET-Shield polar polymeric material disclosed in Smirnov, U.S. Pat. No. 6,369,399 which is incorporated by reference herein in its entirety. In its most basic form the preferred substance is a polymeric material in which the polymeric substance contains small quantities of several components: an oxidized hydrocarbon emulsifier, a galvanic salt, an alkaloid, a dye or stain, and a polysaccharide. Collectively the components form a unique composition that displays a characteristic behavior, when activated by exposure to EMR, to generate its own electromagnetic oscillations at frequencies that resonate with living cellular structure and effectively counteract the harmful aspects of the EMR. The polymer that forms the matrix of the preferred MRET-Shield polymer material can be any polar thermosetting or thermoplastic polymer that has a high value of relative permittivity (dielectric constant). The polymer can be cast into a mold consistent with configurations discussed in the present disclosure.

[0029] The EMR shielding material MRET-Shield was proven to produce the biological protective effect. This polar polymer material was tested by Underwriters Laboratories and received a UL recognition mark in March 2001. EMR shielding material does not reduce the intensity (power) of electromagnetic fields. It “shields” the cellular structures of the body against the harmful effects of EMR. The radiation still enters the body but the neutralizing effect of this polar polymer reduces harmful effects associated with EMR. The EMR shielding polar polymer can neutralize negative effects of EMR by changing the quality or effect of the electromagnetic field rather than reducing its power, which provides benefits over alternative approaches. In contrast, devices that claim to reduce the power of electromagnetic fields create distortion of transmitted signals and worsen the reception of cellular phones, because these devices are based on ferromagnetic materials or high density metals. Besides they reduce the radiation only by 15-20%. They also can create even worse problems for the cellular structures of the body because electromagnetic processes in the cells are thousand times weaker then electromagnetic fields generated by any electronic appliances. Taking into consideration that most of the appliances (cellular phones, computers, etc.) are usually located in a very close proximity to the human body, it is reasonable to admit that shielding devices, which reduce electromagnetic fields, first of all will suppress and disturb electromagnetic processes in living cells.

EXAMPLES

Example 1

Electro Interstitial Scan (EIS) Demonstrates MRET Random Field Generator (MARNF) Protects Against EMR Emitted from Commercially Available Cellular Telephone (RF Phone)

[0030] EIS analysis was conducted at an independent testing facility to assess the biological effects of electromagnetic radiation from a cellular telephone on the human body and whether effects would differ if providing a MRET random field generator (MARNF) within about 3.3 meters (10 feet) from the subject during cellular telephone use.

[0031] The color legend for EIS color model images is as follows: grey indicates normal; yellow indicates elevated conductivity, reduced viscosity or acute inflammation; blue indicates decreased conductivity, increased resistance, increased viscosity, organ hypoxia or chronic inflammation. The legend for EIS data provided in tables is as follows: Il-intensity; iR—resistance; iC—conductivity; ipH—interstitial fluid pH; icpH—intercellular pH; tVO2—tissue oxygen volume; tO2—tissue oxygenation; tCO2—tissue CO2; ATP—Mitochondrial production ATP; A.C.H. pressure—arterial capillary hydrostatic pressure; and I oncotic forces—interstitial oncotic pressure; and M.A. Pressure—mean arterial pressure

[0032] FIG. 3A shows the EIS color model images and corresponding data for Control 1 vs. RF phone without MARNF (labeled TREO—NO MARNF). FIG. 3B shows the EIS color model images and corresponding data for Control 2 vs. RF phone in combination with EMR protective device of present invention MRET Random Field Generator or MARNF (labeled TREO—with MARNF). FIG. 3C shows EIS images and data from the heart corresponding to Control 1 vs. RF phone without MARNF (labeled TREO—NO MARNF). FIG. 3D shows EIS images and data from the heart corresponding to Control 2 vs. RF phone in combination with EMR protective device of present invention MRET Random Field Generator or MARNF (labeled TREO—with MARNF).

SUMMARY OF RESULTS

[0033] The test results in FIG. 3A show that the subject displays hyperactivity of the right frontal lobe during Control 1. After 10 minutes exposure to radiation of TREO 650 cellular phone (referred as TREO RF), all parameters demonstrate negative changes (opposite from normal range): intercellular pH (icpH) begins to drop, as interstitial fluid pH (ipH) rose due to the influx of potassium from within the cellular membranes. ATP increased with the applied EMR field, as edema increases and hydrostatic pressure similarity increases to remove the excess of water in the blood vessels. Overall there are negative effects due to proximity to a non-ionizing RF phone. While the hypothalamic region remains mostly within the normal parameters it is becoming hypo-functional in respect to the changes in the function of the sympathetic nervous system (C8-L4). The state of sympathetic nervous system changed from normal to reduced function. Overall there are indications of negative cerebral effects due to exposure to RF phone. The subject's right frontal lobe showed abnormal values along with the abnormal values from hypothalamus, and they were pictorially displayed as yellow and blue colors respectively. Yellow color corresponds to elevated conductivity, reduced viscosity or acute inflammation and blue color corresponds to decreased conductivity, increased resistance, increased viscosity, organ hypoxia or chronic inflammation. Thus, after the exposure to electromagnetic radiation of a cellular phone all parameters deteriorated.

[0034] The test results shown on FIG. 3B were taken following the 15 minutes break down. The image and data for Control 2 indicate that the values for the right front lobe began to normalize as a result of rest in the absence of EMR exposure. Based on the previous experience it was expected that this positive trend will be interrupted or reversed upon the re-application of EMR. However, scans taken after 10 minutes exposure to the EMR of TREO RF while simultaneously exposure to MARNF (MRET Random Field Generator) indicate continuing normalization of all parameters within the tissue. Additionally, enervation to the sympathetic nervous system (C8-L4) is improved after exposure to MARNF, despite relative proximity of the TREO RF to the subject's right temporal and frontal lobes. The positive effects were detected also in blood pressure, blood viscosity, ATP values and mitochondrial activity, oxygen levels and carbon dioxide levels when using protective MRET Random Field Generator of the present invention. Results of these scans suggest that MARNF has a measured positive cerebral effect.

[0035] Another example shown in FIG. 3C provides pictorial evidence of the measured negative effect of RF phone on the cardiovascular system of the subject. The EIS Control 1 scan indicates reduced function in the inferior vena cava and depressed venous pressure. All remaining cardiac tissue appears normal. After exposure to RF phone, proximal to the subject's right temporal lobe, his mean arterial pressure (MAP) begins to rise, activating the baroreceptor reflex, as shown in yellow (right image). MAP increases from 72.5 for the Control 1 and to 76.2 for TREO—NO MARNF and cardiac rate frequency dropped by 25%. It indicates measured negative cardiovascular effect following the RF phone exposure.

[0036] The scan images shown in FIG. 3D provide evidence that the exposure to EMR of RF phone in combination with MRET Random Field Generator (MARNF) has no negative effect on the cardiovascular system of the tested subject. The second control scan of the subject was performed after the fifteen minute rest period. The baroreceptor reflex returned to normal values and all cardiac tissues except for the inferior vena cava appear normal. The image labeled TREO—with MARNF shows the scan after ten minutes exposure to RF phone in combination with MRET Random Field Generator. Mean Arterial Pressure remains stable and identical to Control 2 scan. It indicates positive cardiovascular effect of MRET Random Field Generator and cardiac rate frequency drops insignificantly by only 7.5% (compare to 25% drop without MARNF protection).

Materials and Methods

[0037] The experiments detected changes in brain chemistry using Electro Interstitial Scanning (EIS). EIS gives a comprehensive overview of the reactions of the body. 3D models of the full body and various different parts of the body are created based on the electro interstitial gram (EIG). The models are color coded to indicate where areas of imbalance are hyper-functioning or hypo-functioning. In essence, EIS provides a functional assessment of the main organs, with report screens that show interstitial biochemical values and an evaluation of body composition including lean mass, fat mass and hydration data. Measurements are further extrapolated to provide report screens with hormone, electrolyte, neurotransmitter and oxidative stress analyses. More specifically, the EIS system operates as a biosensor, which analyzes the interstitial fluid locally in vivo by application of a D.C. current between cutaneous zones using electrodes. In use, the EIS introduces electric signals of low intensity (1.28V D.C.) through the human body via 6 electrodes. This is painless and has no negative effects to the patient. About 22 measurements are taken. The scanning results are recorded by EIS software, which analyzes and interprets the test results and produces a variety of informative models, graphs and data for interpretation by a medical practitioner.

[0038] A TREO 650 cellular telephone (referred to herein as TREO RF), which operates at frequencies of about 1851.25-1908.75 MHz (PCS and CDMA frequencies) was used as a typical source of EMR. The MARNF (MRET Random Field Generator) included a housing, a solenoid operably connected to a driver and a polymer. The polymer included a polar matrix, an oxydated hydrocarbon emulsifier, a galvanic salt, a dye or stain, and a polysaccharide. The present example used 34 g of polymer.

[0039] The subject was scanned at four time points. First scan (Control 1) was conducted before any exposure to EMR. Second scan (NO MARNF) was performed after the subject was exposed to the TREO RF, which was placed next to the right ear of the subject. The EIS scan was performed after 10 minutes of exposure to the TREO RF. The thirds scan (Control 2) was conducted after the subject rested for approximately 15 minutes as a second control. The last scan (with MARNF) was taken after the subject was exposed to the same TREO 650 cellular telephone for 10 minutes while simultaneously being exposed to the MARNF protective generator, placed about 3.3 meters (10 feet) away.

Example 2
The Demonstration of Protective Effect of MRET Random Field Generator During Exposure of a Phantom Head to Electromagnetic Radiation from a Cellular Telephone

[0040] The example (depicted in FIGS. 4A and 4B) demonstrates the protective qualities of the present invention by measuring Specific Absorption Rate (SAR) values of electromagnetic radiation absorbed by a “phantom head,” which mimics the human head muscle and brain tissue composition. The SAR values were measured and "hot spots" localization of electromagnetic radiation generated by RF phones was investigated. The results in FIG. 4B show a measured reduction of the absorption of electromagnetic radiation by muscle and brain tissue, but no significant shift in localization of "hot spots" which indicates that MRET Random Field Generator successfully reduces potential harmful effects on brain chemistry following the electromagnetic radiation exposure. The study was performed using a variety of wireless RF phones and is described in more details below.

[0041] To assess the protective effects of the present invention against exposure to radiation, a "phantom head" was used to mimic the brain and muscle composition within the head. The "phantom head" was produced using a combination of hydroxyethylcellulose (FEC) gelling agent and saline solution. The mixture was calibrated to obtain proper dielectric constant (permittivity) and conductivity of the simulated tissue. The dielectric constant at about 835 MHz was about 40 and at about 1900 MHz, was about 39. The conductivity at about 835 MHz was about 0.88 mho/m, and the conductivity at about 1900 MHz was about 1.43 mho/m. An APREL Laboratories ALSAS system with a dosimetric E-field probe E-020 was used for measurements. The dipole was oriented parallel to the body axis. The investigation was conducted on cellular phones including Qualcomm Model QCP-2035a, Kyocera Wireless Model 2325 and Samsung Model SCH-A670.

[0042] Wireless mobile phones were evaluated in this experiment for localized specific absorption rate (SAR) for controlled environment/occupational exposure limits specified in ANSI/EEE Std. C95.1-1992 and had been tested in accordance with the measurement procedures specified in IEEE 1528-2003 and OET Bulletin 65. The RF phone was placed into simulated transmit mode using the manufacturer's test codes. Such test signals offer a consistent means for SAR and are recommended for evaluating of SAR data. Each SAR measurement was taken with a fully charged battery. In order to verify that each phone was tested at full power, conducted output power measurements were performed before and after each SAR test to confirm the output power. SAR measurement results were obtained, analyzed and compared to provide the scientific conclusion of the experiment: These measurements are taken to simulate the RF exposure effects under worst-case conditions. Precise laboratory measures were taken to assure repeatability of the tests. The tested device complies with the requirements in respect to all parameters subject to the test. The installation and function of MRET Random Field Generator at the distance of 7 feet from the "phantom head" does not significantly affect the air measurements of the RF phone signals and subsequently does not lead to any significant distortion of transmitted RF signals. In each experiment, SAR values were measured in 242 points around the phone within the "phantom head." The effect of MRET Random Field Generator on the "phantom head" showed that the "hot spots" remained in the same location as without MRET Random Field Generator and the amplitudes decreased in 80% of the data points. In 65% of the data points there was observed a significant decrease of SAR values in the range of 10% to 40%. The installation and function of MRET Random Field Generator at the distance of 7 feet from the "phantom head" leads to the reduction of the majority of SAR values.

US6369399
Electromagnetic radiation shielding material and device

A material and devices made therefrom are described when placed in proximity to persons, animals and plants serve to lessen adverse health effects caused by electromagnetic radiation (EMR) exposure. The material has a polymeric matrix and inorganic and organic components which are responsive to an magnetic field and emitting natural electromagnetic oscillations which are beneficial to humans, animals and plants, and offset harmful aspects of the EMR. The polymer is polar and has high relative permitivity. The components are an oxydated hydrocarbon emulsifier; a galvanic salt; an alkaloid; a dye or stain; and a polysaccharide. The devices may be solid, fibrous, powdered or woven fabrics.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention herein relates to exposure of living organisms to electromagnetic radiation (EMR). More particularly it relates to materials to reduce the harmful physiological effects that extended exposure to EMR may pose to the humans, animals and plants and devices made therefrom.

2. Description of the Prior Art

EMR is emitted by every operating electrical and electronic device. The power of EMR emission varies depending on the size and electrical strength of the device and the electrical current it carries or employs. High voltage power lines are significant emitters of EMR, and field strengths sufficiently high to have the potential for causing adverse EMR effects in humans, animals and plants can be detected hundreds of feet away. Smaller devices such as computers, television sets, microwave ovens and the like emit lesser quantities of EMR, but the effect on humans can still be significant because people are in much closer proximity to such devices.

While there has been controversy over whether significant health effects in humans has been proven or disproved by various studies, there is no doubt that EMR fields do surround power lines and common electrical and electronic devices. It is therefore the desire of many prudent people to protect themselves, their animals and plants against whatever health risks might be involved by their exposure to EMR over extended periods of time. Unfortunately, effective and convenient devices for shielding against EMR have not been generally available. Essentially the only defense against EMR has been removal of persons, animals and plants from proximity to the EMR-emitting devices. For major emitters such as power lines or electrical substations, this has usually meant that one has had to move to a different house or to a different job location away from the power line or substation, which commonly means substantial expense and inconvenience. The adverse costs and inconveniences are similar to farmers and ranchers who must move animals and crops to locations remote from the power lines or stations. For devices such as microwave ovens or computers, it has meant that a person must sit or stand at an awkward distance from the device, which can impair the person's ability to use the device in an optimum manner.

Because there is a magnetic field component to EMR, conventional shielding which might provide protection against electrical shock is not effective to shield against the effects of the generated magnetism on a human, animal and plant bodies and health.

Adverse human health effects which have been reported as attributable to long-term EMR exposure include occurrence of certain cancers, multiple sclerosis and autism. Reported adverse effects on animals have included stillbirths of young and reduction of milk production in cattle.

It would therefore be advantageous if there were a device available which could effectively shield people, animals and plants against harmful, adverse health consequences which may be inherent in prolonged or extended exposure to EMR.

SUMMARY OF THE INVENTION

I have now invented a material which may be fabricated in numerous embodiments and which when worn, carried or otherwise kept in proximity to persons, animals and even plants, serves to lessen adverse health effects caused by EMR from power lines, computers, mobile telephones, microwave ovens, televisions and numerous other electrical and electronic devices. These EMR shielding materials and devices can be fabricated and used in many different embodiments. This enables the invention to be used effectively in many locations and under many circumstances where prior art devices were simply unavailable or ineffective.

Key to the present invention is a polymeric body into which are incorporated small quantities of inorganic and organic materials, those materials when placed in an EMR magnetic field, respond to that EMR by emitting natural electromagnetic oscillations which are beneficial to humans, animals and plants, and which at least in part counteract the harmful aspects of the EMR on the human, animal or plant. The polymeric material may be formed into devices of a wide variety of embodiments, including block solids, fibers, fabrics, particulate, and so forth.

Specifically, the invention herein comprises a material to reduce adverse effects of electromagnetic radiation exposure of a human, animal or plant body, comprising a polymeric matrix having high relative permitivity and having incorporated therein a) an oxydated hydrocarbon emulsifier; b) a galvanic salt; c) an alkaloid; d) a dye or stain; and e) a polysaccharide; the material upon exposure to incident electromagnetic radiation responding thereto by emission of electromagnetic oscillations at frequencies which counter the adverse effects of the incident electromagnetic radiation on the body. In a preferred embodiment the polymer is an epoxy polymer.

In preferred embodiments the material's composition comprises, in parts per 1000 parts by weight of the polymer:

the oxydated hydrocarbon emulsifier 10 mL
the galvanic salt 1.3 parts by weight
the alkaloid 2.6 parts by weight
the dye or stain 2.3 parts by weight
the polysaccharide 1.2 parts by weight.

The material may be disposed in a variety of different forms, but the common ones will be as unitary solid objects, often as small disks, or as fibers from which fabrics or garments may be woven.

Other aspects and embodiments of the present invention will be evident from the disclosure below.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of one embodiment of a device formed of the polymeric body of the present invention, and attached for convenience to a common object;

FIG. 2 is an oblique view of a polymeric material of the present invention in the form of a fiber;

FIG. 3 is a schematic, oblique enlarged view of a portion of a woven fabric containing fibers of FIG. 2.

FIG. 4 illustrates pictorially the effects on plant leaves of use of the present material to reduce the harmful effects of EMR exposure of the plant.

FIGS. 5 and 6 illustrate graphically the positive results obtained in blood tests involving use of the material of this invention to reduce the harmful effects of EMR exposure to human subjects.

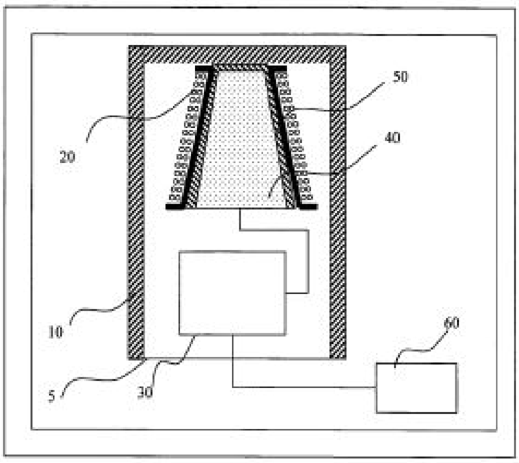


FIG. 1A

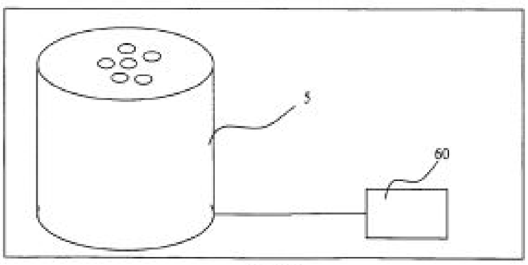


FIG. 1B

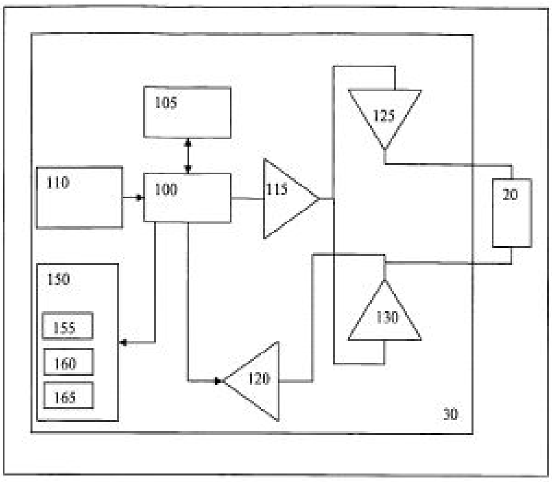
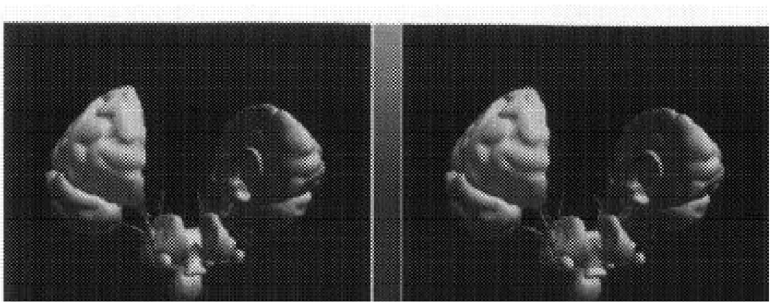
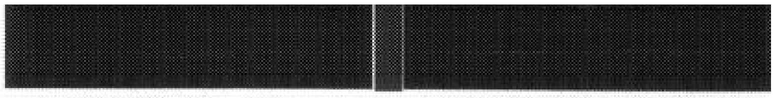


FIG. 2





Left image Control 1 | Right image RF Phone No MARNF

Control 1 | **TREO- NO MARNF**

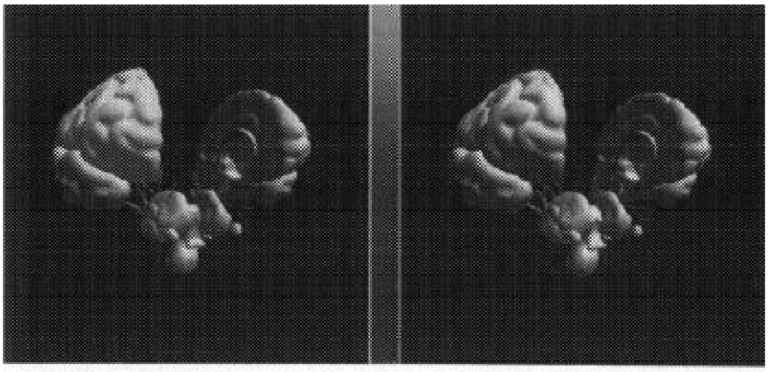
	Values	Norms	Values	Norms	Units
Il	18.8	8.3-18.2	22.10	8.3-18.2	µA
iR	68.00	71.2-162.0	60.50	71.2-162.0	kOhm
iC	14.71	6.2-14.0	16.53	6.2-14.0	10-6 S./m
ipH	7.353	7.31-7.35	7.359	7.31-7.35	I.U
icpH	6.997	7.00-7.04	6.991	7.00-7.04	I.U
tVO2	52.3	48-52	52.9	48-52	%
tO2	77.7	78-82	77.1	78-82	mm/Hg
tCO2	48.3	44-48	48.9	44-48	mm/Hg
ATP	55.8	45-55	57.2	45-55	%
A.C.H. Pressure	37.3	33-37	37.9	33-37	mm/Hg
Blood Viscosity	5.1	4-5	5.2	4-5	10-4 Pa/s
I Oncotic forces	2.8	2.8-3.2	2.7	2.8-3.2	mm/Hg
Water content	17.2	15-17	17.4	15-17	%

Neuronal Excitability: Increased

Sympathetic system (C8-L4) - Norms

Neuronal Excitability: Increased

Sympathetic system (C8-L4) - Reduced



Left image Control 2 | Right image RF Phone with MARNF

Control 2 | **TREO- with MARNF**

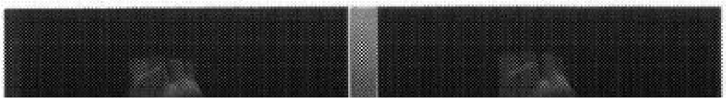
	Values	Norms	Values	Norms	Units
Il	19.9	8.3-18.2	17.00	8.3-18.2	µA
iR	65.5	71.2-162.0	77.60	71.2-162.0	kOhm
iC	15.27	6.2-14.0	12.89	6.2-14.0	10-6 S./m
ipH	7.354	7.31-7.35	7.35	7.31-7.35	I.U
icpH	6.996	7.00-7.04	7.00	7.00-7.04	I.U
tVO2	52.4	48-52	51.6	48-52	%
tO2	77.6	78-82	78.4	78-82	mm/Hg
tCO2	48.4	44-48	47.6	44-48	mm/Hg
ATP	56.0	45-55	54.0	45-55	%
A.C.H. Pressure	37.4	33-37	36.6	33-37	mm/Hg
Blood Viscosity	5.1	4-5	4.9	4-5	10-4 Pa/s
I Oncotic forces	2.8	2.8-3.2	2.8	2.8-3.2	mm/Hg
Water content	17.2	15-17	16.8	15-17	%

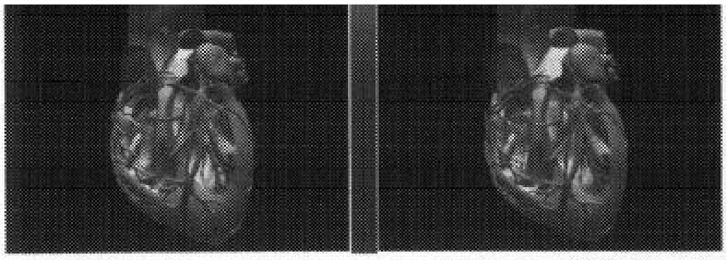
Neuronal Excitability: Increased

Sympathetic system (C8-L4) - Reduced

Neuronal Excitability: Norms

Sympathetic system (C8-L4) - Norms

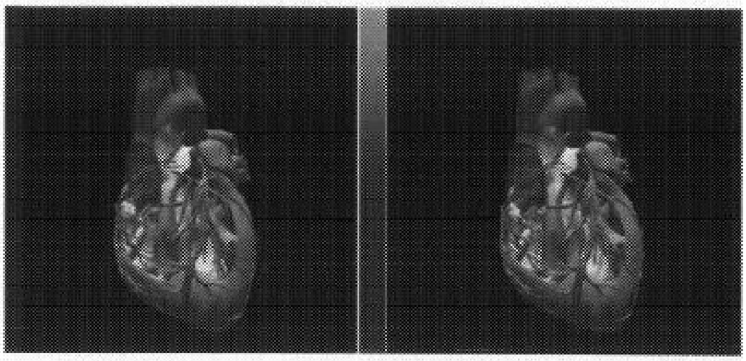




Left Image Control 1 | Right Image RF Phone No MARNF

Control 1	Values	Norms	TREO- NO MARNF Values	Norms	Units
M.A. Pressure	72.5	65 – 75	76.2	65 – 75	mm/Hg
Cardiac rate freq.	80		60		

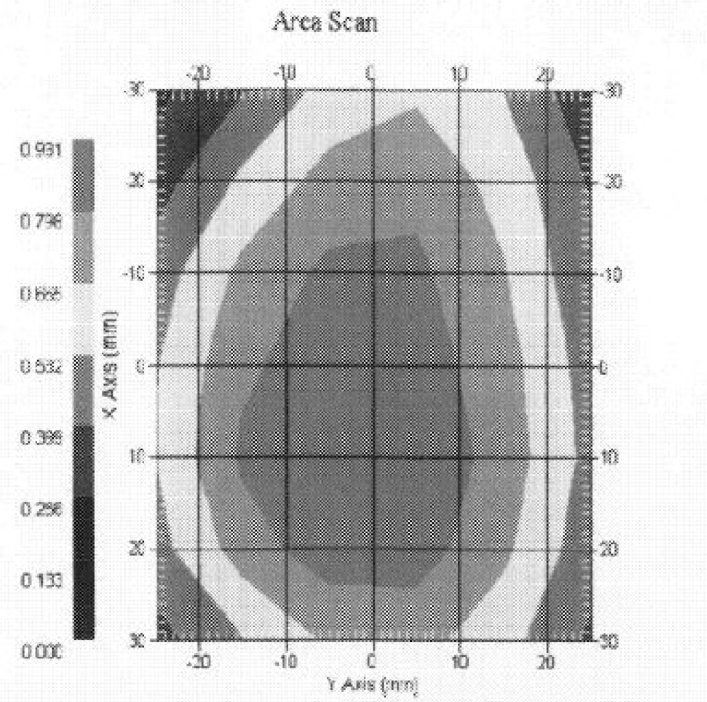
FIG. 3C



Left Image Control 2 | Right Image RF Phone with MARNF

Control 2	Values	Norms	TREO- with MARNF Values	Norms	Units
M.A. Pressure	72.5	65 – 75	72.5	65 – 75	mm/Hg
Cardiac rate freq.	80		75		

FIG. 3D

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1 gram SAR value    : 0.958 W/kg
10 gram SAR value   : 0.621 W/kg
Area Scan Peak SAR  : 0.928 W/kg
Zoom Scan Peak SAR  : 1.061 W/kg
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FIG 4A: Phantom Head Without MRET Random Field Generator (MARNF)

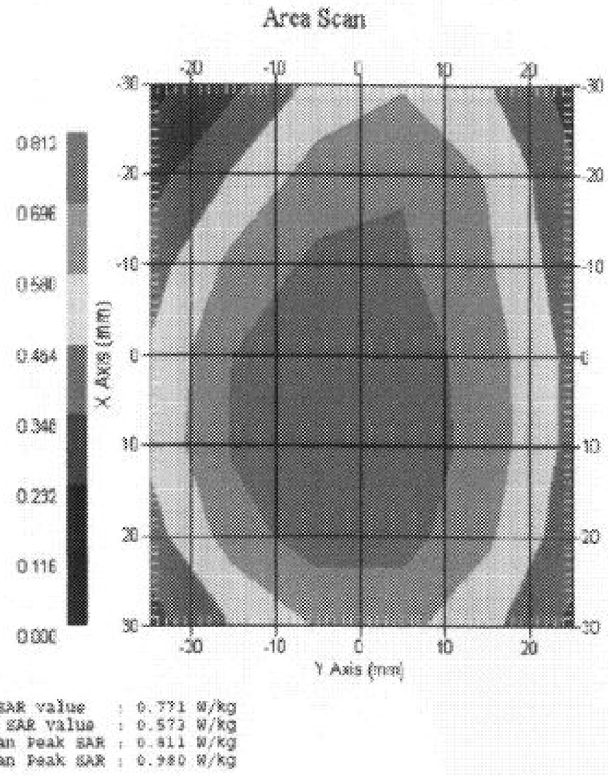


FIG 4B: Phantom Head With MRET Random Field Generator (MARNF)

DETAILED DESCRIPTION AND PREFERRED EMBODIMENTS

In its most basic form, the invention here is a polymeric material in which the polymeric matrix contains small concentrations of several different types of components-an oxydated hydrocarbon emulsifier, a galvanic salt, an alkaloid, a dye or stain, and a polysaccharide. Collectively these components and the polymer form a unique composition which has the unusual ability, when activated by exposure to EMR, to generate its own electromagnetic oscillations at frequencies which resonate with cellular structures and effectively counteract the harmful aspects of the EMR. Thus when a person, animal or plant is exposed to EMR, having a device made of the present material on one's person or in close proximity will reduce the harmful effects which one may suffer from prolonged exposure to the EMR. As an example presented below shows, substantial reductions in the adverse effects on human blood by EMR exposure can be obtained by having a device made of the present material present in proximity to the exposed blood.

The polymer which forms the matrix of the present can be any polar thermosetting or thermoplastic polymer which has a high value of relative permitivity (dielectric constant). Numerous polar polymers are described in the literature; of particular preference in the present compositions are the epoxy polymers. As the matrix, the polymer will form the bulk of the present materials. The concentrations of the components discussed below are stated with respect to 1000 mg of the polymer.

A first component of the material is an emulsifier having solvent properties, which facilitates the incorporation of the components into the polymeric matrix. Numerous suitable emulsifiers are disclosed in the literature. Preferred in these compositions are glycol ethers or salts thereof. A particularly useful emulsifier is ethylene glycol monobutyl ether or its acetate salt (both available commercially under the respective trade names "Butyl Cellusolve" and "Butyl Cellusolve Acetate"). The emulsifier will be present in a concentration of 1-25 milliliters, preferably about 10 mL.

A second component is a galvanic salt which imparts galvanic properties to the composition. Numerous inorganic (and some organic) salts may be used, including the alkali metal and alkaline earth metal salts. The more reactive salts such as the sodium salts are preferred. The anions of the salts may be galvanically active ions such as the various forms of phosphates. Particularly preferred is dibasic sodium phosphate. The galvanic salt will be present in a concentration of 0.1-3.0 mg., preferably about 1.3 mg.

The third component will be an alkaloid which has parasympatholytic properties, and thus counteracts stimulation of the parasympathetic nervous system. Preferred alkaloids are atropine and its derivatives. Particularly preferred is tropine ($C_8H_{15}NO$) which is obtained by hydrolysis of atropine. The alkaloid will be present as 1.0-5.0 mg, preferably about 2.5-2.7 mg.

The fourth component will be a dye or stain, preferably fluorescein or a derivative thereof. Particularly preferred is rose bengal ($C_{20}H_2O_5I_4Cl_4Na_2$), also known as 4,5,6,7-tetrachloro-2,4',5'7'-tetraiodofluorescein (sodium salt) and as "Acid Red 94". The dye or stain will be present as 0.5-3.0 mg, preferably about 2.0-2.5 mg.

Finally, the basic compositions herein will also contain a polysaccharide, preferably a phycocolloid. Particularly preferred are the phycocolloids derived from algae, such as seaweed. Preferred is agar (also known as agar-agar), which is a phycocolloid derived from the red algae such as Gelidium or Gracilaria and is a polysaccharide mixture of agarose and agaropectin. The polysaccharide will be present as 0.1-3.0 mg, preferably 1.0-1.5 mg.

The polymeric materials of this invention are easily manipulated and can be formed into a wide variety of shapes and have a variety of different sizes. Two types of embodiments have been found particularly useful; see FIGS. 1-3. The first is to have the material formed as a unitary small device, such as a disk 2. In the embodiment shown in FIG. 1, the disk is formed as a hollow cylinder about 1" (2.5 cm) in diameter and [1/2]' (1.2 cm) high with a wall 4 which forms a container into which the material 6 is placed. The material 6 being in a liquid form before the polymerization can be placed into the hollow interior where it hardens because of the polymerization reaction, or it can be in granular or powdered form and be packed into the interior. A cover 8 (shown in phantom) may be placed onto the disk 2 after placement of the polymeric material 6 if desired, but the cover is not required. The disk 2 may conveniently be mounted on a common object that a person would carry on his or her person or in a purse, such as a box 10 (perhaps a compact, keycase or the like), by use of a layer of adhesive 12. Larger or small versions of the disk may also be used.

In the alternative embodiment shown in FIGS. 2 and 3, the polymeric material is formed (such as by extrusion) into a fibrous form 14 from which it can be woven into a fabric 16. The individual fibers in the fabric 16 may all be made of the polymeric composition, but more preferably fibers of the polymeric composition will be distributed among a larger number of fibers of conventional fabric materials such as cotton or wool. Since the compositions of this invention are effective in relatively small quantities, as evident from the description of the disk 2 above, it will be understood that the fabric can be made into a garment to be worn, in which the garment is largely composed of the conventional fibers in the fabric, and that fibers of the present polymeric composition are a minor part of the actual garment.

While the mechanism of operation of the present materials and devices made therefrom is not known exactly, it is believed that the following may be applicable (but is not to be construed as limiting of the invention). The polar nature of the polymer allows both bonding and non-bonding electrons in the molecular structure of the polymer to be readily displaced by exposure to an external electromagnetic field. Thus the external electromagnetic field of the EMR creates in the molecular structure of the polymeric composition the excitation of electromagnetic forces which in turn amplifies the corona discharge effect of the polymer and assortment components. The result of this amplification is an emission of subtle electromagnetic oscillations originated by the polymer itself. It is these subtle electromagnetic oscillations which are beneficial to the adjacent human, animal or plant bodies and which serve to counteract or compensate for the negative effects on the various bodies. The recent discoveries in biophysics proved that certain subtle low frequencies can resonate with cellular structures and improve cellular function and metabolism. The different combinations of the inorganic and organic components incorporated into the polymeric matrix cause variations in the frequencies of the electromagnetic oscillations of the polymer, and thus produce varying effects in the different human, animal and plant organisms.

The beneficial effects of this material on humans exposed to EMR is illustrated by the following example. Blood samples were taken from twenty-two adult subjects. Each sample was divided into three parts. The first part was used as a control and was not exposed to EMR. The two remaining parts were exposed to the VLF (very low frequency) EMR emitted by an operating 14" computer monitor screen for one hour, positioned at a person's normal viewing distance of the screen. One of the two remaining parts was exposed to that VLF EMR without any shielding being present. The other part was exposed to that VLF EMR while a sample of the present material in the form of a solid body was positioned proximate to and directly below the screen. The specific composition used comprised an epoxy polymer with the following components (usually reported as mg per 1000 mg of the epoxy polymer): ethylene glycol monobutyl ether ("Butyl Cellusolve": 10 mL), sodium phosphate (1.3 mg), tropine (2.6 mg), rose bengal (2.3 mg) and agar (1.2 mg). After separation all three groups of sample parts were subjected to standard blood testing. The test and their results (N=22) are reported in the Table below. The tests, as abbreviated in the Table, were as follows:

TABLE

Blood Test Results

Test	Control	Radiated Shielded	% Dif.	Radiated; Unshielded	% Dif.
WBC	6.6 K/[mu]L	6.7 K/[mu]L	+1.5	6.6 K/[mu]L	0
LYM	36.0%	44.3%	+23	49.4%	+37
MID	18.0%	23.7%	+31	24.2%	+34
GRAN	46.0%	32.0%	-30	26.4%	-43
RBC	4.50 M/[mu]L	6.34 M/[mu]L	+41	4.83 M/[mu]L	+7
HGB	13.8 g/dL	14.6 g/dL	+6	14.9 g/dL	+8
HCT	28.7%	43.7%	+52	44.5%	+55
MCV	92 fL	92 fL	0	92 fL	0
MCH	30.7 pg	30.7 pg	0	30.8 pg	+0.3
MCHC	32.1 g/dL	33.5 g/dL	+4	33.5 g/dL	+4
RDW	14.2%	14.4%	+1	14.4%	+1
PLT	208 K/[mu]L	193 K/[mu]L	-7	197 K/[mu]L	-5

WBC White blood cell count

LYM Lymphocyte count within WBC

MID "Minimum inhibitory dilution," an aspect of the Schlichter Test, and a measure of the presence of less frequently occurring and rare cells correlating to monocytes, eosinophils, basophils, blasts and other precursor white cells.

GRAN Granulated cell count within WBC, corresponding to the granuloctytes, i.e., basophils, eosinophils and neutrophils.

RBC Red blood cell count

HGB Hemoglobin content

HCT Hematocrit

MCV Mean corpuscular volume

MCH Mean corpuscular hemoglobin

MCHC Mean corpuscular hemoglobin concentration

RDW Red cell distribution width

PLT Platelet content

The striking result which is evident from the above data, and which is reflected graphically in FIGS. 5 and 6, is the significant reduction in the decline of granulocyte content of the blood which was irradiated but shielded by the presence of the material of this invention. FIG. 5 illustrates the decline in granulocyte count in blood samples exposed to EMR for one hour without (-[Delta]-) and with (- -) shielding by the material of this invention, as compared to the granulocyte content of the non-exposed control samples (---). FIG. 6 reflects the same data and illustrates the spread of the decline of the individual samples. As compared to the control the shielded group had one-third less decline in granulocyte content from the EMR exposure than did the non-shield group. Since granulocytes are a critical component of blood, and play one of the most important roles in the immune systems of the body. it is evident that the presence of the material of this invention protected the blood samples from significant amounts of harmful effects (i.e., content decline of granulocytes) resulting from the EMR exposure. The special point of interest is the significant increase of the red blood cells (RBC) in the shielded group. These cells play the major role in the process of oxygenation of the body. This result shows that the installation of the shielding device can positively affect the process of cellular oxygenation and as a result improve metabolism.

The increase of lymphocytes above normal level can also contribute to some negative effects such as leukemia, lymphomas, skin rash, etc. As compared to the control group the shielded group has about 40% less increase in lymphocytes content than the non-shielded group.

Another example of the effectiveness of the present compositions is illustrated in FIG. 4. The three views in this Figure are drawings of photographs of the leaves of a plant made by high-voltage photography. High-voltage photography is a process which allows the corona discharge effect of a body to be detected and captured for visual observation. The first view A is of the coronal discharge of a typical leaf of the plant before exposure to the VLF EMR from the computer monitor mentioned above. The solid image of the leaf indicates that all of the cells of the leaf are alive and functioning. In view B a leaf was exposed to the EMR for 30 minutes but in the presence of a shielding device of the present invention. The detect coronal discharge shows that about 80% of the cells have survived. In contrast, in view C, which shows a leaf exposed for the same 30 minutes but without the presence of the shielding device, in which only 40% of the cells have survived.

It will be evident that there are numerous embodiments of the present invention which are not expressly described above, but which are clearly within the scope and spirit of the invention. The above description is therefore to be considered exemplary only, and the actual scope of the invention is to be defined solely by the appended claims.

US6022479
Method and device for producing activated liquids and methods of use thereof

A device and method are disclosed which activate aqueous liquids, particularly water, and liquid polymers, resulting in enhanced properties in chemical and biological processes in which the activated liquids are used. The device includes a liquid reservoir; an activation body formed of a polymeric matrix containing a number of finely divided materials, with the body disposed in a strong (2,500-25,000 Oersted) magnetic field and responsive to visible electromagnetic radiation having a frequency of 7.2-7.8 Hz and a wavelength of 400-800 nm, and with one end disposed proximate to the surface of the liquid; and an electrical circuit adjacent the other end of the body, activating diodes to emit flashes of light having that wavelength and frequency, so that the materials and the polymeric body are energized and emit low frequency oscillations, which activate the liquid contained in the reservoir. Polymers include polyurethanes and epoxies. Materials include metals, metal salts, organic compounds, and natural minerals and mineral containing bodies. Concentrations are in the range of 0.04-30 parts by weight per 100 parts by weight of polymer. Also described are a number of methods of use of activated liquids, particularly water, including reducing alkalinity, acidity or hardness of water, reducing bacterial content of contaminated water, enhancing the setting time and compressive strength of concrete, and enhancing the growth rate and viability of plants. Physiological effects on cells and viruses as well as in humans have been observed with water activated as described.

1. Field of the Invention

The invention herein relates to activated liquids, such as water and liquid polymers, having exceptional chemical and physiological properties. More specifically, it relates to the method of production of activated liquids, to a device for such production, and to methods of using the activated liquids to obtain the benefits of the enhanced properties.

2. Description of the Prior Art

Water is a critical factor in most chemical and biological processes. It has been known that water quality can have a significant effect upon those processes. Therefore, considerable time and effort has been spent to purify water from various sources. Such purification processes, while useful, merely remove much of the dissolved and suspended foreign matter in water, but do not alter the nature of the water itself. While this is of advantage in reducing the opportunities for the foreign materials to adversely affect the chemical and biological processes, such purification techniques do not overcome the fundamental limitation that the water itself imposes on the process.

No process has previously been known which can alter the water itself, so that enhanced properties of altered water can advantageously be used to improve the basic functions of the chemical and biological processes in which the altered water would be used.

Similarly, liquid polymers are routinely used to manufacture a wide variety of products. The liquid polymers are carefully produced and transported to insure that contaminants do not get into the polymeric liquids before the liquids are used for production of such products. It is well known that if there are contaminants in the polymeric raw materials, the plastic products made (usually by molding) from the contaminated raw materials will be substandard and may be susceptible to breakage, dimensional distortion, and many other defects. However, as with water, while much effort has gone into producing pure polymers, there has been no process for altering the properties of the polymers themselves.

SUMMARY OF THE INVENTION

I have now developed a device and method which alters liquids, specifically aqueous liquids, preferably water, and liquid polymers, by activating them. These liquids when activated with the device and using the method described and claimed herein develop distinctively enhanced properties which are beneficial in numerous chemical and biological processes in which the activated liquids are used in place of some or all of the normal water or liquid supply. Enhancement is in the form of improved results from the processes, as compared to the same processes when performed with non-activated water or liquid polymer.

For example, the device and method of this invention have been used successfully to reduce alkalinity, acidity or hardness of water, reduce bacterial content of contaminated water, enhance the setting time and compressive strength of concrete, and enhance the growth rate and viability of plants. There is also limited indication that ingesting activated water may have advantageous physiological effects on humans, including but not limited to treatment of viral infections and dysmenorrhea.

Key to the present invention is an activation device which includes a polymeric body into which are incorporated small quantities of inorganic and organics materials, those materials when placed in a strong magnetic field being responsive to electromagnetic radiation having a particular range of frequency and wavelength. When this device irradiates a body of the target liquid through operation under the defined conditions of magnetic field strength and radiation frequency and wavelength, the liquid becomes activated. The activated liquid can then be used an a partial or complete substitute for non-activated liquid in numerous industrial chemical and biochemical reactions. Such use has been found to improve the efficiency of such reactions.

Therefore, in one broad embodiment the invention is of a device for the production of activated liquids which comprises a liquid reservoir and an activation member, the activation member comprising an elongated column having first and second axial ends and an annular wall having an exterior and enclosing a hollow interior of the column, the first end projecting toward the reservoir and the second end being disposed outside the reservoir, at least one magnet pair disposed along the exterior of the column, the two magnets of each pair being disposed opposite each other across the column, the at least one magnet pair generating a magnetic field in the range of 2,500-25,000 Oersteds, a polymeric composition filing the interior of the column, the polymeric composition comprising a polymer having a linear chain length of at least 38 monomer units and having dispersed therein, in finely divided form, 0.04-30 parts by weight per 100 parts by weight of polymer of a mixture of materials selected from at least two of the groups of (a) metals and metal salts comprising metals, oxides, nitrates, sulfates or tartrates of Groups 1a, 3a, 4a, 5a, 5b, 6b and 8b elements, (b) silicates and carbonates, (c) inorganic acids, (d)aminoaldehydes and pyridines, and (e) analgesics; the materials being responsive to electromagnetic radiation having a frequency in the range of 7.2-8.2 Hz and a wavelength in the range of 400-800 nm; and an electrical circuit disposed adjacent to the second end of the column, the circuit including a light emitting member which emits flashes of light having a wavelength in the range of 400-800 nm at a frequency of in the range of 7.2-8.2 Hz, the emitted flashes of light being directed at the second end of the column; such that when the reservoir contains a liquid and the electrical circuit operates and causes the light emitting member to flash at the wavelength and frequency, and the materials in the polymer are subject to the magnetic field, the polymer and minerals become energized and emit low frequency oscillations which causes the liquid to become and remain activated.

In another broad embodiment the invention is of a method of activating a liquid which comprises providing a liquid reservoir and an activation member, the activation member comprising an elongated column having first and second axial ends and an annular wall having an exterior and enclosing a hollow interior of the column, the first end projecting into the reservoir and the second end being disposed outside the reservoir, at least one magnet pair disposed along the exterior of the column, the two magnets of each pair being disposed opposite each other across the column, the at least one magnet pair generating a magnetic field in the range of 2,500-25,000 Oersteds, a polymeric composition filing the interior of the column, the polymeric composition comprising a polymer having a linear chain length of at least 38 monomer units and having dispersed therein, in finely divided form, 0.04-30 parts by weight per 100 parts by weight of polymer of a mixture of materials selected from at least two of the groups of (a) metals and metal salts comprising metals, oxides, nitrates, sulfates or tartrates of Groups 1a, 3a, 4a, 5a, 5b, 6b and 8b elements, (b) silicates and carbonates, (c) inorganic acids, (d) aminoaldehydes and pyridines, and (e) analgesics; the materials being responsive to electromagnetic radiation having a frequency in the range of 7.2-8.2 Hz and a wavelength in the range of 400-800 nm; and an electrical circuit disposed adjacent to the second end of the column, the circuit including a light emitting member which emits flashes of light having a wavelength in the range of 400-800 nm at a frequency of in the range of 7.2-8.2 Hz, the emitted flashes of light being directed at the second end of the column; subjecting the polymer and incorporated materials in the activation member to the magnetic field of 2,500-25,000 Oersteds from the at least one magnet pair; positioning the first end of the activation element proximate to the liquid in the reservoir while maintaining the magnetic field; operating the electrical circuit to cause the light emitting member to flash at the wavelength and frequency; whereby the materials and polymer become energized and emit low frequency oscillations which causes the proximate liquid in the reservoir to become and remain activated.

In a particularly preferred embodiment, the materials which are incorporated into the polymer in the activation device are responsive to electromagnetic radiation having a frequency on the order of 7.8 Hz and a wavelength on the order of 585 nm.

Other embodiments and details will be described below.

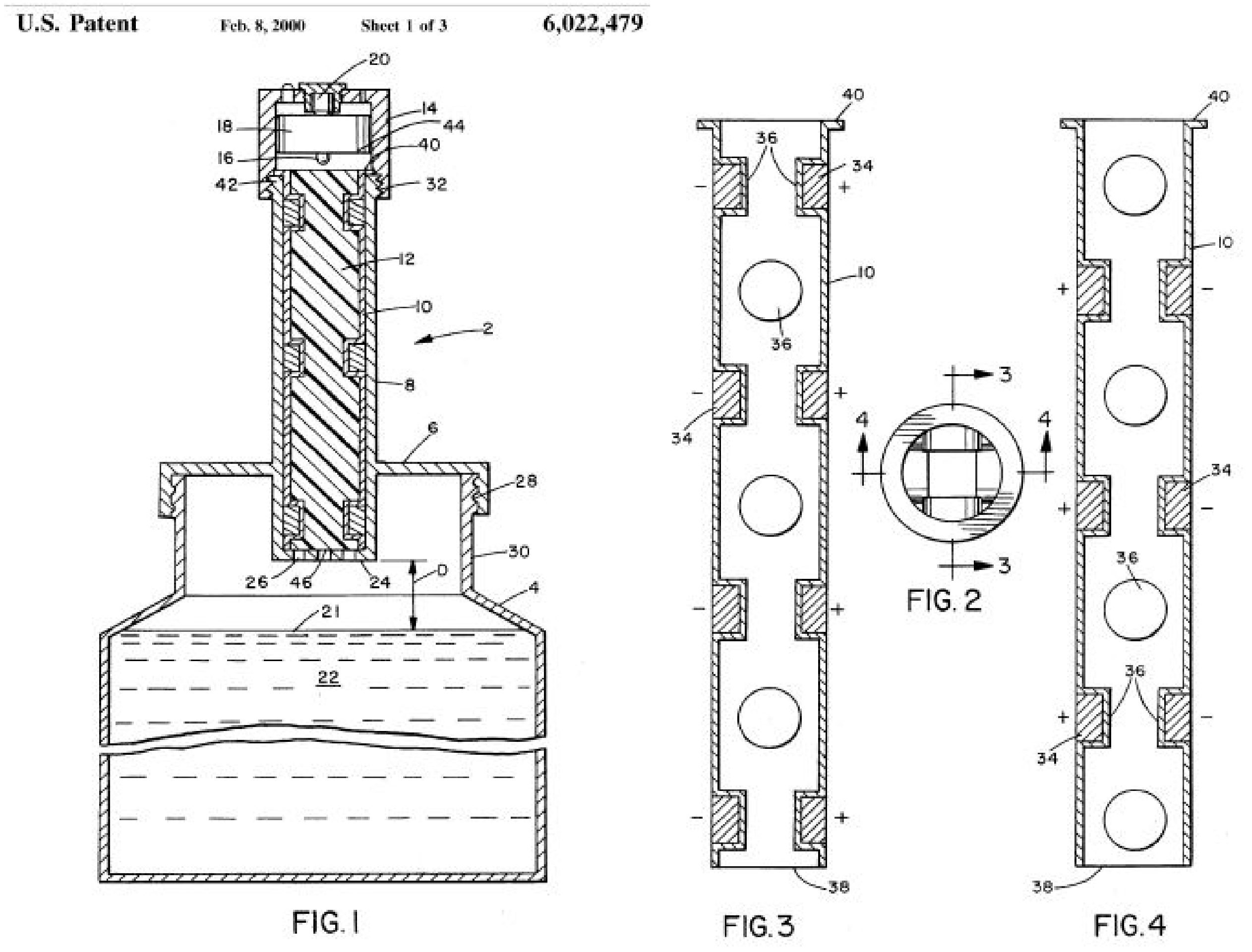
BRIEF DESCRIPTION OF THE DRAWINGS

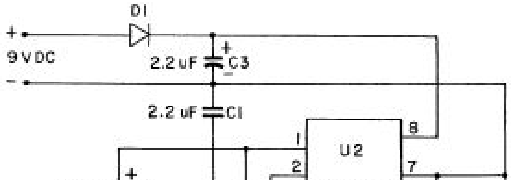
FIG. 1 is a cross-sectional center line elevation view of a water reservoir on which is mounted a novel water activation device of the present invention.

FIG. 2 is a top view of the column on which magnets are mounted and in which a polymeric composition containing finely divided minerals and compounds which cause the activation is housed.

FIGS. 3 and 4 are cross-sectional elevation views of the column taken, respectively, on Lines 3--3 and 4--4 of FIG. 2.

FIG. 5 is a schematic diagram of an electrical circuit which produces radiation flashes or pulses at the wavelength and frequency critical to this invention.





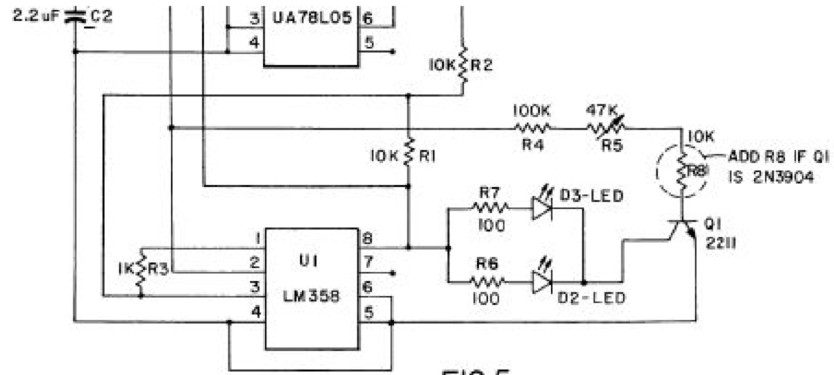


FIG. 5

DETAILED DESCRIPTION AND PREFERRED EMBODIMENTS

The invention is best understood initially by reference to the drawings. Considering first FIG. 1, the device 2 of the present invention is made up of a liquid reservoir 4, a cap 6 which includes a vertical housing 8 in which the column 10 containing a unique "filled" or `impregnated" polymer body 12 is encased, and a removable chamber 14 which is attached to housing 8 and which contains radiation emitting diodes 16 and an electrical circuit 18 to activate the diodes. In the top of the chamber 14 is a socket 20 for a battery which is used to power the circuit 18. Socket 18 can also be adapted to be a receptacle for an external electrical power line which leads to an external source of low voltage DC power (not shown). The latter configuration will be of advantage for an activating device which is intended to be at least semi-permanently disposed in a fixed location, and will avoid the necessity to regularly replace batteries for the device.

To use the device, as shown in FIG. 1, the reservoir 4 is largely filled with liquid 22, which is normally in at least a moderately pure state. It is preferred to use thoroughly purified liquid in the reservoir 4, so that foreign materials in the liquid will not adversely affect or retard the activation process. However, as will be exemplified below, activation itself will serve to purify the liquid to a certain extent.

The liquid to be activated will be an aqueous liquid, preferably water, or a liquid polymer. For brevity herein, the invention will be exemplified in the discussion below by water as the liquid to be activated. It will be understood, however, that the invention is not limited only to activation of water but also applies to the activation of other aqueous liquids and liquid polymers.

The lower end 24 of casing 8 contains openings 26 to allow the body 12 to emit low frequency oscillations toward the water 22. Casing 8 is positioned with its lower end 24 facing toward the water surface 21 and disposed such that the distal end 46 of the polymeric body 12 is spaced apart from the water surface 21 by a distance D of at least about 1" (2.5 cm). The cap 6 is removably mounted by mating screw threads 28 to the top neck 30 of reservoir 4 so that it can be easily unscrewed to fill or empty the reservoir. Similarly, the chamber 14 is attached by mating screw threads 32 to the upper end of housing 8 so that it can be removed to permit access to the interior of housing 8 for insertion, removal or replacement of the column 10. In addition, removal of chamber 14 allows access to the diodes 16 and circuitry 18 for maintenance or repair.

The column which houses the polymeric body is best illustrated in FIGS. 2-4. These Figures show the column 10 with magnets 34 in place but with the polymeric body 12 removed so that the interior of the column 10 can be observed. Formed in the side walls of column 10 are laterally opposed pairs of cylindrical recesses 36 in which magnets 34 are seated. In the embodiment shown there are seven pairs of magnets 34, but the number of magnet pairs may be any number from one to ten or more. The number of magnet pairs will be selected so that the total magnetic field generated is in the range of 2,500-25,000 Oersteds. The magnet pairs may be replaced by electromagnets which provide magnetic induction of about 4000 gauss for each magnet, to produce an equivalent magnetic field. The magnet pairs are disposed so that the north-south orientation of the poles are reversed from pair to pair, such that each pair has the opposite north-south alignment as the adjacent pairs on either side of it, as indicated by the + and - signs in FIGS. 3 and 4. The lower end 38 of the column 10 is open so that when the polymeric body 12 is present it can emit low frequency oscillations toward the water 22 at the lower end of the column 10. The top end of the column 10 is formed with an annular flange 40 which in use rests on and is supported by the top end 42 of housing 8.

The electrical circuit 18 is shown schematically in FIG. 5. Each of the components is identified with conventional standard symbols in FIG. 5 and is labeled with representative values for its properties, such that no further description is needed. Those skilled in the art will also of course recognize that standard component substitutions can be made, as long as the changes do not materially affect the ability of the diodes to flash with the critical frequency and wavelength which will be discussed below. The circuit is normally powered by a 9V battery which is seated in socket 20 and makes contacts with the contacts 44 of circuit 18. The circuit 18 is designed to cause the diodes 16 to emit visible light radiation at a visible wavelength .lambda. in the range of 400-800 nm and a frequency in the range of 7.2-8.2 Hz. In a preferred embodiment the visible wavelength .lambda. is on the order of 585 nm and has a frequency on the order of 7.8 Hz.

These values for frequency and wavelength of the light radiation emitted from the diodes 16 and the magnetic field to which the polymer and materials are simultaneously subjected are critical to the present invention, since the polymeric body 12 and its contained materials are particularly responsive to these frequencies and wavelengths of the radiation while in the magnetic field, and, in turn, resonate to provide the activating energy to the body of water 22. The specific predominant frequency, wavelength and magnetic field will be dependent upon the liquid to be activated and the purpose for which it is to be activated. For instance, for suppression of bacteria in water a magnetic field of about 2,500 Oersteds, a predominant wavelength of about .lambda.=585 nm (a yellow-green color) and a predominant frequency of about 7.8 Hz was found to be quite suitable.

While applicant does not wish to be bound by any particular theory for the mechanism of the present invention, it is believed that the criticality of the 7.2-8.2 Hz frequency, with preferably 7.8 Hz predominant, is related to the fact that 7.8 Hz is a basic frequency of the earth's magnetic field, known as the Shuman frequency. As will be mentioned below, the activating ability of the present device is believed to be related to the earth's natural magnetic field.

The polymeric body 12 is composed of a polymer matrix in which the polymer has a linear chain length of at least 38 monomer units. Both thermosetting and thermoplastic polymers may be used. It is preferred to use polymers which possess comparatively high values of relative permittivity (dielectric constant), since that provides for easier displacement of both bonding and non-bonding electrons in these polymers by the external magnetic field and thus enhanced continuity with the electromagnetic and optical response of the incorporated materials. The polymers selected must, however, be capable of absorbing visible light radiation (v=400-800 nm); absorption of optical (visible) radiation occurs in the polymers by irreversible non-radiative loss effects. Polymers which exhibit this capability include polyurethanes, epoxies and furans. Polyurethane resins are well known polymers and are widely described in the literature. Typical descriptions can be found in Mark et al. (eds.), KIRK-OTHMER CONCISE ENCYCLOPEDIA OF CHEMICAL TECHNOLOGY, "Urethane Polymers", pp. 1211-1212 (1985); Rubin (ed.), HANDBOOK OF PLASTIC MATERIALS AND TECHNOLOGY, chs. 41 and 42, pp. 501-524 (1990); and Juran (ed.), Modern Plastics Encyclopedia 88, 64:10A, pp. 97-98, 122,124, 546 (October 1987). Similarly, epoxy polymers can be found described in many references, including the aforementioned Mark et al. (eds.), KIRK-OTHMER CONCISE ENCYCLOPEDIA OF CHEMICAL TECHNOLOGY, "Epoxy Resins", pp. 431-433 (1985); Rubin (ed.), HANDBOOK OF PLASTIC MATERIALS AND TECHNOLOGY, ch. 72, pp. 829-844 (1990); and Juran (ed.), Modern Plastics Encyclopedia 88, 64:10A, pp. 114, 516-517 (October 1987). Also, furan (or furfuyl) polymers can be found described in many references, including the aforementioned Mark et al. (eds.), KIRK-OTHMER CONCISE ENCYCLOPEDIA OF CHEMICAL TECHNOLOGY, "Furan Derivatives", pp. 542-544 (1985).

Incorporated throughout (i.e., impregnated or filled into) the body of the polymer resin matrix, in finely divided form, are a number of different materials, all selected so that the polymeric activation body containing these materials when subjected to the 2,500-25,000 Oersteds magnetic field responds to the 7.2-8.2 Hz frequencies and 400-800 nm wavelengths of the emitted light and resonates to produce electromagnetic oscillations of low frequency which enhance and intensify the normal coronal discharge of the incorporated materials within the polymeric matrix. The frequency of these resultant oscillations are generally in the range of 0.5-5.0 Hz.

The incorporated materials are selected from several classes of compounds, of which at least two classes must be dispersed in the impregnated or filled polymer, in finely divided form, and at a concentration of from 0.04-30 parts by weight per 100 parts by weight of polymer, to form the activating body. These classes of compounds are (a) metals and metal salts comprising metals, oxides, nitrates, sulfates or tartrates of Groups 1a, 3a, 4a, 5a, 5b, 6b and 8b elements; (b) silicates and carbonates; (c) inorganic acids; (d) aminoaldehydes and pyridines, and (e) analgesics. Specific examples of various mixtures of compounds will be described below. The specific mixture of compounds and their precise concentrations will vary according to the liquid to be activated and the use to which the activated liquid is subsequently to be put. It will, however, from the information herein, be well within the ability of a person of ordinary skill in the art to select the appropriate mixture of materials for the specific task intended by such person, with no more than routine minor experimentation.

It will be recognized that the selection of these materials and their concentration in the polymeric matrix will be a function of their ability to participate in the resonance and to have their normal coronal discharge energies intensified by the resonance effect in the 7.2-8.2 Hz frequency range and 400-800 nm wavelength range. The person skilled in the art will also be able readily to determine the appropriate frequency and wavelength, again with only routine experimentation, for optimum performance of the task intended for the activated liquid.

The metals and metals salts which have been found useful in this invention are the metals, oxides, nitrates, sulfates or tartrates of elements of Groups 1a, 3a, 4a, 5a, 5b, 6b and 8b, preferably aluminum, antimony, boron, chromium, iron, lead, nickel, niobium, osmium or potassium.

Also included in the polymeric matrix are a number of different minerals, which also are selected for their ability to undergo resonant intensification of their coronal discharge. These may include materials from the calcite family, quartz family and jade family, as well as from shells of marine organisms, which are primarily carbonates and silicates of elements such as calcium, copper, sodium and aluminum, as well as various forms of silica itself.

The third class of compounds useful herein are the inorganic acids. Most preferred are the weaker inorganic acids (pH .gtoreq.3.0, preferably .gtoreq.4.5), such as boric acid (pH=5.2).

The fourth class of compounds for the present invention are organic aminoaldehydes and pyridines.

Finally, the fifth class of compounds are those which have an analgesic physiological effect.

The various compounds selected from at least two of the five classes will be present in a total concentration of approximately 0.04-30 parts by weight per 100 parts by weight of the polymeric matrix. (Unless otherwise noted, all concentrations mentioned herein in the Specification and claims are stated in parts by weight of a named material per 100 parts by weight of the polymeric matrix.) It will be recognized that the various concentrations of the individual compounds can be varied to obtain the total defined concentration range as long as the resonant response of the filled polymeric body 12 to the 7.2-8.2 Hz frequency and 400-800 nm wavelength is maintained when the body is in the strong magnetic field provided by the magnet pairs.

The following examples will illustrate specific embodiments of the present invention, with the end use applications for which each is particularly preferred.

EXAMPLE 1

The polymer was a polyurethane polymer, into which were incorporated the following materials at the stated concentrations. For the mineral materials the predominate chemical in the mineral is indicated.

Material Concentration, parts

antimony potassium tartrate 1.3
chromium potassium sulfate 1.6
lead oxide 0.4
boric acid 4.2
aluminum sulfate 1.2
nickel nitrate 1.6
ferric oxide 6.2
calcite [CaCO3] 0.3
malachite [Cu2 CO3 (OH)2] 0.3
quartz [SiO2] 1.3
agate [SiO2] 0.3
carnelian [SiO2] 3.2
amethyst [SiO2] 0.2
citrine [SiO2] 1.3
nephrite or jade [Ca2 Mg5 (Si8 O22)(OH)2 2.2
opal [SiO2 .multidot. nH2 O] 0.4

Total parts 26.0

Water activated with this mixture was found excellent for use for enhancing setting of concrete and removal of bacteria from contaminated water, as well as for rejuvenation of healthy cells. There was also some indication that the water so activated could suppress growth of certain tumor cells.

EXAMPLE 2

The polymer was an epoxy polymer, into which were incorporated the following materials at the stated concentrations. For the natural materials the predominate chemical in the material is indicated.

Compound Concentration, parts

boric acid 0.12
nickel nitrate 0.14
2-dimethylaminoethanal 0.02
pyridoxine HCl 0.04
acetaminophen 0.05
Atlantic Cowrie shell [$CaCO_3$] 0.08
Total parts 0.45

Water activated with this filled polymer was found to suppress cellular and viral activity.

EXAMPLE 3

The polymer was an epoxy polymer, into which were incorporated the following materials at the stated concentrations. For the natural materials the predominate chemical in the material is indicated

Compound Concentration, parts

2-dimethylaminoethanal 0.30
pyridoxine HCl 0.06
acetaminophen 0.07
Atlantic Cowrie shell [$CaCO_3$] 0.12
niobium metal 0.002
osmium metal 0.003
Total parts 0.555

Water activated with this filled polymer was found to act as a fungicide.

Other examples of beneficial end uses of the present invention will be described below.

The device may be constructed in any convenient size. For instance, I have found that a device in which the column 10 is approximately 8" high by 1" in diameter (20.times.2.5 cm) and the reservoir 4 is approximately 61/2" high by 31/2" in diameter (16.times.9 cm), with a liquid volume of approximately 2 pints (1 liter), is quite satisfactory for making small amounts of activated liquid, especially water.

The device of the present invention is operated by activating the electrical circuit 18 by connection to a battery or adapter in socket 12. An off-on switch (not shown) can be provided if desired. The electrical circuit 18 then causes the diodes 16 to emit radiation in the 400-800 nm frequency range with a wavelength in the 7.2-8.2 nm range. Of course the specific frequency and wavelength will be determined by the values of the components on the circuit. Those skilled in the art of circuit design will be readily able to select the appropriate values for the components of a circuit equivalent to that shown in FIG. 5, in order to obtain the frequency and wavelength values desired. The flashing light emitted by the diodes 16 is directed toward the adjacent end 44 of the polymeric body 12. The response of the body 12 and its incorporated materials to the light is resonant, and under such resonance the body 12 in turn emits the aforementioned low frequency radiation from its distal end 46 toward the body of water 22 in the reservoir 4. This continues for a period of time (usually 30-45 minutes) until the proton dispersion in the water reaches an increased value in the range of about 3.4-6.2 ppm. That range has been found to indicate when treated water can be considered to be adequately activated.

Other improved water properties produced by the activation of this invention have been observed. For instance, in one experiment after 30 minutes of activation calcium content decreased by 72% and magnesium content decreased by 18%, thus reducing the hardness (combined Ca and Mg reduction) of the water by 45%. Similarly, 15 minutes of activation of alkaline water (pH=7.69) reduced the pH to 7.48, a 30% reduction alkalinity as compared to neutral water pH DEG =7.0. In another experiment a reduction of pH from 7.65 to 7.25 (62% reduction in alkalinity) was observed after 30 minutes of activation. Similarly, acidity of water is also reduced by activation. In an experiment after 15 minutes of activation the pH of acidic water was increased from 6.73 to 6.89 (a 35% increase relative to neutral water pH DEG =7.0). Finally, water activated for 30 minutes in another experiment showed a 3% increase in conductivity.

The following are examples of the beneficial and heretofore unknown effects of the activation of the water by the present process.

EXAMPLE 4
Enhanced Soy Bean Growth

Two groups of common soy beans were divided into a test group and a control group, each with about 20 beans. The test group was irrigated with activated water produced in accordance with the description of the process herein. The control group was irrigated with regular, non-activated water. Except for the activation, the waters were otherwise equivalent. Similarly, equivalent methods and times of irrigation with the test waters were used for both groups of beans. All other factors related to the growth test were maintain equivalent during the course of the experiment. After 15 days only 7 of the 20 control group beans had sprouted, and the average sprout length was about 4" (10 cm). In contrast, after the same period, 13 of the 20 test beans had sprouted, with a maximum sprout length of 9" (23 cm).

EXAMPLE 5
Enhanced Concrete Setting and Strength

Comparative tests of concrete samples made with activated water and normal water were made by a construction industry consultant. Normal concrete compositions and mixing and setting procedures were used, with the exception of the substitution of the activated water in one half of the samples. One test showed that after 7 days concrete made from the activated water had 11% higher compressive strength than the control, normal water concrete, while a subsequent 8 day test with other samples showed a 36% improvement in compressive strength in the activated sample.

EXAMPLE 6
Bacterial Reduction in Contaminated Water

Laboratory tests of bacteria-contaminated water showed that activation could reduce the level of harmful bacteria substantially. For instance, activation of contaminated rain water for 30 minutes in one test resulted in an 86% reduction in total and fecal coliforms in the water. In another test bacterial colonies in contaminated lake water were reduced by 44% after 15 minutes of activation.

EXAMPLE 7
Possible Physiological and Medical Effects

Several tests involving subjects diagnosed as having various cancers provided anecdotal evidence that ingestion of activated water in place of regular water over a 1-2 month period by such subjects reduced the debilitating effects of the cancers on the subjects' general health. Similarly, a woman suffering from apparent early menopause was reported to have resumed regular menstrual function after a two-week regimen of ingestion of activated water in place of regular water.

As noted, while applicant does not want to be bound to any specific mechanism, it is believed that the results found in experiments are consistent with a mechanism in which the activated water enhances the natural electromagnetic field of inorganic objects, which can be detected by Kirlian photography, and which is often referred to as the coronal discharge effect. The incorporation of the inorganic compounds and minerals in the polymeric matrix results in intensification of the effect by the resonance of the polymeric molecular chains to the visible (.lambda.=400-800 nm) light radiation at the 7.2-7.8 Hz frequencies while the polymer is in the high intensity magnetic field within the column 10.

It will be evident from the above that there are other embodiments of the present invention which, while not expressly set forth above, are clearly within the scope and spirit of the invention. The disclosure above is therefore to be considered exemplary only, and the actual scope of the invention is to be determined solely by the appended claims.

US8445879
COMPOSITIONS FOR PROTECTION AGAINST ELECTROMAGNETIC RADIATION EXPOSURE

The present invention provides compositions for the protection against electromagnetic radiation. The compositions include a polymeric material including a polyamide such as nylon 6 or nylon 6, 6, barium sulfate and magnesium sulfate. The polymeric material upon exposure to incident electromagnetic radiation emits subtle electromagnetic oscillations at probiotic frequencies that counter adverse effects of incident electromagnetic radiation. The polymeric material may be formed into a protective housing for electronic devices and may be formed into protective fabrics.

TECHNICAL FIELD

The present invention relates to compositions for the protection of living cells or organisms against electromagnetic radiation and more particularly to polymeric materials including a polyamide, barium sulfate and magnesium sulfate capable of preventing adverse effects associated with exposure to electromagnetic radiation and products formed therefrom.

BACKGROUND OF THE INVENTION

Electromagnetic radiation (EMR) is a self-propagating wave in space with electric and magnetic components. These components oscillate at right angles to each other. EMR is classified into types according to the frequency of the wave: these types include, in order of increasing frequency, radio waves, microwaves, terahertz radiation, infrared radiation, visible light, ultraviolet radiation, X-rays and gamma rays.

EMR is emitted by every operating electrical and electronic device. The power of EMR emission varies depending on the size and electrical strength of the device and the electrical current it carries or employs. High voltage power lines are significant emitters of EMR, and field strengths sufficiently high to have the potential for causing adverse EMR effects in humans, animals and plants. Effects can be detected hundreds of feet away. Smaller devices such as computers, television sets, microwave ovens and the like emit lesser quantities of EMR, but the effect on humans can still be significant because people are in much closer proximity to such devices.

Electromagnetic radiation carries energy and momentum, which may be imparted when it interacts with matter. Thus once struck, the matter can be affected. While the effect may vary depending on frequency and amplitude, there are biological effects that can be modulated by exposure to electromagnetic radiation. Among the effects believed to be associated with exposure to electromagnetic radiation include the disruption of hydrogen bonding. Thus, exposure to such radiation may disrupt the natural hydrogen bonding of compounds or molecules. This also affects the hydrogen bonding of water molecules. Therefore there is a particular concern regarding the exposure of areas of the body that are highly fluid, such as within the brain or blood stream. Thus while the effects of electromagnetic radiation are not widely accepted by all, it is nonetheless the desire of many prudent people to protect themselves, their animals and plants against whatever health risks might be involved by their exposure to electromagnetic radiation. Adverse human health effects that have been reported as attributable to long-term electromagnetic radiation exposure include but are not limited to occurrence of certain cancers, multiple sclerosis and autism. Adverse effects on animals have including stillbirths of young and reduction of milk production in cattle have also been reported.

Unfortunately, effective and convenient devices for shielding against EMR are not generally available. Essentially the only defense against EMR has been removal of persons, animals and plants from proximity to the EMR-emitting devices. For major emitters such as power lines or electrical substations, this has usually meant that one has had to move to a different house or to a different job location away from the power line or substation, which commonly means substantial expense and inconvenience. The adverse costs and inconveniences are similar to farmers and ranchers who must move animals and crops to locations remote from the power lines or stations. For devices such as microwave ovens or computers, it has meant that a person must sit or stand at an awkward distance from the device, which can impair the person's ability to use the device in an optimum manner.

The inventor of the present invention has proposed compositions for such protection in the past. U.S. Pat. No. 6,369,399 teaches compositions for the protection against electromagnetic radiation. The compositions include a material including an oxydated hydrocarbon emulsifier; a galvanic salt; an alkaloid; a dye or stain; and a polysaccharide. Although the compositions did demonstrate protection against electromagnetic radiation, the preparation of such a material was complex and therefore its widespread adoption was hindered. Thus there remains a need to develop compositions capable of protecting against electromagnetic radiation that are less complex and easier to adapt to a variety of uses.

SUMMARY OF THE INVENTION

The present invention addresses the need to provide compositions for the protection against electromagnetic radiation and provides related benefits. Thus it is the primary object of the present invention to provide compositions that protect against adverse effects associated with exposure to electromagnetic radiation. It is another object of the present invention to provide housings or portions thereof for electronic devices that emit electromagnetic frequencies to reduce adverse effects associated with the use of such electronic devices. It is yet another object of the present invention to provide fabrics and protective garments capable of protecting against exposure to electromagnetic radiation.

In one aspect of the present invention a polymeric material is provided to reduce adverse effects of electromagnetic radiation exposure. The polymeric material includes a polyamide such as nylon 6 or nylon 6, 6, barium sulfate and magnesium sulfate. The polymeric material upon exposure to incident electromagnetic radiation emits subtle electromagnetic oscillations at probiotic frequencies that counter or reduce adverse effects of incident electromagnetic radiation. The polymeric material may be used for the protection of humans, animals, plants, eukaryotic cells or organisms and the like. The polymeric material may be formed into a protective housing for electronic devices and may be formed into protective fabrics.

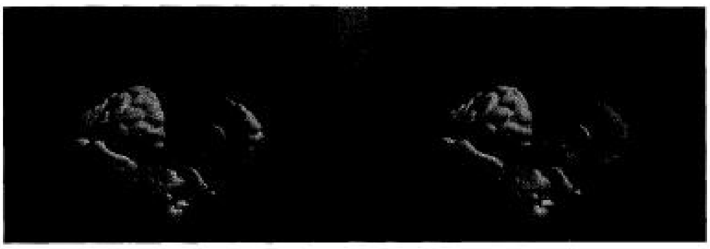
In another aspect of the present invention, a housing for an electronic device that emits electromagnetic radiation is provided. The housing includes a polymeric material including a polyamide, barium sulfate, and magnesium sulfate in an amount suitable to reduce exposure to such radiation. The housing, upon exposure to incident electromagnetic radiation, emits subtle electromagnetic oscillations at probiotic frequencies that protect the user against incident electromagnetic radiation. In some embodiments the polyamide is nylon such as nylon 6 or nylon 6, 6. Examples of electronic devices that may benefit from the housing include wireless telephones, cordless telephones, audio players such as MP3 players and others, wireless headsets, headphones, computers, televisions and the like.

In another aspect of the present invention a fabric or a protective garment constructed from fabric is provided to protect against exposure to electromagnetic radiation. The fabric includes a polymeric material including a polyamide, barium sulfate and magnesium sulfate. Fabrics of the present invention are believed to emit subtle electromagnetic oscillations at probiotic frequencies when exposed to incident electromagnetic radiation.

BRIEF DESCRIPTION OF THE FIGURES

FIG. 1A depicts a pictorial image of EIS analysis of the brain and FIGS. 1B-1C depict the corresponding data tables from EIS testing of a representative subject after exposure to electromagnetic radiation from a cellular telephone placed in close proximity to the subject's right ear, with and without a polymeric material of the present invention. As can be viewed pictorially in FIG. 1A and by consideration of the data provided in FIGS. 1B-1C, in the control (without the polymeric material of the present invention), the subject's right frontal lobe showed abnormal values along with abnormal values from the left temporal lobe, hypothalamus, and left amygdala, and were pictorially displayed as yellow, which corresponds to elevated conductivity, viscosity or acute inflammation. However, positive effects were identified when using the polymeric material of the present invention in combination with the cellular telephone (labeled TREO-MRET) at the right temporal lobe and more significantly for the right frontal lobe. Additional positive effects were detected in blood pressure, blood viscosity, ATP values and mitochondrial activity, oxygen levels, and carbon dioxide levels when using the polymeric material of the present invention.

FIGS. 2A and 2B depict heat maps of a representative “phantom head” study, which detected the intensity and localization of electromagnetic radiation upon exposure from a cellular telephone incorporating a polymer with and without the polymeric material of the present invention. Thus, the “phantom head” study provides SAR testing of representative embodiments of the present invention. FIG. 2A displays results from exposing the “phantom head” to the control cellular telephone (no polymeric material included within the test polymer) and FIG. 2B displays results from exposing the “phantom head” to a cellular phone with a polymer including 1 gram of the polymeric material (referred to as MRET) As can be viewed in FIGS. 2A and 2B, the effect of incorporating 1 gram of the polymeric material on the “phantom head” showed that the “Hot Spots” remained in the same location as without the polymeric material; however, the amplitudes decreased in 80% of the data points. About 60% of the data points were observed to have a significant decrease in SAR values in the range of 10% to 50%. Thus, the incorporation of the polymeric material in the “phantom head” study demonstrated a reduction in the majority of SAR values. 12 SAR values out of 16 meaningful SAR values in this experiment were reduced in the range of 16.5%-32.6%, and only 3 SAR values increased by 1.0%-5.6%.



Control 2 **TREO-MRET**

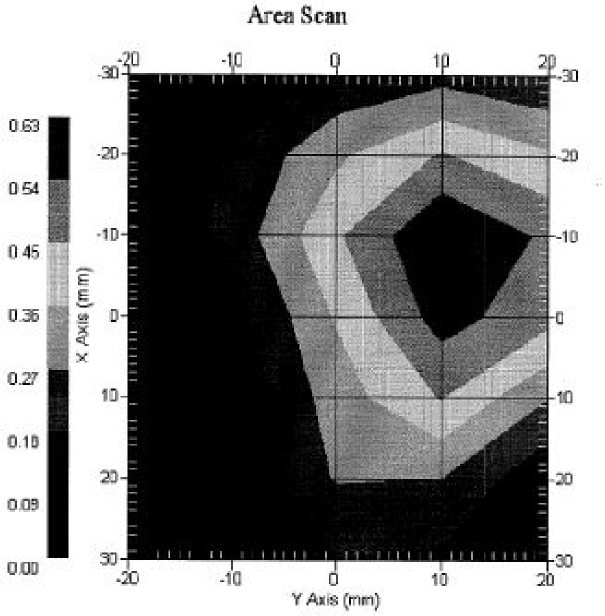
FIG. 1A

	Control 2			TREO-MRET		
	Values	Normal	Units	Values	Normal	Units
iI	28.6	17.6 - 21	uA	12.8	17.6 - 21	uA
iR	45.5	63-74.4	KOhm	100	63-74.4	KOhm
iC	21.98	13.4-15.8	10-6 S.m-1	10	13.4-15.8	10-6 S.m-1
ipH	7.358	7.31-7.35	I.U	7.319	7.31-7.35	I.U
icpH	6.992	7.00-7.04	I.U	7.031	7.00-7.04	I.U
tVO2	52.8	48-52	%	48.9	48-52	%
tO2	80.4	82-86	mm/Hg	85.1	82-86	mm/Hg
tCO2	42.8	38-42	mm/Hg	38.9	38-42	mm/Hg
ATP	57	44-45	%	47.2	44-45	%
Microcirculation						
blood pressure	13.4	11-13	cm/Hg	11.4	11-13	cm/Hg
blood viscosity	5.2	4-5	10-4Pa/s	4.2	4-5	10-4Pa/s
Interstitial viscosity	1.3	1.4-1.8	10-4Pa/s	1.7	1.4-1.8	10-4Pa/s
iWater content	17.4	15-17	%	15.4	15-17	%
Neuronal excitability: Increased				Neuronal excitability: Norms		

FIG. 1B : Zone of the Right Frontal Lobe

	Control 2			TREO-MRET		
	Values	Normal	Units	Values	Normal	Units
iI	15.2	17.6 - 21	uA	14.6	17.6 - 21	uA
iR	87.2	63-74.4	KOhm	90.40	63-74.4	KOhm
iC	11.47	13.4-15.8	10-6 S.m-1	11.06	13.4-15.8	10-6 S.m-1
ipH	7.325	7.31-7.35	I.U	7.323	7.31-7.35	I.U
icpH	7.025	7.00-7.04	I.U	7.027	7.00-7.04	I.U
tVO2	49.5	48-52	%	49.3	48-52	%
tO2	84.5	82-86	mm/Hg	84.7	82-86	mm/Hg
tCO2	39.5	38-42	mm/Hg	39.3	38-42	mm/Hg
ATP	48.8	44-45	%	48.2	44-45	%
Microcirculation						
blood pressure	11.8	11-13	cm/Hg	11.6	11-13	cm/Hg
blood viscosity	4.4	4-5	10-4Pa/s	4.3	4-5	10-4Pa/s
Interstitial viscosity	1.6	1.4-1.8	10-4Pa/s	1.7	1.4-1.8	10-4Pa/s
iWater content	15.8	15-17	%	15.6	15-17	%
Neuronal excitability: Norms				Neuronal excitability: Norms		

FIG. 1C : Right Temporal Zone

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1 gram SAR value      : 0.573 W/kg
10 gram SAR value     : 0.321 W/kg
Area Scan Peak SAR    : 0.628 W/kg
Zoom Scan Peak SAR    : 0.920 W/kg
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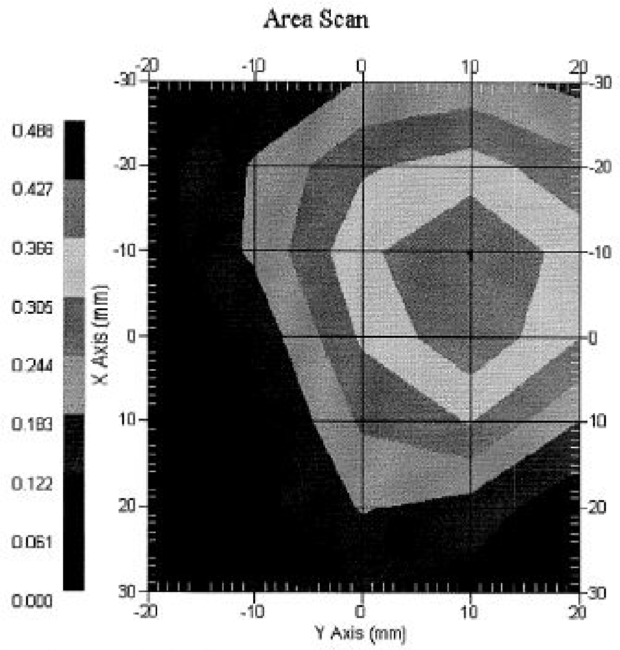
FIG. 2A : Phantom Head Without MRET

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1 gram SAR value      : 0.391 W/kg
10 gram SAR value     : 0.231 W/kg
Area Scan Peak SAR    : 0.429 W/kg
Zoom Scan Peak SAR    : 0.620 W/kg
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FIG. 2B: Phantom Head with MRET

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

As an introduction, the present invention provides polymeric materials and compositions formed therefrom to protect against exposure to electromagnetic radiation, such as electromagnetic frequencies emitted from electronic devices, power lines and the like. Compositions provided herein have been tested for their ability to protect against electromagnetic radiation by measuring a variety of biological indicators associated with brain chemistry in the interstitial fluid and have demonstrated the ability to reduce or counteract abnormal shifts identified upon exposure to electromagnetic radiation. In view of the present disclosure, one skilled in the art to which the present invention belongs will be able to provide a variety of protective housings, structures, fabrics and the like that provide as an element, a polymeric material including a polyamide in combination with barium sulfate and magnesium sulfate. Thus the polymeric compositions of the present invention can be adapted for use as a protective barrier against exposure to electromagnetic radiation; as protective housings or portions thereof for electronic devices that emit frequencies that adversely effect biological systems; and can be woven into fabrics for production of protective garments. The following description provides various preferred embodiments and uses for the polymeric material described herein. The various embodiments are intended to be nonlimiting since the polymeric materials may be varied or adapted for many protective uses.

In one aspect of the present invention a polymeric material is provided to reduce adverse effects of electromagnetic radiation exposure. The polymeric material includes a polyamide such as nylon 6 or nylon 6, 6, barium sulfate and magnesium sulfate. Though nonlimiting, the polymeric material of the present invention is believed to emit subtle electromagnetic oscillations at probiotic frequencies that counter adverse effects of incident electromagnetic radiation. The polymeric material has been demonstrated as useful in reducing exposure to electromagnetic radiation and can be thus be provide to protect humans, animals, eukaryotic cells, plants and the like.

Referring to the new combination of compounds and the beneficial results described herein, the present invention utilizes a polymeric material including a polyamide, barium sulfate and magnesium sulfate. The polymeric material is capable of reducing the effects of exposure from electronic devices and can be incorporated into a variety of housings, fabrics and protective structures. Though nonlimiting, the preferred polyamide is nylon-6 or nylon-6, 6. In the preferred embodiment the ratio by weight of the polymeric material is about ten parts by weight polyamide, about two parts by weight barium sulfate, and about one part by weight magnesium sulfate. However other embodiments include variations on these ratios. In some embodiments, the amount of one or more of the compounds varies by about 10%. In another embodiment, the amount of one or more of the compounds varies by about 15%. In still other embodiments, the amount of one or more of the compounds varies by about 20%. Thus the ratios provided herein correspond to preferred embodiments found during development but are not intended to limit the scope of the present invention. One may determine the particular desired ratio by varying ratios of each compound, forming a protective structure such as a housing or fabric and testing the ability to protect against electromagnetic radiation. In some embodiments, electro interstitial scan (EIS) analysis can be used to test for protective properties. In alternative embodiments a “phantom head” or “phantom body” study may be used to assess affects against electromagnetic radiation.

The polyamide provides the primary polymer backbone to which the barium sulfate and magnesium sulfate interact or bind to form the polymeric material of the present invention. Polyamides are monomers of amides linked by peptide bonds. Although some polyamides occur naturally, such as those found in wool and silk, others are formed artificially. Polyamide polymers are frequently produced by condensation reactions between an amino group on one polymer and a carboxylic acid or acid chloride group on the opposing polymer. These reactions typically eliminate water, ammonia or hydrogen chloride thereby resulting in a polyamide chain. In the preferred embodiment of the present invention, the polyamide provided in the polymeric material is a nylon. Nylons are some of the most common polymers used as synthetic fibers and thus compositions of the present invention may be provided as substitutions for nylons for the preparation of fibers if the protective features of the present invention are desired. Nylons are commonly used in the clothing industry and the plastics industry. Most preferably, the polyamide of the present invention is nylon 6, 6 or nylon 6.

Nylon-6, 6, which is also referred to those skilled in the present art as polyamide 6-6 or PA66, is a semicrystalline polyamide commonly used in fiber applications such as carpeting, clothing and tire cord. It is also used as an engineering material in bearings and gears due to its good abrasion resistance and self-lubricating properties. Nylon-6, 6 includes repeating units of the formula C12H22O2N, has a molecular weight of about 226.32 g/mol and can be formed by condensation reactions of a diamine and a dicarboxylic acid or acid chloride, such as hexamethylene diamine and adipoyl chloride, so that peptide bonds form at both ends of the monomers. The numerical indications within nylons indicate the number of carbons donated by the monomers; the diamine first and the diacid second. Thus nylon-6, 6, refers to the donation of 6 carbons from the diamine and 6 carbons from the diacid to form the polymer chain and is a repeating unit of alternating monomers, one after another. The polymer reaction is typically performed in an aqueous solvent.

Nylon-6, also referred to as polyamide 6 or PA6, is a semicrystalline polyamide used most commonly in tire cord. Nylon-6 has a lower melting temperature compared to nylon 6, 6 and in general is believed to have better affinity towards dyes, tends to be more elastic and tends to be more resistant to weathering. Thus in some instances one may prefer to use nylon-6 depending on the resulting material, housing, structure, fabric and the like. The determination of which to use is well within the ability of one skilled in the present art. Referring back to the compound, nylon-6 is repeating unit of $C6H11ON$ with a molecular weight per unit of 113.16 g/mol. Nylon-6 is not a condensation polymer but instead is formed by a ring-opening polymerization reaction of the monomer caprolactam. Like nylon 6, 6, the technique for preparing nylon 6 is well known in the art. Nylon-6 was developed by DuPont and may be obtained from a variety of sources such as Sigma-Alderich (St. Louis, Mo.).

Barium sulfate is often provided as a fine white powder and has the chemical formula $BaSO4$. Generally it is poorly soluble in water and other traditional solvents but is soluble in concentrated sulfuric acid. Barium sulfate is commercially available through a variety of vendors including Sigma-Aldrich (St. Louis, Mo.). The preferred ratio of barium sulfate to polyamide is 20 grams barium sulfate to 100 grams nylon 6 or nylon 6, 6. The preferred embodiment is nonlimiting and thus more or less barium sulfate may also be used as long as protective properties are maintained. In one embodiment the ratio of barium sulfate to polyamide is about 20-25 grams of barium sulfate per 100 grams of polyamide. In another embodiment the ratio of barium sulfate to polyamide is about 25-30 grams of barium sulfate per 100 grams of polyamide. In another embodiment the ratio of barium sulfate to polyamide is about 15-20 grams per 100 grams of polyamide. In another embodiment the ratio of barium sulfate to polyamide is about 10-15 grams per 100 grams of polyamide. Thus the ratios are intended to provide various useful ranges, which may be considered by one skilled in the art for the particular use, and are intended to be nonlimiting.

Magnesium sulfate is often provided as transparent crystals or a white powder and has the chemical formula $MgSO4$. It can also be found as a heptahydrate, $MgSO4.7H2O$. Magnesium sulfate is available through a variety of vendors including Sigma-Alderich (St. Louis, Mo.). The preferred ratio of magnesium sulfate to polyamide is 10 grams per 100 grams polyamide. In another embodiment the ratio of magnesium sulfate to polyamide is 10-15 grams per 100 grams polyamide. In another embodiment the ratio of magnesium sulfate to polyamide is 15-20 grams per 100 grams polyamide. In another embodiment the ratio of magnesium sulfate to polyamide is 7-10 grams per 100 grams polyamide. In another embodiment the ratio of magnesium sulfate to polyamide is 3-7 grams per 100 grams polyamide. Thus the ratios provided herein are useful as guidance for the formation of protective materials, housings, structures and fabrics but are intended as nonlimiting with respect to scope of the present invention.

Compositions according to the present invention are formed by preparing the protective polymeric material then casting, molding or manipulating the material to form the desired product. In general, the polyamide is formed into a polymer chain then the barium sulfate and magnesium sulfate are added to the chain. The polyamide polymer may be purchased as single monomers or polymers and may be polymerized using chemistries that correspond to the particular polyamide or desired polymer. In one example, a condensation reaction is used to form a polyamide including nylon-6, 6. In another example ring opening polymerization is performed using caprolactam to form a nylon-6 polymer. After forming a polymer backbone, conventional chemistries can be used to form ester linkages or covalent bonds between the polymer backbone and the barium sulfate or magnesium sulfate. Once combined and allowed to react, a polymer incorporating the polyamide, barium sulfate and magnesium sulfate is formed. The resulting polymeric material is viscous slurry, which can be further processed to form desired protective housings, structures, fabrics and the like. As a nonlimiting exemplary embodiment, formation of the polymeric material may include mixing magnesium sulfate, barium sulfate and the polyamide at ratios provided herein and adding the mixture to a compounding machine. The operation of compounding machines for the preparation of polymeric materials is well known to those skilled in the present art and is intended to be nonlimiting. The mixture is heated to melt the polyamide and to absorb or combine with the magnesium sulfate and barium sulfate. Temperatures may vary depending on the melting temperature of the polyamide and may be about 250 degrees C. The mixture can then be forced through holes for the production of thread-like materials which can be cooled and cut into desired sized threads, pieces, granules and the like. Once cut the product may be collected for desired applications. The polymeric material may be further processed or formed as desired.

In addition to the magnesium sulfate and barium sulfate, the polymeric material may also include compounds that affect the characteristics of the resulting composition according to the desires of the user. In some embodiments, one or more dyes are added to enhance or alter the coloring of the composition. In other embodiments, fillers are added to increase or decrease the density of the resulting polymeric matrix. In still other embodiments, compositions are coated with a coating to enhance sheen or reflective properties.

As will become apparent to one skilled in the art to which the present invention belongs, the polymeric materials of the present invention may be cast or molded to form a variety of shapes and therefore a variety of protective housings. Thus it is another aspect of the present invention to provide a housing for an electronic device that is capable of protecting a user against electromagnetic radiation emitted from the electronic device. The housing includes a polyamide, such as nylon 6 or nylon 6, 6; barium sulfate; and magnesium sulfate. It is believe that the housing upon exposure to incident electromagnetic radiation emits subtle electromagnetic oscillations at probiotic frequencies that protect the user against the incident electromagnetic radiation. Casting and molding techniques are well are known in the plastic and polymer arts and are incorporated herein. Thus although the present invention provides increased protection against electromagnetic radiation, features such as viscosity and molding characteristics remain largely unchanged allowing conventional casting and molding techniques to be utilized. As with many nylons, the polymeric material of the present invention may also be provided as fibers or in a fibrous configuration for the preparation or weaving of protective fabrics. Thus one skilled in the art would readily acknowledge the present invention is not limited by a composition's size or configuration as the polymeric material may be formed in any suitable size or shape using known casting or molding techniques.

The polymeric material of the present invention has particular utility as a protective housing for electronic devices. Many electronic devices emit electronic radiation. Thus in some preferred embodiments of the present invention the polymeric material is formed into a rigid housing to house an electronic device. It is believed that by encasing the electronics in a housing according to the present invention, the effect of frequencies generated by such devices on humans, plants and the like will be minimized. It is believed that the frequencies emitted from the electronic device will act as a carrier allowing the delivery of the subtle low frequencies emitted from the polymeric material to occur in combination with the harmful frequencies generated from the electrical device. Thus by delivering the protective frequency in combination with the harmful frequency, the overall effect from the electrical device is reduced or minimized. In some embodiments the polymeric material does not make up the entire housing but instead only a portion of the housing. In these embodiments, the polymeric material may be used in the front, back, top, bottom, side or any portion thereof.

The examples demonstrate beneficial features of the present invention as a protective housing. More specifically, the examples describe experiments conducted where harmful effects were reduced or minimized by adapting an electronic device such as a cellular telephone with a polymeric material according to the present invention. The examples also demonstrate the ordinary use of traditionally housed cellular telephones effect the chemistry in the brain. Particular abnormal activity was found in the frontal and temporal lobes. In addition, abnormal shifts in minerals and hormones were also observed. However, when the housing was adapted with a polymeric material according to the present invention, activity in the frontal and temporal lobe was deemed normal or more normal than without. Also, the abnormal shifts identified in minerals and hormones were not observed when using a housing according to the present invention. Thus, the studies demonstrate through EIS analysis, that a polymeric material including a polyamide, barium sulfate and magenesium sulfate is effective at protecting humans against electromagnetic radiation.

Housings of the present invention are not limited to cellular telephones but instead are intended for use with a variety of electronic devices that emit EMR, The polymeric material of the present invention may be formed into a housing or portion thereof for a number of household appliances including refrigerators, microwaves, blenders, coffeemakers, food processors and the like. Moreover the housings may be used for entertainment devices such as televisions, stereos, portable audio players such as MP3 players, and computers. Housings of the present invention may also be used for electronic devices such as telephones, cordless telephones, headphones, wireless headphones and the like. Thus any electrical device that emits a frequency similar to any of the devices provided herein may be adapted with a housing according to the present invention. In some embodiments, the housing of the present invention is provided to protect against frequencies in the MHz range. In other embodiments, housings according to the present invention are provided to protect against frequencies in the GHz range. If testing is desired, electro interstitial scanning is one method that may be used to detect changes in biological state after exposure to the electronic device with and without the protective housing. Another method is to test the protective capabilities using a “phantom head” or “phantom body” that mimics the conductivity or dielectric constant of the exposed region.

The polymeric material of the present invention also provides a particular utility as a fabric in preparation of protective garments and the like. If exposed to electromagnetic radiation, the protective garment may help reduce or minimize adverse effects associated with exposure. Examples of particular garments are any known in the art and may include hats, jackets, shirts or blouses, pants, gloves, boots or shoes and the like. The garments may have particular utility in industries where electronic device manufacturing or testing occurs. It is therefore another aspect of the present invention to provide a fabric for the protection of a user against exposure to electromagnetic radiation. The fabric includes a polyamide, such as nylon-6 or nylon-6, 6; barium sulfate; and magnesium sulfate. The fabrics provided herein, upon exposure to incident electromagnetic radiation are believed to emit subtle electromagnetic oscillations at probiotic frequencies that protect the user against the incident electromagnetic radiation. Since the present invention retains many of the characteristics as conventional nylons, the methods used to form fibers and fabrics from nylons may also be used with the present invention. In particular the methods of forming fibers and fabrics from nylon-6, 6 and nylon-6 can be used with the present invention. As general guidance, once the polymer material including the polyamide, barium sulfate and magnesium sulfate is formed, the material may be extruded into fibers through pores, such as those provide in an industrial spinneret. During extrusion the individual polymer chains tend to align because of viscous flow. If subjected to cold drawing afterwards, the fibers align further, increasing their crystallinity, and the material acquires additional tensile strength. In practice, fibers incorporating the polymeric material of the present invention for fabrics are most likely to be drawn using heated rolls at high speeds. The resulting fibers may then be woven into fabric and thus used the preparation of garments having protective features.

The preferred embodiments have described a variety of compositions useful for the protection against electromagnetic radiation. Though nonlimiting, the polymeric material of the present invention is believed to oscillate upon incident radiation. The oscillation is believed to generate a subtle, low frequency, non-coherent electromagnetic field (random field) that can affect the hydrogen lattice of the molecular structure of water and thus modify the electrodynamic properties of water. The low frequency oscillation is of a frequency lower than the incident radiation. It is believed these low frequency oscillations emitted from the polymeric material can be carried by higher frequencies generated by electronic devices, without adverse interaction and thus can be delivered in combination with the harmful frequency for desired protection.

The biological effect of exposure to electromagnetic radiation is not fully understood however it is believed the electromagnetic radiation affects the water molecules and hydrogen bonds within the body. It is believed the oscillations generated by the compositions of the present invention protect against such effect by causing the reorganization of the water clathrate structures. This reorganization is believed to be beneficial and help prevent adverse reactions from exposure to the higher frequencies emitted from electronic devices.

It will be evident to one skilled in the art that there are numerous embodiments of the present invention that are not expressly described herein, but which are clearly within the scope and spirit of the invention. The description is provided to demonstrate a variety of preferred embodiments only.

EXAMPLES

Example 1

Electro Interstitial Scan (EIS) Comparison Between Exposure to Commercially Available Cellular Telephone (RF Phone) and Cellular Telephone with MRET Housing Among Human Subjects

EIS analysis was conducted at an independent testing facility to assess the biological effects of electromagnetic radiation from a cellular telephone on the human body and whether effects would differ if using a cellular telephone housed in a polymeric material of the present invention (herein referred to as MRET). In summary it was found that exposure to the cellular telephone without MRET caused significant shifts in brain chemistry within the right frontal and temporal lobe; whereas exposure to the cellular telephone with MRET did not show the adverse shifts. A representative example is provided as FIGS. 1A-1C. In addition levels of insulin, ACTH and TSH were also believed to be adversely effected after exposure to the cellular telephone without MRET. The adverse shifts in brain chemistry due to the exposure to the cellular telephone worsened over time. Although initial effects were difficult to detect, after 20 minutes from halting exposure, the biological effects continued to deteriorate, which suggest the effects from cellular phone usage continue beyond the initial exposure. The majority of the deleterious effects were lessened or mediated after use with the cellular telephone using MRET suggesting MRET plays an important role in preventing or correcting adverse effects from exposure to electromagnetic radiation.

Materials and Methods

The experiments detected changes in brain chemistry using Eletro Interstitial Scanning (EIS). Subjects were scanned at four time points. The first scan was conducted before any exposure. The second scan was conducted after 5 minutes of exposure to a TREO 650 cellular telephone (referred to herein as TREO RF) which operates at frequencies of about 1851.25-1908.75 MHz (PCS and CDMA frequencies). The TREO RF was placed next to the individual's right ear. The subject was then scanned after waiting 20 minutes. A TREO 650 cellular telephone adapted with a housing including the polymeric material of the present invention (referred to as TREO-MRET) was then used. The last scan occurred after 20 minutes of exposure to TREO 650 MRET.

EIS gives a comprehensive overview of the reactions of the body. 3D models of the full body and various different parts of the body are created based on the electro interstitial gram (EIG). The models are color coded to indicate where areas of imbalance are hyper-functioning or hypo-functioning. In essence, EIS provides a functional assessment of the main organs, with report screens that show interstitial biochemical values and an evaluation of body composition including lean mass, fat mass and hydration data. Measurements are further extrapolated to provide report screens with hormone, electrolyte, neurotransmitter and oxidative stress analyses. More specifically, the EIS system operates as a biosensor, which analyzes the interstitial fluid locally in vivo by application of a D.C. current between cutaneous zones using electrodes. In use, the EIS introduces electric signals of low intensity (1.28V D.C.) through the human body via 6 electrodes. This is painless and has no negative effects to the patient. About 22 measurements are taken. The scanning results are recorded by EIS software, which analyzes and interprets the test results and produces a variety of informative models, graphs and data for interpretation by a medical practitioner.

Results from Subject 1: 42 yr Old Female

Initial EIS showed reduced conductivity (hypo-activity) in the right and left frontal lobes, intra-cranial vessels and right temporal lobe before exposure. This was believed to be stress-related. Thus the effect of 5 minute exposure to the TREO RF was initially not conclusive. Further analysis showed endogenous chatecholamines sharply decreased after exposure to TREO RF, which corresponds to low adrenal medullary hormone and thus TREO RF appears to adversely affect neurotransmitter activity. Dopamine levels after TREO RF also dropped.

Despite abnormal values for frontal lobes, temporal lobes, intra-cranial vessels and amygdalas from measurements taken after 20 minutes from the earlier scan, positive effects after TREO-MRET exposure included: decreased cranial blood pressure; decreased cranial blood viscosity, decreased carbon dioxide levels, and decreased intra-cranial blood pressure. The values, which were statistically below the norm for the general population, were deemed positive in proportion to the subject's low values overall. An increase in phosphorous and a decrease in calcium was detected suggesting mineral balance may be slightly affected by the TREO-MRET however no shift in hormone levels was identified.

Results from Subject 2: 48 yr Old Female

The initial scan showed reduced oxygen levels and increased carbon dioxide levels believed to be associated with a fast paced lifestyle. Immediately after exposure to TREO RF, reductions in elevated values for the frontal lobe were identified. Blood pressure, H2O content, and ATP levels were adversely increased in the right temporal lobe. These adverse effects are believed to be associated with exposure to TREO RF.

After waiting 20 minutes and before exposure to TREO-MRET, EIS showed significant abnormal values in the right temporal lobe, left temporal lobe, hypothalamus and left amygdala. Abnormal values in insulin, ACTH and TSH were also identified. In addition, measurements of the vertebral column suggesting nerve supply worsened. It is believed the negative effects associated with TREO RF continued over time.

After exposure to the TREO-MRET, positive effects were identified for blood pressure, blood viscosity, ATP values and mitochondrial activity, oxygen levels and carbon dioxide levels. In addition, positive effects were detected in values of insulin, ACTH, cortisol, thyroid hormone and TSH. Improvement in the vertebrae was also identified.

Results from Subject 3: 42 yr Old Male

The initial scan showed abnormal levels in the right frontal lobe prior to testing. In addition, elevated intra-cranial blood pressure and hyperactivity of the temporal lobes was also shown. Because of the initial heightened values it was difficult to assess whether some of the changes in brain chemistry immediately after 5 minute exposure to the TREO RF occurred.

After waiting 20 minutes and before exposure to TREO-MRET, EIS showed abnormal values in potassium, ACTH, insulin and cortisol. Abnormally high values were observed for dopamine. Abnormally low values were observed for catecholamine and serotonin. After exposure to TREO-MRET, insulin levels were improved but still below normal. Levels of cellular potassium, ACTH, catecholamine, dopamine and serotinin were normal after exposure to TREO-MRET.

Example 2

Detection of Amplitude of Electromagnetic Radiation Emitted from a Cellular Telephone with and without the Polymeric Material and its Effect on a "Phantom Head"

The present example demonstrates the ability of the polymeric material of the present invention to reduce the effects of electromagnetic radiation on a "phantom head," which mimics the human head muscle and brain tissue composition. The intensity and localization of electromagnetic intensity was measured. The results showed a significant decrease in electromagnetic radiation intensity but no significant shift in localization indicating the polymeric material successfully reduces potential harmful effects on brain chemistry due to electromagnetic exposure. The study was performed using a variety of wireless mobile phones and is described in more detail below.

To assess the protective effects of using the polymeric material of the present invention against exposure to radiation, a "phantom head" was formed to mimic the brain and muscle composition within the head. The "phantom head" was produced using a combination of hydroxyethylcellulose (FEC) gelling agent and saline solution. The mixture was calibrated to obtain proper dielectric constant (permittivity) and conductivity of the simulated tissue. The dielectric constant at about 835 MHz was about 40 and at about 1900 MHz, was about 39. The conductivity at about 835 MHz was about 0.88 mho/m, and the conductivity at about 1900 MHz was about 1.43 mho/m. An APREL Laboratories ALSAS system with a dosimetric E-field probe E-020 was used for measurements. The dipole was oriented parallel to the body axis. The investigation was conducted on cellular phones including Sanyo Model PM-8200(S), Kyocera Wireless Model 2325 and LG Model VX6000.

Wireless mobile phones were evaluated in this experiment for localized specific absorption rate (SAR) for controlled environment/occupational exposure limits specified in ANSI/EEE Std. C95.1-1992 and had been tested in accordance with the measurement procedures specified in IEEE 1528-2003 and OET Bulletin 65. The RF phone was placed into simulated transmit mode using the manufacturer's test codes. Such test signals offer a consistent means for SAR and are recommended for evaluating of SAR data. Each SAR measurement was taken with a fully charged battery. In order to verify that each phone was tested at full power, conducted output power measurements were performed before and after each SAR test to confirm the output power. SAR measurement results were obtained, analyzed and compared to provide the scientific conclusion of the experiment.

The protective polymers were prepared with and without the polymeric material according to the present invention. In the experimental polymer, about 1 gram of polymeric material was used (referred to as MRET polymeric material), whereas the control contained no MRET polymeric material. The resulting polymers were placed in an exposed jack then positioned next to the phantom head for measurement. Control and the experimental conditions were compared to determine differences in electromagnetic radiation intensity and localization of signal. The results were displayed as a heat map, which demonstrates the positioning and intensity of signal as hot spots and cool spots.

Referring to FIGS. 2A and 2B, the analysis of "Hot Spot" Area Scan data provides evidence that the incorporation of 1 gram of MRET polymeric material in the protective polymer for the RF phones affects the amplitude of emission but does not change location of the "Hot Spot". More specifically, the incorporation of 1 gram of MRET polymeric material protected the "phantom head" against the intensity of the electromagnetic radiation, while showing that the signal remained in substantially the same location as without the MRET polymeric material. Thus intensity was largely affected, whereas localization was not. The intensity of electromagnetic radiation when incorporating the MRET polymeric material decreased the amplitude in 80% of the data points. 60% of the data points were observed to have a significant decrease in SAR values in the range of 10% to 50%. Thus the incorporation of the MRET polymeric material in the "phantom head" leads to the reduction of the majority of SAR values. 12 SAR values out of 16 meaningful SAR values in this experiment were reduced in the range of 16.5%-32.6%, and only 3 SAR values increased by 1.0%-5.6%.