CLAIMS

What is claimed is:

1. A potential energy modification apparatus, wherein the potential energy modification apparatus comprises:

a body force generating apparatus;

a first material, wherein the body force generating apparatus can be configured to induce a region of accumulation of charge within the first material, wherein the first material is electrically conducting, and wherein the first material comprises a first point and a second point; and

a second material, wherein the body force generating apparatus can be configured to induce a region of accumulation of charge within the second material, wherein the second material is electrically conducting, and wherein the second material comprises a first point and a second point,

wherein the second point in the second material is electrically coupled to the second point in the first material, and

wherein a relevant property of the second material is different relative to same property in the first material

2. The apparatus of claim 1, wherein the second point in the first material lies within a region of accumulation of charge

3. The apparatus of claim 1, wherein the second point in the second material lies within a region of accumulation of charge

4. The apparatus of claim 1, wherein the second point in the second material lies within a neutrally charged region

5. The apparatus of claim 1, wherein the first point in the second material is electrically coupled to the first point in the first material

6. The apparatus of claim 1, wherein an electrical coupling comprises an electrical conductor

7. The apparatus of claim 1, wherein an electrical coupling comprises the transfer of electrical power between the two specified points

8. The apparatus of claim 1, wherein the change in the potential energy of a mobile charge carrier moving through at least a portion of the region of accumulation of charge between the first point in the first material and the second point in the first material is larger in magnitude than the change in the potential energy of a mobile charge carrier moving through at least a portion of the region of accumulation of charge between the first point in the second material and the second point in the second material

9. The apparatus of claim 1, wherein the thickness of the region of accumulation of charge within the second material is smaller than the thickness of the region of accumulation of charge within the first material

10. The apparatus of claim 1, wherein at least a portion of the first material is electrically insulated from a second material

11. The apparatus of claim 1, wherein the body force generating apparatus comprises an electric field generating apparatus, wherein at least a portion of the body force is electric in nature

12. The apparatus of claim 1, wherein the body force generating apparatus comprises a gravitational field generating apparatus, and wherein at least a portion of the body force is gravitational in nature

13. The apparatus of claim 1, wherein the body force generating apparatus comprises a magnetic field generating apparatus, and wherein at least a portion of the body force is magnetic in nature

14. The apparatus of claim 1, wherein the body force generating apparatus comprises an electromagnetic field generating apparatus, and wherein at least a portion of the body force is electromagnetic in nature

15. The apparatus of claim 1, wherein the body force generating apparatus comprises an accelerating apparatus, wherein the accelerating apparatus is configured to accelerate the first material or the second material in an inertial frame, and wherein at least a portion of the body force is inertial in nature

16. The apparatus of claim 1, wherein the mobile charge carriers in the first material or second material comprise electrons

17. The apparatus of claim 1, wherein the mobile charge carriers in the first material or second material comprise positively or negatively charged ions

18. The apparatus of claim 1, wherein the first material or second material comprises a metal

19. The apparatus of claim 1, wherein the first material or second material comprises a semiconductor

20. The apparatus of claim 1, wherein the relevant properties comprise the nominal number of mobile charge carriers per unit volume within the material

21. The apparatus of claim 1, wherein the relevant properties comprise the nominal electrical conductivity within the material

22. The apparatus of claim 1, wherein the relevant properties comprise the absolute permittivity within the material

23. The apparatus of claim 1, wherein the relevant properties comprise the number of atoms per unit volume

24. The apparatus of claim 1, wherein the relevant properties comprise the number of donor atoms or acceptor atoms in a doped semiconductor per unit volume

25. The apparatus of claim 1, wherein the relevant properties comprise the temperature of the material

26. The apparatus of claim 1, wherein the relevant properties comprise the average charge carried by a mobile charge carrier within the material

27. The apparatus of claim 1, wherein relevant properties comprise the electric field strength at a boundary of the region of accumulation of charge within a material

28. The apparatus of claim 1, wherein relevant properties comprise the average effective mass of a mobile charge carrier within a material

29. The apparatus of claim 1, wherein an electrical coupling comprises an electrical load

30. The apparatus of claim 1, wherein an electrical coupling comprises a heat exchanger

31. The apparatus of claim 29, wherein the electrical load comprises a computer or microprocessor, an electrical switch, an electrical motor, or an antenna

32. The apparatus of claim 30, wherein the heat exchanger is configured to deliver heat from the environment to mobile charge carriers

33. The apparatus of claim 1, wherein the average potential energy of mobile charge carrier at the first point in the first material is larger than the average potential energy of mobile charge carrier at the first point in the second material

34. The apparatus of claim 5, wherein the apparatus can be configured to comprise a closed electrical circuit, wherein mobile charge carriers can flow from the first point in the second material to the second point in the second material, and via the first electrical coupling from the second point in the second material to the second point in the first material, and from the second point in the first material to the first point in the first material, and via the second electrical coupling from the first point in the first material to the first point in the second material.

35. A system comprising two or more of the potential energy modification apparatuses of claim 1

36. The system of claim 35, wherein a first potential energy modification apparatus is electrically coupled in series with a second potential energy modification apparatus

37. The system of claim 35, wherein a first potential energy modification apparatus is electrically coupled in parallel with a second potential energy modification apparatus

38. A method of potential energy modification, comprising: providing a potential energy modification apparatus of claim 1

39. A method of potential energy modification, comprising:

providing a body force generating apparatus;

providing a first material, wherein the first material is electrically conducting, and wherein the first material comprises a first point and a second point;

providing a second material, wherein the second material is electrically conducting, and wherein the first material comprises a first point and a second point;

employing the body force generating apparatus to induce a region of accumulation of charge at least within the first material;

electrically coupling the second point in the second material to the second point in the first material; and

configuring a relevant property of the second material to be different relative to same property in the first material

40. The method of claim 39, wherein the method further comprises electrically coupling the first point in the second material to the first point in the first material