comprising a collapsible body of an insulating or weakly conductive material containing interstices that contain granules of an insulating or weakly conductive polymer containing particles of at least one strongly conductive material selected from the group consisting of metals, alloys and reduced metal oxides, said granules having such a loading of said strongly conductive material that said granules themselves have a first level of electrical conductance when quiescent and a second level of conductance upon change of mechanical or electrical stress applied to said granules.

2. A variable electrical conductance composite according to claim **1** in which the collapsible body comprises at least one material selected from the group consisting of foam, net, gauze, mat and cloth.

3. A variable electrical conductance composite according to claim **2** which is the product of loading cells of an open-cell polymer foam with particles of the strongly conductive material and collapsing the loaded foam by a factor which is in the range 2 to 8 by volume but leaves it capable of further compression.

4. A variable electrical conductance composite according to claim **1** wherein the concentration of the strongly conductive material in said collapsible body is graded.

5. A variable electrical conductance composite according to claim **1** in which the collapsible body is weakly conductive and formed from a polymer containing finely divided carbon.

6. A variable electrical conductance composite according to claim **1** in a sheet-like configuration of thickness 0.1 mm to 5.0 mm.

7. A variable electrical conductance composite according to claim **1** in which the granules comprise the particles mixed with a non-conductive elastomer.

8. A variable electrical conductance composite according to claim **7** in which the volumetric ratio of particles to elastomer within the granules is at least 0.1:1.

9. A variable electrical conductance composite according to claim **1** in which the particles have a surface texture comprising at least one of a spiky surface texture and a dendritic surface texture and/or a filamentary.

10. A variable electrical conductance composite according to claim **9** in which the particles comprise carbonyl-derived metallic nickel.

11. A variable electrical conductance composite according to claim **7** in which the elastomer is a silicone rubber.

12. A variable electrical conductance composite according to claim **7** in which the ingredient volumetric ratio of particles to elastomer is at least 1:1, the particles being mixed with the elastomer in a controlled manner, in a mixing regime avoiding destructive shear forces, whereby the particles are dispersed within and encapsulated by the elastomer and may remain structurally intact, the nature and concentration of the particles being such that the electrical resistivity of the granules is variable in response to compression or extension forces and decreases from a given value in the quiescent state towards a value substantially equal to that of the conductor bridges of the particles when subjected to either compression or extension forces, the granules further comprising a modifier which, on release of said forces, accelerates the elastic return of the granules to their quiescent state.

13. A variable electrical conductance composite according to claim **6** including a collapsible layer of an insulating or weakly conductive material containing interstices that are accessible to mobile fluid and which are free of said particles.

14. A variable electrical conductance composite according to claim **1** wherein said interstices are accessible to mobile fluid.

15. A variable electrical conductance composite according to claim **1** in which the particles have a filamentary structure.

16. A variable resistor having a first level of electrical conductance when quiescent and a second level of conductance upon change of mechanical or electrical stress applied to said resistor, said resistor comprising externally connectable electrodes bridged by a collapsible body of an insulating or weakly conductive material containing interstices that contain granules of an insulating or weakly conductive polymer containing particles of at least one strongly conductive material selected from the group consisting of metals, alloys and reduced metal oxides, said granules having such a loading of said strongly conductive material that said granules themselves have a first level of electrical conductance when quiescent and a second level of conductance upon change of mechanical or electrical stress applied to said granules.

17. A variable resistor according to claim **16** including means effective to perform at least one of the following functions:

a) to apply conductance increasing stress to the region of said collapsible body bridging said electrodes,

b) to reverse conductance increasing stress to the region of said collapsible body bridging said electrodes, and

c) to act against pre-existing conductance increasing stress; to the region of said collapsible body bridging said electrodes.

18. A variable resistor according to claim **13** and including external connection by way of at least one localized region of the collapsible body pre-stressed to conductance.

19. A variable resistor according to claim **18** in which the collapsible body is in sheet form and the pre-stressed region is provided by a line of stitching.

20. A variable resistor according to claim **16** having externally connectable bridged electrodes embedded in the collapsible body.

21. A variable resistor according to claim **16** wherein the concentration of the strongly conductive material in said collapsible body is graded.

22. A plurality of variable resistors according to claim **16** sandwiched together and actuated by a single mechanical stressing means.

23. A plurality of variable resistors according to claim **22** including insulating means whereby the resistors are electrically insulated from each other.

24. A variable resistor according to claim **16** wherein said interstices are accessible to mobile fluid.

25. A variable resistor according to claim **24** in which the collapsible body is at least one material selected from the group consisting of foam, net, gauze, mat and cloth.

26. A variable resistor according to claim **25** in which the collapsible body is the product of loading cells of an open-cell polymer foam with particles of the strongly conductive material and collapsing the loaded foam by a factor which is in the range 2to 8 by volume but leaves it capable of further compression.

27. A chemical sensor comprising:

a) a contacting head including a variable resistor having a first level of electrical conductance when quiescent and a second level of conductance upon change of mechanical or electrical stress applied to said resistor, said resistor including externally connectable electrodes bridged by a collapsible body of an insulating or weakly conductive material containing interstices that are accessible to mobile fluid and contain granules of an insulating or weakly conductive polymer containing particles of at least one strongly conductive material