FIG. **6** reports the effect of various vapours on conductance. For this operation a contacting unit as described with respect FIG. **1** was used, in which block **20** consisted of QTC polymer composition as follows:

conductive filler:	nickel 287 (INCO Corp)
polymer	'SILCOSET 153' (Amber Chemicals: acetoxy-cure silicone rubber with fumed silica reinforcer)
nickel:polymer ratio	8:1 w/w
granule size	through 18 mesh, on 50 mesh.

The contacting unit is connected to a source of dry nitrogen at 1 atm pressure alternatively direct or by way of a bubbler containing the analyte in liquid form. From the upper and lower electrodes **18**,**14** leads run to a circuit comprising:

WEIR 4000 voltage source;

KEITHLEY 2000 multimeter (FET conductance bridge); and

LabVIEW software in PC.

The test was started up by feeding nitrogen, setting the input electricity supply at 10 volts, 1 mA and adjusting tube **16** until the conductance agreed with the intended input steadily over 15 min. Then the gas feed was switched to pass through a bubbler containing n-hexane. As shown in FIG. **6**(*a,b*) the resistance increased over 10 min to 10^4 times its starting value, much of the increase occurring in the first 8 min, corresponding to sorption on the silicone At 40 min the gas feed was switched back to pure nitrogen. The resistance now decreased by a factor of about 100 over 5 min and to its starting value in about 16 min.

The other graphs of FIG. **6** show a similar range of variation of resistance, but differences in speed of sorption or desorption. In other experiments it was observed that the unit is capable of responding to the presence of water vapour in the nitrogen.

The Table reports results for 3 sensors in which, respectively, the nickel conductive filler was dispersed in silicone, polyurethane and polyvinylalcohol. For each determination the QTC was compressed to approximately 20 ohms. The nitrogen flow rate was 50 ml/min, saturated with vapour at room temperature. In each box the resistance in ohms is given for 30 seconds, 60 seconds and saturation (i e no further increase), the times being counted from the start of the change of resistance. It was also observed that on stopping the supply of analyte but continuing pure nitrogen flow, the resistance decreased immediately towards its stating value. The sensor is therefore very effective for showing failure of supply of a desired constituent of a fluid stream.

Referring to FIG. **7**, the sensor comprises outer tube **710** formed with a fluid inlet section **712** and outlet section **714**. Section **714** is of smaller diameter than **712** and forms an annular shelf **716** at the junction of the sections. It would be equally possible to use a tube of uniform diameter and provide an annular insert. Shelf **716** carries a support grid **718** of electrically insulating material., which in turn carries cylindrical unit **720** of mutually adhering particles each of which is an aggregate of QTC granules coated with shrunk-on thermoset epoxy resin. Unit **720** carries metal terminals **722** for external electrical connection via grommets not shown. Terminals **722** may be separated axially or diametrally. Thus they may consist of metal grids top and bottom, in which event axial pressure is applied to ensure electrical contact. For diametral separation metal electrodes may be for example:

in contact with the periphery of the unit; or

drilled into the unit near the periphery; or

pressed downward on its upper surface near its periphery; or

pinching the unit near its periphery.

The invention claimed is:

1. A sensor comprising

i) a conduit for through-flow of a test fluid;

ii) a porous body of granules of a polymer composition having particles of conductive filler metal, alloy or reduced metal oxide dispersed therein, said body having a first level of electrical conductance when quiescent and being convertible to a second level of conductance by change of stress applied to the body by stretching or compression or electric field, said body being permeable to the test-fluid and disposed across the conduit whereby, in use, said test fluid flows through said body; and

iii) electrodes connected to said body for connection to an electrical circuit responsive to a change in conductance of said body.

2. A sensor according to claim **1** wherein a bed of granules is supported in the conduit between a pair of perforate grids forming the electrodes.

3. A sensor according to claim **2** wherein at least one of the grids is moveable towards the other whereby the bed can be compressed.

4. A sensor according to claim **3** wherein the porous body is held between clamps forming the electrodes disposed on either side of the conduit.

5. A sensor according to claim **3** wherein the bed of granules comprises a foam or textile having granules of the polymer composition dispersed therein.

6. A sensor according to claim **1** wherein the porous body comprises a sheet and wherein means are provided to stretch the sheet.

7. A sensor according to claim **6** wherein the means to stretch the sheet comprises a hollow member bearing against one surface of the sheet and moveable in a direction perpendicular to the plane of the sheet.

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