UNIVERSITY of LIMERICK
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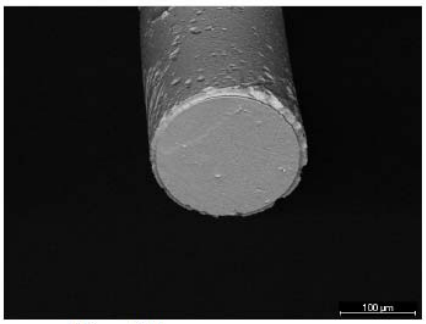
Fibre Optic Pressure Sensor

Overview



Tip of the pressure sensor

Optical Fibre Sensors Research Centre have developed a small diameter temperature compensated pressure sensor using fibre optic technology. The sensor is made from class (silica) and is 250µm in diameter.

Technology

- When the fibre optic sensor is exposed to a given pressure, the silica glass diaphragm deflects and causes to a modulation of the light within the device.
- To avoid the errors in pressure measurements resulting from temperature variations, the all silica fibre optic pressure sensor has an integrated temperature measurement element.
- The temperature measurement element is used as a temperature reference sensing device and hence is used to eliminate the temperature cross-sensitivity of the all-silica fibre optic pressure sensing element.
- Performance:
  - Accuracy: 0.26%FS; Pressure sensitivity: +/- 2mmHg;
  - Temperature range: tested range: 0°C to 450°C, however a range of -20°C to 800°C is feasible.

Commercial Opportunity

Fibre optic pressure sensors can be constructed entirely from fused-silica, i.e. entirely made of glass. They offers many advantages such as biocompatibility, miniature size, simple and low-cost fabrication process, mechanically robust, immune to electromagnet interference, do not conduct electricity, and are capable of operating in high temperature environments.
Patent filed in the US since February 2010.

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