

Paul Clark, Jason Boriniski, Mike Gunther, Steve Poland, Don Wigent, and S. E. Watkins, "Modern Fibre Optic Sensors," *Smart Materials Bulletin*, Elsevier Science Ltd., 8-11, June 2001.

## **Modern Fibre Optic Sensors**

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### **ABSTRACT**

Fibre optic sensors are currently used as transducers for many physical phenomena. Variations on the scheme of measuring a small gap in real time with Fabry-Perot interferometry yield sensors for local strain, extension between points, crack growth, fluid pressure, temperature, surface shear and acoustic emission in solids. Chemical changes can also be monitored with long period gratings using affinity coatings. The embedding of fibre optic elements in structural materials presents a technical challenge in the use of fibre optic sensors. Fibre egress has been addressed by the use of strain relieving sheathing and the introduction of wireless telemetry. The smart footbridge at the University of Missouri-Rolla highlights the application of fibre optic sensors in civil structures. This bridge is equipped with extrinsic Fabry-Perot interferometer sensors measuring flexural strain, shear strain and temperature, providing year round information from the structure.