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# United States Patent [19]

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Hamburger et al.

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[54] **FIBER-OPTIC SENSOR DEVICE AND METHOD**

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### [57] ABSTRACT

A sensor system includes an optical fiber sensor element which is connected to a light source at one end and a detector at the opposite end. The sensor element is an optical fiber which has a light transmitting core, a cladding layer surrounding the core, and an outer protective layer. The outer protective layer is removed along at least part of the length of the fiber to expose a portion of the cladding layer, and the exposed portion of the cladding layer is roughened to produce a plurality of surface scratches extending through at least part of the thickness of the cladding layer. The exposed, roughened portion of the cladding layer forms a sensor region through which light is lost from the core, and is exposed to a medium to be monitored so that the amount of light lost will be dependent on the refractive index of the medium.

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[51] **Int. Cl.**<sup>6</sup> ..... **G02B 6/10**

[52] **U.S. Cl.** ..... **385/12; 385/128**

[58] **Field of Search** ..... 250/227.11, 227.14;  
356/133; 385/12, 147, 123, 128

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**14 Claims, 1 Drawing Sheet**

