TECHNOLOGY COMMERCIALIZATION OFFICE
THE UNIVERSITY OF UTAH

Reference: U-4067

Title: Optical Respiratory Flow Meter

Invention Summary	This invention provides for respiratory flow characterization by an optical fiber-based transducer. The device is comprised of a commercially available, solid state photo detector, a LED light source and a basic optical fiber housed in a chamber coupled to a standard respiratory tube. The sensor outputs an electrical signal proportional to the displacement of the optical fiber within the housing. Rate calculations will be made on the fly and the integration of the sensor output signal over time allows for precise volumetric flow characterization.
Market Applications	A sensor of this type is free from the mechanical disadvantages faced by currently available respiratory transducers. Its low cost and ease of use make this product particularly attractive for applications in medicine, exercise training, home care, and numerous other markets where accurate flow characterization is a necessity.
Features, Benefits & Advantages	Current commercial flow meters are based on two primary concepts: 1) measuring the pressure drop across an orifice in a diaphragm partitioned chamber via solid state pressure transducers; 2) turbine-based flow characterization. Each of these methods has significant mechanical disadvantages that make accurate flow measurements difficult. For example, in orifice-based sensors - the most widely used type - the measured pressure drop across the membranes is large, making accurate flow measurements at low volumes difficult and requiring extended time for accurate results. Changing electronic characteristics of the pressure sensors also have to be compensated for in any measurement. The fiber-based sensor of the present invention will be free from the mechanical disadvantages of current devices, and will make low volume flow characterization simple and accurate.
Intellectual Property & Development Status	This concept-stage invention is the basis for one of the design projects for the Bioengineering 3801/4801 Design Class sequence, and will be further developed in that context. It is available for developmental research support/licensing under either exclusive or non-exclusive terms.
Related Research	
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