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*Abstract*

**Title:** *Optofluidic ring resonators: properties, characterization, and applications*

Liquid core optical ring resonator (LCORR) is a novel technology platform that integrates the photonics with microfluidics. The LCORR can be made by pulling a glass capillary down to approximately 100 microns in outer diameter. The circular wall of the capillary forms a ring resonator and supports the whispering gallery modes (WGMs). The thickness of the LCORR wall is only a few microns; therefore, the WGM of high Q-factors ( $> 10^6$ ) has a sufficient evanescent field in the LCORR core and is capable of interacting with the analytes conducted in the capillary. The LCORR takes advantage of excellent liquid (and gas) handling capability of capillaries, and high sensitivity and small sample consumption of optical ring resonators. It has broad applications in bio/chemical sensing, analytical chemistry, and novel optical devices. This presentation will overview the unique properties of the LCORR, summarize the theoretical and experimental results in protein/DNA detection, capillary electrophoresis, and microfluidic lasers, and discuss future research directions.

*Biography*

**DR. FAN** obtained Ph.D. in physics from the University of Oregon in 2000. During 2000 and 2004, he worked at 3M-Austin and later became a project leader on fiber optics and optical biosensor development. In August of 2004, he joined the Biological Engineering Department at the University of Missouri at Columbia as an assistant professor. Dr. Fan's research includes development of novel photonic bio/chemical sensors based on ring resonators and nanoparticles. He has nearly 30 publications and over 10 issued/pending patents. Dr. Fan serves as a chair and organizer of SPIE conferences and as a member of Nanotechnology and Biosensors Committee in USDA. He is a recipient of Wallace H. Coulter Early Career Award and 3M Non-tenured Faculty Award.