Contribution ID: **542** Type: **Oral (Student, In Competition) / Orale (Étudiant(e), inscrit à la compétition)**

Silicon Nitride microdisk resonators as refractometric sensors in water

Wednesday 17 June 2015 09:45 (15 minutes)

Optical microdisks are intriguing devices due to their small size, compatibility with standard planar micro/nano-fabrication techniques, and ability to support high-Q whispering gallery modes. We fabricate and explore the use of thin (130 nm) Si_3N_4 disks with diameters of 15 - 30 μm as refractive index sensors, using a dimpled-tapered fiber to couple with the optical modes under water. The thin disks cause evanescent fields to extend far into the surrounding medium, providing large shifts of > 200 nm/refractive index units (RIU) of the optical modes in response to Lithium salts added to the environment. Loaded quality factors of ~10^4 let the resonant frequencies to be determined with great accuracy, providing a limit of detection near 10^{-6} RIU, comparable with state-of-the-art RI sensors.

Primary author: DOOLIN, Callum (University of Alberta)

Co-authors: Ms LEWIS, B (University of Alberta); Mr DAVIS, John (University of Alberta); Mr DOOLIN, P (University of Alberta)

Presenter: DOOLIN, Callum (University of Alberta)

Session Classification: W1-6 Devices (DCMMP) / Dispositifs (DPMCM)

Track Classification: Condensed Matter and Materials Physics / Physique de la matière condensée et matériaux (DCMMP-DPMCM)