Contribution ID: **1011** Type: **Oral (Student, Not in Competition) / Orale (Étudiant(e), pas dans la compétition)**

Detection of C2H2 at a concentration of ppmv levels using a fiber laser system

Thursday 16 June 2016 09:00 (15 minutes)

A gas sensor based on optical fiber technology is in demand for applications in environmental monitoring. Authors will present an acetylene (C2H2) gas sensor which was developed using the principle of intracavity laser absorption spectroscopy operating at room temperature. An intracavity gas cell based on hollow core photonic crystal fiber was developed and used inside a fiber ring laser cavity. Authors will present the details of the construction of the gas cell and the advantages of using a gas cell based on photonic crystal fiber in comparison to the existing cells reported in the literature. The laser wavelength was selected by a fiber Bragg grating (FBG) with a peak wavelength close to one of the absorption lines of the acetylene gas in the 1.55 micron band. The system was capable of detecting acetylene gas in concentrations of ˜ 10 ppmv. It is possible to operate the system to detect other gases such as CH4 by changing the FBG in the cavity or using a tunable FBG.

The research was financially supported by Natural Sciences and Engineering Research Council of Canada (NSERC) and Agrium Inc.

Author: VALIUNAS, Jonas (Lakehead University)

Co-author: DAS, Gautam (Lakehead Uniersity)

Presenter: VALIUNAS, Jonas (Lakehead University)

Session Classification: R1-5 Photonics II: Optoelectronics and Devices (DAMOPC-DCMMP) / Photonique II : optoélectronique et dispositifs (DPAMPC-DPMCM)

Track Classification: Division of Atomic, Molecular and Optical Physics, Canada / Division de la physique atomique, moléculaire et photonique, Canada (DAMOPC-DPAMPC)