Trent University
Chemistry/Physics Seminar Series

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Wednesday, March 16, 2016
11:00 a.m. to 11:50 a.m.
Science Complex Room 115

Polymer-Source Chemical Vapor Deposition - The "Electronic-Grade" Challenge

Polydimethylsilane (PDMS) became the subject of industrial interest when Yajima discovered in 1970's that SiC-fibers can be produced by the pyrolysis of a polycarbosilane, species synthesized by the thermolysis of PDMS. The mechanical properties, the resistance to oxidation, corrosion and thermal shock, the mechanical properties of the SiC produced from PDMS, together with the versatility of the industrial process using polycarbosilane derived from PDMS, prompted expansion to many other applications, from the use of SiC as structural material to conformal coatings in harsh environments.

This seminar will present the results we have obtained in the transfer of the knowledge of chemistry involved in the Yajima process, to the synthesis of electronic-grade thin ceramic films for semiconductor devices and for the Czochralski-growth of silicon single crystals, via our in-house developed "Polymer-Source Chemical Vapor Deposition" (PS-CVD). The results we have obtained in the synthesis of thin SiON passivation coatings for the Cz-crucibles, and the synthesis process for passivation/antireflective SiCON:H coatings for photovoltaic devices supported on silicon single crystal will be presented. The correlation between the required properties of the e.-g. thin films and the special conditions needed from the synthesis of the "electronic-grade" PDMS-precursor will also be addressed.

All Welcome!