



Chemical & Physical Sciences  
UNIVERSITY OF TORONTO  
MISSISSAUGA

## COLLOQUIUM

TUESDAY, MARCH 19<sup>TH</sup>, 2013  
12:00 P.M. (**SHARP**) – 1:00 P.M.  
**IB270**

# Desmond Moser

*Western University*

## “Nanorecords of Megatime from Outer and Inner Space”

The age and nature of events during the evolution of the solar system can be preserved at the nanometer scale in the physical properties and isotopic composition of U-bearing minerals such as zircon ( $\text{ZrSiO}_4$ ) and baddeleyite ( $\text{ZrO}_2$ ). These minerals are among the early condensates, and some, especially zircon, are the ultimate survivor phases; able to persist through high heat and pressure in tectonic, igneous, and impact events while retaining elements of their primary history. The recent combination of electron nanobeam techniques such as Electron Backscatter Diffraction (EBSD), Cathodoluminescence and STEM with *in situ* U-Pb isotopic dating is allowing us to marry orientation and chemical microstructure at unprecedented spatial resolution, and retrieve an even richer level of information from these ancient mineral messengers. Examples will be given from my group's work on samples of asteroids, Mars, the Moon, and the inner space of our home planet.