



Chemical & Physical Sciences  
**UNIVERSITY OF TORONTO**  
MISSISSAUGA

## **COLLOQUIUM**

**TUESDAY OCTOBER 25<sup>TH</sup>, 2011**  
**12:00 P.M. (SHARP) – 1:00 P.M.**  
**INSTRUCTIONAL BUILDING 240**

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# **Joshua Feinberg**

*University of Minnesota*

## **“The Magnetism of Cave Environments”**

The magnetic recordings preserved in stalagmites and the nature of their constituent magnetic minerals hold considerable potential for paleomagnetic and paleoenvironmental reconstructions. Speleothems lock in their magnetization on seasonal timescales, are not affected by the post-depositional processes that effect marine and lake records, and can be dated with high precision using U-Th techniques. Recent improvements in instrumentation sensitivity and spatial resolution allow geophysicists to make use of the potential of speleothems as high-resolution paleomagnetic recorders. Modern studies enable us to resolve short-term geomagnetic variability, and characterize events such as geomagnetic excursions at an unprecedented scale. Additionally, aspects of the magnetic mineral assemblage preserved in speleothems (e.g., composition, concentration, and grain size) are influenced by regional environmental conditions such as precipitation, temperature, and storm intensity. These data provide a complementary environmental signal to more established speleothem environmental proxies (e.g., oxygen and carbon isotopes).