

**M.Sc. Defense
Chris Martin
DATE: Wednesday, April 7th, 2010
TIME: 3:00 p.m.
PLACE: MacNaughton Room 222
University of Guelph**

**THESIS TITLE:
High Resolution Pair Distribution Function Method for Analysis
of Amorphous and Nanoparticle Samples**

ABSTRACT:

High resolution Pair Distribution Functions were generated for a number of amorphous and nanometer sized samples, including thin film amorphous germanium and gold nanoparticles of various sizes. X-ray diffraction data for each of these samples was collected on a customized setup on the A2 beamline at the Cornell High Energy Synchrotron Source, allowing for relatively fast data collection out to high momentum transfer magnitudes ($Q_{\max} = 55$ inverse Angstroms). A Fourier filtering method was developed to allow a high degree of automation in the analysis while still producing quantitative results. Data from a bulk gold sample was also analyzed as a reference material, verifying the success of this procedure.

EXAMINING COMMITTEE:

Chair: Dr. Robert Wickham

Advisor: Dr. Stefan Kycia

Advisory Committee Member: Dr. De-Tong Jiang