

# Lyle M. Gordon

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## Education

- 2014 **PhD in Materials Science and Engineering**  
*Northwestern University*. Evanston, IL.
- 2008 **Bachelors of Applied Science with Honours in Materials Science and Engineering**  
*University of Toronto*. Toronto, ON.

## Experience

- 2014- **Wiley Distinguished Postdoctoral Fellowship**, Environmental Molecular Sciences Laboratory  
Pacific Northwest National Laboratory, Richland, WA.  
Designed custom low temperature cell for FTIR of ice on nanoporous surfaces. Member of microscopy group, responsible for working with internal and external users on materials characterization projects. Extensive experience with in situ SEM and TEM and atom probe tomography.
- 2008-2014 **Biomaterial Engineering Group**, Materials Science and Engineering, Northwestern University.  
Applied advanced characterization tools to understand the structure chemistry of biological minerals. Identified controlling influence of grain boundary chemistry in tooth enamel on mechanical and chemical properties.
- 2007-2008 **Hybrid Materials Group**, Materials Science and Engineering, University of Toronto.  
Designed and fabricated a microscale periodic cellular material using rapid prototyping and electrodeposition of high-strength nanocrystalline nickel. Measured mechanical properties and developed structure-property relationships to optimize composite truss design.
- 2004-2008 **Concrete Canoe Team**, Civil Engineering, University of Toronto.  
Led the development and testing of carbon fiber reinforced lightweight concrete composite. Implemented ASTM standards for mechanical testing. Optimized composite was used to construct a four-person a racing canoe.
- 2007 **Advanced Regenerative Tissue Engineering Centre**, Sunnybrook Health Sciences Centre.  
Characterized mechanical properties of a composite hydrogel for tissue engineering of the intervertebral disc. Modeled viscoelastic mechanical response and evaluated cell-material interactions.
- 2005-2006 **Orthopaedic Biomechanics Lab**, Sunnybrook Health Sciences Centre.  
Began development and experimental validation of a finite element model of pelvic lateral compression fracture stability. Developed a 3D atlas-based method to automate segmentation of metastatic vertebrae on X-ray computed tomography scans.

## Professional Experience

- 2012 **PreScouter**, Evanston, IL.  
TECHNOLOGY CONSULTANT  
Technology scouter connecting corporate innovators to new technologies.

## Skills

**Experimental Techniques:** atom-probe tomography · electron microscopy · focused ion beam · infrared spectroscopy · electron energy loss spectroscopy · X-ray spectroscopy · synchrotron X-ray absorption spectroscopy, diffraction & tomography · electron backscatter diffraction · inductively coupled plasma mass spectroscopy · finite element analysis · nanoindentation · mechanical testing · corrosion testing.

**Programming Languages:** Mathematica · C/C++ · VB.net.

## Selected Awards

- 2014 **William R. Wiley Distinguished Postdoctoral Fellowship**, Environmental Molecular Spectroscopy Lab, Pacific Northwest National Lab.
- 2013 **Microscopy & Microanalysis Presidential Scholar Award**, Microscopy Society of America and the Microanalysis Society.
- 2008-2012 **Postgraduate Scholarship, Masters & Doctorate**. National Science and Engineering Research Council of Canada.
- 2009 **Image of Distinction**. Nikon Small World — Photomicrography Competition. [\[URL\]](#)
- 2008 **Walter P. Murphy Fellowship**. Materials Science and Engineering, Northwestern University.
- 2007-2008 **Stelco Scholarship**. Materials Science and Engineering, University of Toronto.

## Teaching Experience

- 2012 **Guest lecturer**, Biominerals: Hierarchical Architecture and Function, Northwestern University.
- 2009-2011 **Teaching and laboratory assistant**, Introduction to Materials Science, Northwestern University. Implemented new discovery-based laboratory experiments and coordinated weekly laboratory sessions.

## Selected Publications

- 2016 Nune, S. K., Lao, D., Heldebrant, D. J., Liu, J., Olszta, M. J., Kukkadapu, R., **Gordon, L.M.**, Nandasiri, M. I., Gotthold, D. W., Schaef, H. T. "Anomalous Water Expulsion from Carbon Rods at High Humidity." *Nature Nanotechnology* under review.
- 2015 **Gordon, L.M.**, Cohen, M.J., MacRenaris, K., Pasteris, J.D., Seda, T., Joester, D. "Amorphous Intergranular Phases Control the Properties of Tooth Enamel." *Science* 347, 6223 (2015). [\[DOI\]](#)
- 2015 **Gordon, L.M.**, Joester, D. "Mapping residual organics and carbonate at grain boundaries and in the amorphous interphase in mouse incisor enamel." *Frontiers in Physiology* 6, 57. [\[DOI\]](#)
- 2014 Schreiber, D. K., Chiamonti, A. N., **Gordon, L.M.**, Kruska, K. "Applicability of post-ionization theory to laser-assisted field evaporation" *Applied Physics Letters* 105, 244106 (2014). [\[DOI\]](#)
- 2014 **Gordon, L.M.**, Roman, J., Everly, R.M., Cohen, M.J., Wilker, J.J., Joester, D. "Selective Formation of Metastable Ferrihydrite in the Chiton Tooth." *Angewandte Chemie International Edition* 53, 11506 – 11509 (2014). [\[DOI\]](#)
- 2012 **Gordon, L.M.**, Tran, L., Joester, D. "Atom probe tomography of apatites and bone-type mineralized tissues." *ACS nano* 6, 10667-10675 (2012).
- 2011 **Gordon, L.M.**, Joester, D. "Nano-Scale Chemical Tomography of Buried Organic-Inorganic Interfaces in the Chiton Tooth." *Nature* 469, 194-197 (2011). [\[PDF\]](#) Featured in *Nature Methods* 8, 199 (2011). [\[PDF\]](#)
- 2009 **Gordon, L.M.**, Bouwhuis, B.A., Suralvo, M., McCrea, J.L., Palumbo, G., Hibbard, G.D. "Micro-truss nanocrystalline Ni hybrids." *Acta Materialia* 57, 932-939 (2009). [\[PDF\]](#)
- 2009 Leung, A., **Gordon, L.M.**, Skrinkas, T., Szwedowski, T., Whyne, C.M. "Effects of bone density alterations on strain patterns in the pelvis: application of a finite element model." *Proceedings of the Institution of Mechanical Engineers, Part H: Journal of Engineering in Medicine* 223, 965-979 (2009). [\[PDF\]](#)

References available upon request.