Leslie Dewan
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Education

Massachusetts Institute of Technology
Doctoral candidate in the Department of Nuclear Science and Engineering

Research focus: Examining radiation damage effects in glasses and ceramics using molecular dynamics simulations, with the aim of developing a more mechanically and chemically stable medium for long-term storage of high-level nuclear waste.

Massachusetts Institute of Technology
Bachelor of Science in Nuclear Engineering, June 2007
Bachelor of Science in Mechanical Engineering, June 2007

Experience

Transatomic Power 2010 – present
Cofounder, CEO

- Operations manager for this nuclear reactor design company.
- Leading the materials and thermohydraulics design of Transatomic Power's WAMSR reactor, which converts high-level nuclear waste into carbon-free electric power.

Vecna Technologies
Robotics Engineer 2007 - 2008
Nuclear Engineering Consultant 2008

- Mechanical design, development, and manufacture of the BEAR, a 6.5 foot tall hydraulically actuated humanoid robot capable of of dynamic balancing on two legs.
- Developed a proof-of-concept device that used laser-induced breakdown spectroscopy and surface-enhanced Raman spectroscopy for field identification of chemical and nuclear weapons.

Center for Materials Research and Ethnography, MIT 2004 - 2010
Principal researcher modeling mechanical characteristics of prehistoric watercraft

- Designed and implemented software to model stress patterns, size limits, cargo capacity, and aerodynamic and hydrodynamic characteristics to evaluate sailing ability in various weather conditions and ocean currents.
- Led team of thirty to design and build a replica raft (five meters in length) to empirically test sail efficiencies and steering mechanisms.

Additional Design Projects and Teaching

- Lab assistant for the MIT undergraduate Materials Science and Engineering classes 3.022 and 3.024, "Microstructural Evolution in Materials" and "Electronic, Optical and Magnetic Properties of Materials." (Spring 2010)
- Instructor for the MIT undergraduate Materials Science and Engineering class 3.094, "Materials in Human Experience." (Spring 2009)
- Designed and built a cyclotron capable of accelerating protons to 2 MeV, as a Nuclear Engineering undergraduate thesis at the Francis Bitter Magnet Laboratory. (Spring 2007)

Skills

Computer Software: SolidWorks, SolidEdge, AutoCAD, Ansys, Ricardo WAVE, Matlab, LabVIEW, Metrowerks CodeWarrior, Eclipse, LaTeX, GULP, DL POLY, LAMMPS
Programming Languages: C, C++, Java, Python
Machine Tools: Lathe, Milling machine, OMAX Waterjet, Plasma cutter

Awards

Department of Energy Computational Science Graduate Fellowship, 2010 - present. Named an **MIT Presidential Fellow**, 2008-2009. Undergraduate research was funded by the **Paul E.**

Gray Fund, MIT. Awarded first place in the 2007 **American Nuclear Society Undergraduate Student Design Competition** for "Design for a Compact Neutron Interferometer."

Publications and Presentations

Modeling Radiation-Induced Alteration of the Network Topology of Alkali Borosilicate High-Level Waste Glass. International Conference on the Chemistry of Glasses and Glass-Forming Melts, September 2011. (first author)

Topological Modeling of Radiation-Induced Structural Alterations of Amorphous and Amorphizable Solids for Nuclear Waste Applications. The 19th University Conference on Glass Science: Glasses for Energy, August 2011. (first author)

Topological Exploration of Structure and Defects in Amorphous and Amorphizing Solids. University of Michigan Colloquium, February 2011.

Modeling Radiation-Induced Alteration of the Network Structure of Alkali Borosilicate High-level Waste Glass. Proceedings of *The Materials Research Society Fall Meeting*, December 2010. (first author)

Radiation-Induced Alteration of Network Structure in Sodium Borosilicate Glass . *American Nuclear Society Transactions*, November 2010. (first author)

Atomistic Simulations of Radiation Damage Resistance in Network Glasses. Proceedings of *Innovative Materials Immune to Radiation*, August 2010.

Modeling Alteration of Borosilicate High-level Waste Glass Networks in a Radiation Environment. Proceedings of *The American Ceramic Society Glass and Optical Materials Division Spring Meeting*, May 2010. (first author)

Ancient Maritime Trade Between Ecuador and Western Mexico on Balsa Rafts: An Engineering Analysis of Balsa Raft Functionality and Design. *Journal of Anthropological Research*, Volume 64, Number 1, 2008. (first author)

Design for a Compact Neutron Interferometer. Proceedings of *The American Nuclear Society Winter Meeting*, November 2007.