

SEUNG-JIN LEE

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Education

- September 2007 – Present **University of Washington**, Seattle, WA <http://www.washington.edu>
Certificate in Environmental Management, expected June 2008
- Faculty Mentor: Professor Nancy Rottle, Department of Landscape Architecture
- January 2006 – Present **University of Washington**, Seattle, WA
Doctor of Philosophy in Mechanical Engineering
- Advisor: Professor Joyce Smith Cooper
- August 2004 – May 2005 **Carnegie Mellon University**, Pittsburgh, PA <http://www.cmu.edu>
Master of Science in Civil and Environmental Engineering
- Advisors: Professors H. Scott Matthews and Hoon Sohn
- August 1999 – May 2004 **Boston University**, Boston, MA <http://www.bu.edu>
Bachelor of Science in Mechanical Engineering

Research Experience

- January 2006 - Present *Graduate Research Assistant*
Design for Environment Laboratory, University of Washington Seattle, WA
<http://faculty.washington.edu/cooperjs>
The Design for Environment Lab promotes sustainability and design for environment at the University of Washington by engaging researchers and educators in the Mechanical Engineering and Civil and Environmental engineering Departments and throughout the UW in efforts to improve technology development, design, and infrastructure through the advancement of life cycle assessment (LCA) and industrial ecology (IE).

Professional Experience

- June 2003 – June 2004 *Industrial Trainee*
RMC Group (now CEMEX), Kuala Lumpur, MALAYSIA
<http://www.cemex.com>
CEMEX is a growing global building-solutions company that produces, distributes, and markets cement, ready-mix concrete, aggregates, and related building materials to customers and communities in more than 50 countries.
- Research & Development (R&D) on concrete
 - Interacted with major clients both on performance and marketing issues. Presented advantages of company's products and operations in the quality control/quality action.
 - Monitored the grading of several sand samples from company quarry
 - Produced and studied trial mixes involving various slumps and strengths
 - Performed several structural tests both in the lab and sites
 - Studied differences in admixture performance in several RMC plants
 - Presented studies in monthly meetings with managers and supervisors
- June 2002 – August 2002 *Summer Intern*
RMC Group, Kuala Lumpur, MALAYSIA

Funded or Sponsored Research

- September 2007 – Present “Zoo Footprints” – A 21st Century Environmental Sustainability Plan for Woodland Park Zoo, funded by **The Henry Luce Foundation**
- Keystone project as part of the Environmental Management Certificate Program at the University of Washington
 - Help develop an institutional philosophy and guidelines regarding resource use and sustainability at the zoo
 - Develop critical baseline information and options for short and long-term goals and implementation strategies
 - Create a campus-wide sustainability plan that will help significantly reduce the institution’s environmental impact over time, and ultimately serve as a model for zoos across America and throughout the world
- March 2007 – September 2007 Greening Campus Data Centers: A Critical Evaluation of Energy Efficient Servers for the Department of Biology’s “Living Building” Proposal, funded by **Vulcan Inc.**
- Research performed as a precursor for the “Living Building Charette” sponsored by Vulcan Inc. and the University of Washington’s Department of Biology. Key component of the “Living Building” is the server room and how it can introduce the next generation of cooling technology
 - Studied state-of-the-art cooling techniques for data centers and server farms
 - Recommend highly efficient design for server room
 - Recommend design improvements that account for inefficiencies caused by non-uniform heat distribution and power conversion factors
 - Rough cost analysis also performed
- January 2007 – Present Modeling Material Flows for Sustainable Industrial Systems in Urban Regions (SISFUR), funded by the **National Science Foundation**
- Collaborative project involving researchers from Chemical Engineering, Mechanical Engineering and City and Regional Planning at the Georgia Institute of Technology, University of Washington and West Virginia University
 - Long-term objective is to encourage new manufacturing activity through recycling and remanufacturing in distressed urban areas
 - Focus is on two durable consumer goods – computer monitors and carpets
 - Material flow analysis required a review and analysis of monitor material and manufacturing alternatives. This work covered all materials that have been used as components of LCD monitors
 - Continuation of work starts with quantifying each material in terms of functional criteria in each LCD component
 - Survey of monitor recyclers in Seattle and Atlanta regions being performed to gather information on throughput, destination and business information. Survey also includes facility tours to analyze energy use and environmental impacts using life cycle assessment
- January 2006 – December 2006 A Life Cycle Assessment tool for use in the design of distributed Proton Exchange Membrane fuel cell systems, funded by **Plug Power**
- Designed and created life cycle design tool for fuel cells
 - Analyzed energy and environmental profiles of fuel cell hardware materials
 - Development of EcoScores for Fuel Cell Materials
- October 2004 – May 2005 Recycling Potential Index (RPI) of materials and parts in End-of-Life Vehicles for Design for Recycling (DfR): Case Study in South Korea, funded by the **Ford Motor Company**
- Graduate student research project completed as part of a Ford Motor Company grant sponsored by Carnegie Mellon University
- August 2002 – May 2003 Fibroblast Environmental Chamber for an Optical Microscope, funded by **Pratt & Whitney**
- Senior Capstone Design Project

Independent Research

- Pennsylvania Department of Transportation Roadmap Project (Information Technology (IT) for Integrated Asset Management)
- Integrated Management System for Sustainable Highway Bridges
- Development and Assessment Strategies for Sustainable Urban Water Systems
- Life Cycle Assessment of Flooring Materials
- Implementing a Cogeneration Plant at Carnegie Mellon University: The Costs and Benefits

Awards and Honors

- Ford Motor Company Graduate Student Research Grant, 2004-2005
- Boston University Pratt & Whitney Award for Outstanding Senior Design Project in Mechanical Engineering, 2003
- Massachusetts Engineer-in-Training (EIT) Certification, 2003
- Boston University Dean's List, 2000-2002

Organizations

- University of Washington Korean Graduate Student Association (Secretary)
- International Society of Industrial Ecology Student Chapter (Member)
- American Society of Mechanical Engineers (Member)
- American Society of Civil Engineers (Member)

Skills and Interests

- Languages: Korean (Fluent), Malay (Conversant), Mandarin (Basic)
- Computer skills: GREET, SimaPro, Eco-it, BEES, MATLAB, AutoCAD, Mechanical Desktop, Pro-Engineer, MS Office Suite, Adobe Dreamweaver, Adobe Photoshop, HTML
- Other interests: Swimming, cooking, basketball, music, movies

Peer-Reviewed Journals

Seung-Jin Lee, Joyce Smith Cooper, Review and analysis of LCD monitor material and manufacturing alternatives, *in preparation for IEEE Transactions on Electronics Packaging Manufacturing*, 2007.

Joyce Smith Cooper, Liila Woods, Seung-Jin Lee, The Use of Commodity Transport Models in the Construction of Life Cycle Inventories, *abstract accepted by the International Journal of Life Cycle Assessment*, 2007.

Conference Proceedings

Seung-Jin Lee, Joyce Smith Cooper, Life Cycle Design of Emerging Energy Generation Technologies, *Proceedings of the 2006 InLCA Conference, Washington, DC*, October 4-6, 2006.

Junbeum Kim, Junghan Bae, Seung-Jin Lee, Recycling Potential Index (RPI) of materials and parts in End-of-Life vehicles for Design for Recycling, *Proceedings of the 2005 International Society of Industrial Ecology Conference, Stockholm, Sweden*, May, 2005.