CURRICULUM VITAE
ALEXANDER J. MOSESON

Personal

Date Of Birth:	April 24, 1984
Email:	AlexMoseson@drexel.edu
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Phone/Address:	Philadelphia, PA, USA [Details Upon Request]
Family:	Married in November 2007, No Children

Education

Ph.D. – Mechanical Engineering And Mechanics, Expected Completion September, 2011
NSF Graduate Research Fellow (GRFP)
Drexel University, Philadelphia, PA
Thesis Topic: Alkali-Activated Cements as Appropriate And Sustainable Technology
(Advisor: Dr. Michel Barsoum)

M.S./B.S. - Joint 5-Year M.S./B.S. Program Completed September 2007
Drexel University, Philadelphia, PA
M.S. - Materials Engineering (Advisor: Dr. Michel Barsoum)
Thesis: "Spherical Nanoindentation: Insights And Improvements, Including Stress-Strain Curves and Effective Zero Point Determination"
B.S. - Mechanical Engineering (Magna Cum Laude, 3.72/4.00, Concentration: Design & Manufacturing)

Academic Research Experience (Drexel University, Philadelphia PA)

Alkali-Activated Cements – Materials Science and Engineering & Mechanical Engineering and Mechanics
Research Associate and Ph.D. Research, September 2007 to Current
Research Natural Cements as appropriate, sustainable, and intermediate technology. Goals include i) Overcome technical and social obstacles to their adoption as a competitive yet environmentally friendly Portland Cement alternative ii) Better understand and characterize their microstructure and behavior and iii) Along with other complementary technologies, develop Natural Cements for applications in global developing communities.

Nanoindentation, Mechanical Properties - Materials Science and Engineering
Hess Undergraduate Honors Research Fellow and Master's Thesis Research, September 2005 to Current
Invented a method to objectively and easily determine the zero point of contact for spherical nanoindentation. Mitigates the convoluted effects of zero point and surface roughness, and could also be used to overcome sample-leveling problems. Developed and demonstrated application in stress-strain curves.

Mechanical Design - Mechanical Engineering and Mechanics
Hess Undergraduate Honors Research Fellow, January to March 2005
Designed and built proof-of-concept for a 2-DOF laboratory helicopter producible for only 4% of its commercial cost. Required application of dynamics, control theory, electronics, and fabrication.

Polymer Nanotechnology - Materials Science and Engineering

STAR Scholar, June to August 2003

Conducted research and development in polymer nanotechnology. Designed, performed, and analyzed goal-oriented experiments on the electrospinning of nanofiber. Through interactive lecture, inspired prospective students to consider materials science.

Industry Experience

STV Inc. (National Consulting Firm), Philadelphia, PA

Vehicle Specialist, April 2006 to September 2006

Supported passenger rail vehicle fleet procurement, improvement, and maintenance for several railroads. United several organizations per project such as railroad, carbuilder, and consultant.

- Programmed and developed a dynamic train route simulator to aid in procurement decisions
- Documented and contributed to many high-level meetings. Traveled Extensively.
- Contributed to bearing failure analysis and repair, preventing potential fleet-wide derailment.

Boehringer Laboratories, Inc., Norristown, PA

Project Engineer, March 2005 to September 2005

Designed and developed novel medical devices and associated manufacturing processes. Utilized experiments, literature, and industry experts to creatively overcome technical challenges.

- Advanced patent-pending wound healing system through several stages of development
- Managed the development of a new product line
- Designed and built prototypes and unique test equipment in a full machine shop
- Utilized novel materials, including plastics, textiles, and metals

McNeil Consumer and Specialty Pharmaceuticals, a Johnson & Johnson Company, Fort Washington, PA

Solid Dose Processing / Manufacturing Co-op, August 2003 to March 2004

Developed solutions for complex projects independently, on teams, and as Manager. Facilitated critical ongoing operations. Collaborated with staff in a wide range of departments and functional levels.

- Independently developed and managed process to decontaminate and prevent destruction of product, with input from many levels (Saved $65,000)
- Managed emergency corrective action to prevent plant shutdown
- Created efficient Plant-Wide Batch Tracking System (Saves $30,000/year)

Other Relevant Work Experience

Drexel University - College of Engineering, Philadelphia, PA

Recruitment and Outreach Associate, April 2004 to Current

Develop, execute, and manage programs for pre-college recruitment and outreach, and high school faculty training. Creatively communicate complex engineering topics to a variety of audiences. Programs include:

- Math And Science Partnership (MSP), Philadelphia School District
- Summer Engineering Experience At Drexel University (SEED)
- Summer Mentorship
- Interdisciplinary development of outreach programs to Philadelphia and surrounding schools

Publications And Patents

A. Moseson, S. Basu, and M.W. Barsoum, "Determination of The Effective Zero Point Of Contact For Spherical Nanoindentation," *J. Materials Research*, 23, No. 1 (2008)

S. Basu, **A. Moseson**, and M.W. Barsoum, "On The Determination Of Spherical Nanoindentation Stress/Strain Curves," *J. Materials Research*, 21, 2628-37 (2006)

Pending Patent: **A. Moseson**, S. Basu, and M.W. Barsoum "A Novel Method for Zero Point Detection." USPTO Provisional Application No. 60/953,361.

Conference Presentations

A. Moseson, E, Jud, P. Narang, A. Sakulich, M.W. Barsoum, "Alkali-Activated Cements As A Sustainable Building Material; Case Study of Slag Cement using Design Of Experiment," MS&T 2008, Pittsburgh, PA, USA, October 5-9, 2008. Oral Presentation.

A. Moseson, S. Basu, and M.W. Barsoum, "A novel method to determine the effective zero point of contact for spherical nanoindentation," MS&T 2008, Pittsburgh, PA, USA, October 5-9, 2008. Oral Presentation.

M. W. Barsoum; E. Jud Sierra; A. Sakulich; **A. Moseson**; K. J. MacKenzie; S. C. Vogel; L. L. Daemen, "Silica-based Nanostructures and the Pyramids of Egypt," MS&T 2008, Pittsburgh, PA, USA, October 5-9, 2008. Oral Presentation.

E. Jud Sierra; S. Miller; P. Narang; **A. Moseson**; M. W. Barsoum, **"**Alkali-activated Cements based on Diatomaceous Earth**,"** MS&T 2008, Pittsburgh, PA, USA, October 5-9, 2008. Oral Presentation.

A. Moseson, A. Sakulich, A. Curtin, E. Jud Sierra, M.W. Barsoum, "Slag-based geopolymer cements as a sustainable building material; case study using design of experiment," 2nd International Conference On Ceramics (ICC2), Verona, Italy. June 29 – July 4, 2008. Poster Presentation.

Honors And Awards

- NSF Graduate Research Fellowship (GRF) (2008)
- Featured in ASEE *Engineering Go For It!* Magazine (one of eight students nationwide) (2008)
- ACerS Travel Grant to attend ICC2 in Verona, Italy (2008)
- Graduate Assistance In Areas Of National Need (GAANN) Fellowship (2007)
- Drexel University Provost Fellowship (2007)
- Drexel University Dean's III Fellowship (2007)
- ASM International - Arthur E. Focke LeaderShape Award (2007)
- Outstanding Cooperative Education Student Award (2007)
- Outstanding Senior Award (2007)
- Ryder Award for Seniors (2007)
- Hess Undergraduate Honors Research Fellow (Project: Lab. Helicopter, Design and Build) (Winter 2005)
- Drexel University STAR Scholar – Polymer Nanotechnology (Summer 2003)
- National Society of Collegiate Scholars (Inducted 2003)
- Drexel University Honors College (Inducted 2002)

Teaching Experience

Teaching Assistant for

- Statics (MEM 202), Spring 2007
- Introduction To Thermodynamics (ENGR 210), Fall 2007 & Winter 2007
- Mechanics Of Materials (MEM 230), Summer 2007
- Introduction To Materials Science And Engineering (TDEC 211), Fall 2006

International Experience

- Tanzania – August 2008 (3 Weeks) – Leader, Lathes For Africa humanitarian project
- Verona, Italy – July 2008 (1 Week) – ICC2 Conference
- Maracaibo, Venezuela – March 2007 (2 Weeks) –Cultural / Humanitarian Project

Advising Experience

- Drexel University Summer Mentorship 2008 – William Alexander (Alex) Hanson and David Fronheiser
- Co-Advisor, Lathes For Africa Senior Design Project (2008 – Current)

Business Experience

- Co-Founder, Co-Owner, and Executive Scientist, Greenstone Technologies, Inc. (2008 – Current)

Committees Served

- Drexel University Mechanical Engineering And Mechanics (MEM) Department Head Search Committee Member (2008)
- Drexel University Student Conference On Global Challenges, Committee Member and Panelist (2008)

Technical Skills

- Design Of Experiment (DOE)
- Laboratory techniques including mechanical testing, SEM microscopy, nanoindentation, and XRD
- Mechanical Design of products, test equipment, and manufacturing processes
- Theory and applications of Ceramics, Composite Materials, Polymers, Metals, and Textiles
- Working knowledge of Maple, LabVIEW, CAD (AutoCAD), FEA (ANSYS), and Web Development
- Expertise in Microsoft Office (Word, Excel, Powerpoint, Outlook) and VBA for Excel

Other Relevant Experience And Interests

- Engineers Without Borders, Drexel University; Co-Founder, Member (2006-2008), and President (2007)
- Hurricane Katrina Relief in New Orleans, Alternative Spring Break (2006)
- MEM Department Head Search Committee Member (September 2007 to Present)
- Invited Panelist, Drexel Student Conference On Global Challenges (February 2008)
- LeaderShape Institute Certificate (June 2007)
- Drexel University Recruitment And Outreach Associate (2004 to 2007)
- American Society of Mechanical Engineers (ASME) Member (Inducted 2004)