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available upon request]

EDUCATION

- Visiting Scholar* Thesis Expansion and Collaboration
Indian Institute of Technology (IIT) Bombay, Mumbai, India (June - December 2010)
Civil Engineering, Center for Technology Advancement in Rural Areas (CTARA)
Advisor: Prof. Devendra Narain Singh (Ph.D.: IIT Kanpur)
Alkali-Activated Cements for Slum Development in Mumbai
- Ph.D.* NSF Graduate Research Fellow (GRFP)
Drexel University, Philadelphia, PA, USA (Completed 2011)
Interdisciplinary: Mechanical Eng. And Mechanics (Degree)
Materials Science & Eng.; Civil Eng.; Science, Tech. & Soc.
Advisor: Dr. Michel W. Barsoum (Ph.D.: MIT)
Committee Chair and Advisor: Dr. James Tangorra (Ph.D.: MIT)
Alkali-Activated Cement as Appropriate And Sustainable Technology 
- M.S./B.S.* Joint 5-Year M.S./B.S. Program
Drexel University, Philadelphia, PA (Completed 2007)
M.S.: Materials Engineering
Advisor: Dr. Michel Barsoum (Ph.D.: MIT)
Spherical Nanoindentation: Insights And Improvements, Including Stress-Strain Curves and Effective Zero Point Determination 
B.S.: Mechanical Engineering (Magna Cum Laude)
Concentration: Design & Manufacturing


ACADEMIC APPOINTMENTS

Drexel University, Department of Mechanical Engineering & Mechanics (Sept. 2011 - Current)
Assistant Teaching Professor
Lead comprehensive strategic plan development for lab course curricula and college-wide Senior Design. Instruct core courses and serve the department and college.

GRANTS

- P.I., NCIIA Course and Program Grant: Senior Design Innovation and Entrepreneurship (Planning Grant) (#9175-11, \$8,000, 2011-2012)
- Co-P.I., EPA P3: People, Prosperity and the Planet, Phase II: *Alkali-Activated Cement (AAC) as a Sustainable Building Material*. (EPA SU834350, \$75,000, 2010 - 2012)
- Co-P.I., International Center for Appropriate & Sustainable Technology (iCAST) Triple Bottom-Line Impact Award. (\$11,000, 2010 - 2012)
- Co-P.I. EPA P3: People, Prosperity and the Planet, Phase I: *Alkali-Activated Slag Cement (AASC) as a Sustainable Building Material*. (EPA SU834350, \$10,000, 2009-2010)

PATENTS

- Tangorra, J., **Moseson, A.**, et al. Reciprocating Metering Device. USPTO Provisional Application No. 61/496,582 (2011).
- **Moseson, A.**, Basu, S. & Barsoum, M. W. Novel Method for Zero Point Detection. USPTO Provisional Application No. 60/953,361 (2009). 

RESEARCH EXPERIENCE

Product Development and Methodology: Appropriate Technology (2007 – 2011)

Ph.D. Thesis, Interdisciplinary: Science, Technology & Society; Mechanical; Materials; Civil

Developed and implemented methodology (Technology Seeding) and devices to leverage technology for equitable development. Co-invented patent-pending rice seed planter for use on steep rocky slopes in rural Thailand. Designed and implemented scrap-parts machine design and production for microeconomy through Lathes For Africa in Tanzania. Led other projects in Bangladesh and India, including alkali-activated cement for slum improvement in Mumbai.

Product Development and Analysis: Alkali-Activated Cements (2007 - 2011)

Ph.D. Thesis, Interdisciplinary: Mechanical; Materials; Civil; Science, Technology & Society

Developed alkali-activated cements (AACs) that compete with ordinary portland cement (OPC) in performance and cost, but reduce both CO₂ production and energy demand by up to 97%, with up to 40% cost savings. Studied impact of mixture design with statistical Design of Experiment (DOE) and chemistry by quantitative x-ray diffraction, NMR, and more.

Materials: Nanoindentation, Mechanical Properties - Materials Science and Engineering (2005 – 2007)

Hess Undergraduate Honors Research Fellow and Master's Thesis Research

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.

TEACHING EXPERIENCE

- Advancing and teaching senior design, lab, and core course curricula (current)
- Invited guest lecturer for:
 - *Intro to Comp. Aided Design & Manufacturing*, Profs. Tangorra & Kang, Drexel U (2011)
 - *Eco Design*, Prof. Wegst, Drexel University (2011)
 - *Advanced Concrete Materials*, Prof. Hsuan, Drexel University (2010)
- Invited organizer and keynote, *Appropriate Technology Workshop* for Laudon Acad. of Sci. (2009)
- Lecturer and lab instructor, PASCO electronic teaching tools, for urban K-12 teachers (2007 x 2)
- Advised research assistants (1 graduate, 8 undergraduate, 3 high school)
- Teaching Assistant: (R – Recitation Instructor, G – Grading)
 - Statics, MEM 202, (2007, R & G)
 - Introduction To Thermodynamics, ENGR 210 (2007, R & G x 2)
 - Mechanics Of Materials, MEM 230 (2007, R & G)
 - Introduction To Materials Science And Engineering, TDEC 211 (2006, G)

INDUSTRY EXPERIENCE

Greenstone Technologies, Inc. (2008 – Current)

Co-Founder and Principal Scientist

Business and technical commercialization of Ph.D. research on alkali-activated cements.

STV Inc. (National Consulting Firm), Philadelphia, PA (2006, 6 Mo.)

Vehicle Specialist (Co-op)

Supported passenger rail vehicle fleet procurement, improvement, and maintenance.

Boehringer Laboratories Inc., Norristown, PA, (2005, 6 Mo.)

Project Engineer (Co-op)

Designed and developed novel medical devices and associated manufacturing processes.

McNeil Pharmaceuticals (a J&J Company) Fort Washington, PA (2003 – 2004, 6 Mo.)

Solid Dose Processing / Manufacturing Engineer (Co-op)

Developed solutions for manufacturing challenges independently, on teams, and as manager.

SELECT HONORS AND AWARDS

- NSF Graduate Research Fellowship (GRF) (2008-2011)
- Graduate Assistance In Areas Of National Need (GAANN) Fellowship (2007-2008)
- Drexel University Provost and Dean's III Fellowships (2007)
- Featured in Engineering Go For It (eGFI) magazine for K-12, one of 8 students nationally (2009)







PERSONAL & ASSOCIATIONS

- Engineers Without Borders (EWB), Drexel University Chapter
 - Co-Founder (2006), President (2007), Member (2006 -2008)
- Member, American Society of Mechanical Engineers (ASME) (2004 - Present)
- Member, Materials Advantage (ACerS, AIST, ASM and TMS) (2006 - Present)
- Co-founder and leader, FIRST Robotics Competition Team 357, Upper Darby H.S. (1999– 2002)
- Interests: Photography, SCUBA diving


SELECT PRESS

- Alkali-Activated Cement
 - 1/23/2012: The Daily Climate (Syndicated on Planet Forward, Princeton's Climate Central, etc.) ([Link](#))
 - 1/27/2012: Living on Earth for Public Radio International (Syndicated on 300+ stations) ([Link](#))
- Drexel Thai Harvest (Humanitarian Engineering)
 - 7/13/2011: WHY? NewsWorks Tonight (FM Radio) - 21:09 - 22:00 ([Link](#))

PEER-REVIEWED JOURNAL PUBLICATIONS

- **Moseson, A.,** Slaton A.E. Alkali-Activated Cements For Slum Empowerment In Mumbai, India. *In Review.* (2011). 
- **Moseson, A.,** Tangorra, J. & Lama, L. Development By Technology Seeding. *In Review.* (2011). 
- **Moseson, A.,** Sakulich, A., Moseson, D., Mackenzie, K. & Barsoum, M. W. Chemical Pathways And Origins Of Strength In Alkali Activated Fine-Aggregate Concrete. *In Review.* (2010). 
- **Moseson, A.,** Moseson, D. E. & Barsoum, M. W. High volume limestone alkali-activated cement developed by design of experiment. *Cement & Concrete Composites* 34, 328-336, DOI: 10.1016/j.cemconcomp.2011.11.004, (2010). 
- **Moseson, A.,** Basu, S. & Barsoum, M. W. Determination of the Zero Point of Contact for Spherical Nanoindentation. *Journal of Materials Research* 23, 204 - 209, (2008). 
- Basu, S., **Moseson, A.** & Barsoum, M. W. On The Determination Of Spherical Nanoindentation Stress-Strain Curves. *Journal of Materials Research* 21, 2628-2637, (2006). 

CONFERENCE PUBLICATIONS

- **Moseson, A.** & Barsoum, M. W. Alkali-Activated Cement for Equitable Slum Improvement in Mumbai, India - A Low-CO₂, Low-Cost, and Equitable Alternative in *IEEE Global Humanitarian Technology Conference (GHTC)* (Seattle, WA, 2011). 

INVITED TALKS

- **Moseson, A.,** Lama, L. & Tangorra, J. Sustainable Development By Technology Seeding at *E4C/AAAS Connect* (Washington, D.C., 2012). Exhibitor.
- **Moseson, A.,** Lama, L. & Tangorra, J. Cement From Trash: Low-CO₂, Low-Cost, and Fair at *E4C/AAAS Connect* (Washington, D.C., 2012). Exhibitor.
- **Moseson, A.** Rapid Development of Alkali-Activated Cement Using Design of Experiment at *Princeton University Department of Civil Engineering.* (Princeton, NJ, 2011). Departmental Seminar.
- **Moseson, A.,** Sakulich, A., Moseson, D., MacKenzie, K. & Barsoum, M. W. Design Of Experiment (DOE) Investigation of the Mechanical and Chemical Properties of Alkali Activated Slag Fine Aggregate in *34th International Conference and Exposition on Advanced Ceramics and Composites (ICACC)* (Daytona Beach, FL, 2010). Oral Presentation.
- **Moseson, A.** Development by Technology Seeding at *Center for Technology Advancement in Rural Areas (CTARA), Indian Institute of Technology (IIT) Bombay.* (Mumbai, India, 2010). Departmental Seminar.
- **Moseson, A.** Engineering For The Whole World at *River Valley H.S.* (Madison, WI, 2009). Lecture.

CONFERENCE PRESENTATIONS

- **Moseson, A.**, et al. Cement From Trash: Low-CO₂, Low-Cost, and Fair in *8th Annual EPA National Sustainable Design Expo - Green Public Forum*. (National Mall, Washington, DC, 2012). Exhibitor.
- **Moseson, A.**, Lama, L. & Tangorra, J. Sustainable Development By Technology Seeding in *IEEE Global Humanitarian Technology Conference (GHTC)* (Seattle, WA, 2011). Poster Presentation.
- **Moseson, A.**, et al. Cement From Trash: Fair, Low-Cost, and Low-CO₂ in *7th Annual EPA National Sustainable Design Expo - Green Public Forum*. (National Mall, Washington, DC, 2011). Exhibitor.
- **Moseson, A.** & Barsoum, M. W. Alkali-Activated Cement As An Appropriate And Sustainable Building Material in *17th Int. Sust. Dev. Res. Conf.* (Columbia U., NYC, 2011). Oral Presentation.
- **Moseson, A.**, Lama, L. & Tangorra, J. Sustainable Development By Technology Seeding in *17th Int. Sust. Dev. Res. Conf.* (Columbia U., NYC, 2011). Poster Presentation.
- **Moseson, A.**, Sakulich, A. R., Radlinska, A. & Barsoum, M. W. Cement From Trash: Alkali-Activated Cements That Cut CO₂ by 95% in *6th Annual EPA National Sustainable Design Expo - Green Public Forum*. (National Mall, Washington, DC, 2010). Oral Presentation.
- **Moseson, A.**, Lama, L. & Tangorra, J. Appropriate Technology for the World: Small, Simple, Cheap, and Non-Violent in *6th Annual EPA National Sustainable Design Expo - Green Public Forum*. (National Mall, Washington, DC, 2010). Oral Presentation.
- **Moseson, A.**, Sakulich, A. R., Moseson, D., MacKenzie, K. & Barsoum, M. W. Mechanical and Chemical Development of Alkali Activated Slag Fine Aggregate Concrete by Design Of Experiment (DOE) in *TMS Annual Meeting & Exhibition* (Seattle, WA, 2010). Oral Presentation.
- **Moseson, A.** & Barsoum, M. W. Application of ASTM Standard Test Methods to Competing Cementitious Materials in *34th International Conference and Exposition on Advanced Ceramics and Composites (ICACC)* (Daytona Beach, FL, 2010). Oral Presentation.
- **Moseson, A.**, Sakulich, A., Curtin, A., Sierra, E. J. & Barsoum, M. W. Slag-based geopolymer cements as a sustainable building material; case study using design of experiment in *2nd International Conference On Ceramics (ICC2)* (Verona, Italy, 2008). Poster Presentation.
- Sierra, E. J., Miller, S., Narang, P. & **Moseson, A.** Alkali-activated Cements based on Diatomaceous Earth in *Materials Science & Technology (MS&T)* (Pittsburgh, PA, 2008). Oral Presentation.
- **Moseson, A.**, Sierra, E. J., Narang, P., Sakulich, A. & Barsoum, M. W. Alkali-Activated Cements as a Sustainable Building Material; Case Study of Slag Cement Using Design of Experiment in *Materials Science & Technology (MS&T)* (Pittsburgh, PA, 2008). Oral Presentation.
- **Moseson, A.**, Basu, S. & Barsoum, M. W. A Novel Method To Determine The Effective Zero Point Of Contact For Spherical Nanoindentation in *Materials Science & Technology (MS&T)* (Pittsburgh, PA, 2008). Oral Presentation.
- Barsoum, M. W., Sierra, E.J., Sakulich, A., **Moseson, A.**, MacKenzie, K.J., Vogel S.C., and Daemen, L.L. Silica-based Nanostructures and the Pyramids of Egypt in *Materials Science & Technology (MS&T)* (Pittsburgh, PA, 2008). Oral Presentation.