

DEBBIE CHACHRA

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FEBRUARY 2011

APPOINTMENTS

Associate Professor of Materials Science

Franklin W. Olin College of Engineering

May 2010 - present

Assistant Professor of Materials Science

Franklin W. Olin College of Engineering

August 2003 – May 2010

Interests in pedagogical research include persistence, self-efficacy, self-directed learning, and gender and diversity issues. Research interests in materials science focus on biological materials, including bone and natural polymers.

Visiting Assistant Professor

Department of Human-Centered Design and Engineering
University of Washington

September 2008 – June 2009

EDUCATION AND RESEARCH EXPERIENCE

2001-3: **Postdoctoral Associate**

Department of Materials Science and Engineering, Massachusetts Institute of Technology

Research included quantification of force generated by bone cells, and characterization of a novel scaffold for cell formation.

2001: **Doctor of Philosophy**

Department of Metallurgy and Materials Science, University of Toronto

Thesis: The Influence of Lifelong Exposure to Environmental Fluoride on Bone Quality in Humans

1995: **Master of Applied Science**

Department of Metallurgy and Materials Science, University of Toronto

Thesis: The Effect of Insulin-Like Growth Factor-I Therapy on the Mechanical Properties of Bones from Mature Ovariectomized Rats

1992: **Bachelor of Applied Science**

Division of Engineering Science (Physics), University of Toronto

Thesis: A Feasibility Study of the Use of Scintillator in the Sudbury Neutrino Observatory

1992: **Research Technician**

Tissue Mechanics Laboratory, Centre for Biomaterials, University of Toronto

Investigated the effects of applied stress on crosslinking in a bioprosthetic material.

TEACHING EXPERIENCE

Courses developed and taught at Olin College, 2003-present:

Polymers (ENGR 3899)

(experimental course, Spring 2008)

Project-based course in polymers that aims to give students exposure to the fundamentals of polymer chemistry, mechanical behavior of polymers, polymer manufacturing, and design. A modular course structure allows students to choose one area (chemistry, mechanical properties, manufacturing) in which to concentrate. The course is taught in collaboration with three other faculty, who provide additional expertise and guidance for student projects.

Materials Science and Solid-State Chemistry (SCI 1410; formerly FND 2240)

Introductory course in materials science offered as an elective in chemistry and taken by most Olin students. Covers fundamental principles of materials science in a modular, self-directed format with an extensive project-oriented laboratory component.

Structural Biomaterials (ENGR 3810)

Biomedical Materials (ENGR 3610)

Complementary upper-year electives in the intersection of materials science and bioengineering, these two graduate-style courses feature extensive readings drawn from the primary literature as well as self-designed, team-based experimental projects. Structural Biomaterials focuses on the material properties of natural materials ranging from spider silk to bamboo to sea anemones, as well as development of more advanced materials science concepts such as viscoelasticity. Biomedical Materials investigates the properties of materials used in biomedical applications (such as implants), with an emphasis on the biological responses to materials at the molecular, cellular, and tissue level.

Other teaching at Olin College:

Studio Instructor for User-Oriented Collaborative Design (Spring 2007)

Provided guidance to students in studio sessions and assessed student work, including design reviews.

Guest instructor in numerous courses including:

AHSE 1150	What is "I"? (2004)
AHSE 2110/ SCI 1410	The Stuff of History (2004, 2005)
AHSE 2114	Science Fiction and Historical Context (2005, 2006)
SCI 2110	Biological Physics (2005)
ENGR 3899	Special Topics in Materials Science: Engineering Polymers (2006)

TEACHING EXPERIENCE CONT'D

Teaching experiences prior to joining Olin College:

- Spring 1999: **Lecturer**, *An Introduction to Materials Science*
Preparation and teaching of lectures and tutorials, together with exam-setting and grading.
- 1998-1999: **Certificate in Teaching in the Biomedical Sciences**
Comprised a course on practical teaching skills, an elective theory-oriented course in higher education), and a mentoring and practical experience component.
- Fall 1998: **Tutorial Assistant**, *Applied Science: Materials* (first-year engineering course)
- Fall 1999, Fall 1996-97, Spring 1994-96:
Tutorial Assistant, *Materials Science* (sophomore engineering course)
- Fall 1993: **Laboratory Assistant**, *Mechanical Properties of Polymers* (senior engineering course)

OTHER EXPERIENCE

- Summer 1990: **Founding Co-Director, Science Outreach**
Faculty of Applied Science and Engineering, University of Toronto
Initiated and developed a summer science and engineering camp for children aged 9 to 12. Responsibilities including securing funding, administration, curriculum development, and teaching classroom workshops and weeklong sessions.

AWARDS

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| NSF Faculty Early Career Development (CAREER) Award
<i>(see "Grants Awarded" for details)</i> | 2010-2014 |
| William Elgin Wickenden Award, American Society for Engineering Education
<i>(see "Publications" for details)</i> | 2009 |
| Natural Sciences and Engineering Council (Canada) Postdoctoral Fellowship | 2001-03 |
| Norman F. Moody Award for Academic Excellence,
Institute of Biomaterials and Biomedical Engineering, University of Toronto | 2000 |
| Rocky Mountain Bioengineering Symposium, 'Best Paper' | 2000 |
| Ontario Graduate Scholarship | 1998-99 |
| Medical Research Council/Industrial Scholarship | 1993-95 |

SELECTED CONTRIBUTIONS TO THE ACADEMIC COMMUNITY

At Olin College:

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| Chair, Committee on Curricular Effectiveness | 2009-2010 |
| Chair, Engineering Program Group | 2007-2008 |
| Member, Provost/Dean of Faculty Search Committee | 2010-2011 |
| Member, Engineering Program Group | 2003-present |
| Member, Math and Sciences Field Group | 2007-present |
| Member, Academic Recommendations Board | 2007-2008 |
| Member, Institutional Review Board | 2007-present |

SELECTED CONTRIBUTIONS TO THE ACADEMIC COMMUNITY CONT'D

At Olin College (cont'd):

Chair, Committee on Diversity in the Academic Environment	2005-2006
Convener, Bioengineering Option Working Group	2004-2008
Chair, Bioengineering Faculty Search Committee	2004-2005
Convener, Diversity Working Group	2004-2005
Member, Big Conversations Committee	2003-2004

At the University of Toronto:

Member, Search Committee for Dean of Applied Science and Engineering	1999-2001
Member, Academic Board, University of Toronto (also served on the Committee on Academic Policy and Programs)	1999-2000

Service to the Academic Community:

Reviewer, <i>European Journal of Engineering Education</i>	2009-present
Reviewer, Frontiers in Education Conference American Society for Engineering Education	2008-present
Member of Program Committee, Northeast Bioengineering Conference	2004, 2005
Reviewer, <i>Science and Engineering Ethics</i>	2003-2005

GRANTS AWARDED

Principal Investigator, "CAREER: Exploring the Relationship Between Self-Efficacy and Project-Based Learning Among Engineering Students"
NSF Early Career Development (CAREER) Award (#0953698), January 2010-December 2014
\$400 084

Recipient of NSF Research Opportunity Award, September 2008
Associated with the Center for the Advancement of Engineering Education, NSF ESI-0227558
PI: Professor Cynthia J. Atman, University of Washington
\$91 989

Co-investigator, "Acquisition of an Infrared Spectrometer System for Interdisciplinary Materials Research and Undergraduate Engineering Education"
NSF Major Research Instrumentation Grant (#0619468), 2006
\$208 167

Co-investigator, "Acquisition of a Confocal Microscope for Investigation of Biophysical Interactions and to Enrich Undergraduate Bioengineering Education"
NSF Major Research Instrumentation Grant (#0619373), 2006
\$478 845

OTHER RESEARCH FUNDING

Academic Pathways Study, NSF Center for the Advancement of Engineering Education
ESI-0227558, 2005-2008 (1-2 weeks of summer support per annum)
Subcontract; in collaboration with Ozgur Eris, Olin College

PUBLICATIONS

Journal papers:

- Eris O, **Chachra D**, Chen HL, Sheppard S, Ludlow L, Rosca C, Bailey T, Toye G (2010) Outcomes of a longitudinal administration of the Persistence in Engineering survey. *J Eng Ed* Oct: 371-395.
- Chachra D**, Limeback H, Willett T, Gryn timer MD (2010) Assessing the long-term effects of water fluoridation on the human skeleton. *J Dent Res* 89:1219-1223.
- Wynnyckyj C, Omelon S, Savage K, Damani M, **Chachra D**, Gryn timer MD (2009) A new tool to assess the mechanical properties of bone due to collagen degradation. *Bone* 44:840-848.
- Chachra D**, Vieira A, Gryn timer MD (2008) Fluoride and mineralized tissues. *Crit Rev Biomed Eng* **36**:183-223. [invited review paper]
- Ohland MW, Sheppard SD, Lichtenstein G, Eris Ö, **Chachra D**, Layton RA (2008) Persistence, Engagement, and Migration in Engineering Programs. *J Engin Educ* **97**:259-278 [invited publication]. [for which we received the William Elgin Wickenden Award, awarded to the 'authors whose article reflects the highest standards of scholarly research in engineering education' in that year of the JEE]
- Tholpady SS, Freyman TF, **Chachra D**, Ogle RC (2007) Tensional forces influence gene expression and sutural state of rat calvariae in vitro. *Plast Reconstr Surg* **120**: 601-611.
- Gryn timer MD, **Chachra D**, Lundon KMA (2000) Bone quality in animal models of osteoporosis. *Drug Develop Res* **49**:146-158.
- Chachra D**, Lee JM, Kasra M, Gryn timer MD. (2000) Differential effects of ovariectomy on the mechanical properties of cortical and cancellous bone from aged rats. *Biomed Sci Instrum* 36:123-128.
- Chachra D**, Turner CH, Dunipace AJ, Gryn timer MD (1999) The effect of fluoride treatment on bone mineral in rabbits. *Calcif Tiss Int* **64**:345-351.
- Turner CH, Garetto LP, Dunipace AJ, Zhang W, Wilson ME, Gryn timer MD, **Chachra D**, McClintock R, Peacock M, Stookey GK (1997) Fluoride treatment increased serum IGF-I, bone turnover and bone mass, but not bone strength, in rabbits. *Calcif Tiss Int* **61**:77-83.
- Julien M, Létourneau D-R, Marois Y, Cardon A, King MW, Guidoin R, **Chachra D**, Lee JM (1997) Shelf-life of bioprosthetic heart valves: a structural and mechanical study. *Biomaterials* **18**:605-12.
- Chachra D**, Gratzner PF, Pereira CA, Lee JM (1996) Effect of applied uniaxial stress on rate and mechanical effects of cross-linking in tissue-derived biomaterials. *Biomaterials* **17**:1865-75.
- Chachra D**, Kasra M, Vanin CM, MacLusky NJ, Casper RF, Gryn timer MD (1995) The effect of different hormone replacement therapy regimens on the mechanical properties of rat vertebrae. *Calcif Tiss Int* **56**:130-4.
- Vanin CM, MacLusky NJ, **Chachra D**, Kasra M, Gryn timer MD, Casper RF (1995) Lumbar vertebral density and biomechanics in aged ovariectomized rats treated with estrogen and norethindrone or norgestimate. *Am J Obst Gynec* **173**:1491-8.

Editorials:

- Chachra D** (2010) Adding value to teaching: what do we offer that our students can't get online? *ASEE Prism*. November.
- Chachra D** (2009) Putting people first: today's challenges require a different kind of engineer. *ASEE Prism*. October.
- Chachra D** (2005) Beyond course-based engineering ethics instruction. *Sci Eng Ethics* **11**:459-461

PUBLICATIONS CONT'D

Book chapter:

Limeback H, **Chachra D**, Grynblas MD (2000) The action of fluoride on bone. In: J.E. Henderson, D. Goltzman, eds. *The Osteoporosis Primer*, Cambridge University Press, pp. 318-330

Peer-reviewed conference papers:

Zastavker YV, **Chachra D**, Sarang-Sieminski AL, Stein LA, Lynch C. Faculty and student construction of gender in first-year engineering programs: gender, micro-messaging, and engineering education. *Submitted: ASEE Annual Conference*, June 26-29, 2011, Vancouver BC.

Kilgore D, Sheppard S, Chachra D, Atman C. Motivation makes a difference, but is there a difference in motivation? *Submitted: ASEE Annual Conference*, June 26-29, 2011, Vancouver BC.

Tatar N, **Chachra D**, Zastavker YV, Stolk J (2010) Work in progress – using video and self-reflection to enhance undergraduate teams. *Frontiers in Education Conference*, October 27-30, 2010, Washington, DC.

Chachra D, Chen HL, Kilgore D, Sheppard S (2009) Outside the classroom: gender differences in extracurricular activities of engineering students and their impact on engineering. *Frontiers in Education Conference*, October 18-21, 2009, San Antonio, TX.

Chachra D, Kilgore D (2009) Exploring gender and self-confidence in engineering students: a multi-method approach. *Proceedings of the 2009 ASEE Annual Conference*, June 14-17, 2009, Austin, TX.

Stolk J, Somerville M, **Chachra D** (2008) Drowning in method, thirsty for values: a call for cultural inquiry. *Proceedings of the Frontiers in Education Conference*, October 22–25, Sarasota Springs, NY.

Chachra D, Kilgore D, Loshbaugh H, McCain J, Chen H (2008) Being and becoming: gender and identity formation of engineering students. *Proceedings of the 2008 ASEE Annual Conference*, June 22-25, 2008, Pittsburgh, PA.

Chen H, Donaldson K, Eris O, **Chachra D**, Lichtenstein G, Sheppard S, Toye G (2008) From PIE to APPLS: the evolution of a survey instrument to explore engineering student pathways. *Proceedings of the 2008 ASEE Annual Conference*, June 22-25, 2008, Pittsburgh, PA.

Eris O, **Chachra D**, Chen H, Rosca C, Ludlow L, Sheppard S (2007) A preliminary analysis of correlates of engineering persistence: results from a longitudinal study. *Proceedings of the 2007 ASEE Annual Conference*, June 22nd-24th, Honolulu, HI

Kilgore D, Yasuhara K, **Chachra D**, Loshbaugh H, Jones M, McCain J (2007) Creative, contextual, and engaged: are women the engineers of 2020?. *Proceedings of the 2007 ASEE Annual Conference*, June 22nd-24th, Honolulu, HI.

Somerville M, **Chachra D**, Chambers J, Cooney E, Dorsey K, Geddes JE, Pratt G, Rivard K, Schaffner A, Stein LA, Stolk J, Westwood S, Zastavker YV (2005) Work in progress – a provisional competency assessment system. Presented at the 35th ASEE/IEEE Frontiers in Education Conferences, October 18th-22nd.

WORKSHOPS

As facilitator:

Zastavker YV, **Chachra D**, Stein LA, Sieminski AL, Lynch C (2011) Who you are is what you teach: gender, micromessaging, and engineering education.

Somerville M, Stolk J, Stein LA, **Chachra D** (2009) “Developing Heuristics for Curriculum Reform.” *Frontiers in Education Conference*, October 18-21, San Antonio, TX.

WORKSHOPS CONT'D

As facilitator (cont'd)

Chachra D, Atman C, Turns J, Yasuhara K, Sheppard S (2009) "Research Findings on Engineering Student Learning and Engineering Teaching: Interactively Exploring the Implications for Engineering Education." Frontiers in Education Conference, October 18-21, San Antonio, TX.

Atman C, Sheppard S, **Chachra D**, Turns J, Yasuhara K, Kilgore D, Fleming L, Miller R, Smith K, Stevens R, Streveler R (2008) "Linking Research Findings on Engineering Student Learning and Engineering Teaching: Implications for Engineering Education." American Society for Engineering Education, Pacific Northwest and Washington Council for Engineering and Related Technical Education Joint Meeting, November 6-8, Seattle, WA.

Atman C, Sheppard S, **Chachra D**, Turns J, Yasuhara K, Kilgore D, Fleming L, Miller R, Smith K, Stevens R, Streveler R (2008) "Linking Research Findings on Engineering Student Learning and Engineering Teaching: Implications for Engineering Education." Frontiers in Education Conference, October 22-25, Sarasota Springs, NY.

Barabino G and **Chachra D** (2008) "Minorities in Biomedical Engineering." 3rd Summit in Biomedical Engineering, June 15-17, Chicago, IL.

As invited/sponsored attendee:

US-Europe Workshop for Research on Gender and Diversity in Engineering Education. Delft, The Netherlands. June 30th-July 1st, 2009.

Engineering Leaders as Agents of Academic Change. National Academy of Engineering Workshop, Chicago, IL. June 25-26, 2009.

The Engineering Curriculum: Understanding the Design Space and Exploiting the Opportunities. National Academy of Engineering Workshop, Washington, DC. March 23-24, 2009.

CONFERENCE ABSTRACTS AND PRESENTATIONS

Taylor S, Belisle R, Morse CA, **Chachra D** (2011) Investigation of the nest cell lining of *Colletes inaequalis*. To be presented at the Materials Research Society Spring Meeting, April 25-29, 2011, San Francisco, CA.

Chachra D (2011) Unpacking gender: men, women, technology and more (2011) South by Southwest Interactive Conference, March 11-16, 2011, Austin, TX.

Kilgore D, Morozov AE, Atman CJ, Yasuhara K, **Chachra D**, Eris O, Loucks C (2009) "Driven by passion, curiosity, engagement and dreams?" Findings from the Academic Pathways Study on undergraduates' motivations to study engineering. Presented at the Annual Meeting of the American Education Research Association, April 13th-17th, 2009, San Diego, CA.

Barabino G, **Chachra D** (2008) Minorities in biomedical engineering. Proceedings of the Biomedical Engineering Society Conference, October 2nd-4th, 2008, St. Louis, MO.

Angmo D, McCahon M, Morse C, **Chachra D** (2008) Materials characterization of nest cell linings of bees from the family *Colletidae* (*Colletes inaequalis*). Presented at the Materials Research Society Spring Meeting, March 24-28, 2008, San Francisco, CA.

Chachra D, Eris O, Chen H, Donaldson K, Sheppard S, Rosca C, Ludlow L (2007) Correlates of persistence in engineering education: preliminary results from the Academic Pathways Study. Presented at the Frontiers in Education Conference, October 10th-13th, Milwaukee, WI.

Chachra D, Eris O, Chen H, Donaldson K, Sheppard S, Rosca C, Ludlow L (2007) Correlates of persistence in engineering education: preliminary results from the Academic Pathways Study. Presented at the Engineering Education NSF Awardees Conference, September 26th-28th, Arlington, VA.

- Chachra D**, McCusker EM (2005) Investigating Cell-Substrate Mechanical Interaction: A Tissue Engineering Approach. Presented at the 3rd European Medical and Biological Engineering Conference, November 20th–25th, Prague, Czech Republic.
- McCusker EM, **Chachra D** (2005) Assessment of contractility in osteoblastic cells. Presented at the Northeast Bioengineering Conference, April 2nd-3rd, Hoboken, NJ.
- Chachra D**, Yannas IV, Gibson LJ (2004) Quantification of force generated by murine osteoblasts. Presented at the 50th Annual Meeting of the Orthopaedic Research Society, March 7th-10th, San Francisco, CA.
- Chachra D**, Limeback H, Zukor D, Schwartz M, Gross AE, Hutchison CH, Gryn timer MD (2001) Environmental fluoride exposure, bone quality, and osteoarthritis. *J Bone Miner Res* **16 (Suppl 1)**: S323.
- Freyman TM, Yannas IV, **Chachra D**, Gibson LJ (2001) Fibroblast contractile force is independent of the stiffness which resists the contraction. *Ann Biomed Eng* **29 (Suppl 1)**:S39.
- Chachra D**, Limeback H, Gross AE, Hutchison C, Zukor D, Schwartz M (2001) Comparing human bone quality in fluoride-free Montreal and fluoridated Toronto. Presented at the International Association for Dental Research, 79th General Session, June 27th-30th, Chiba, Japan.
- Chachra D**, Limeback H, Gross AE, Hutchison CH, Zukor D, Schwartz M, Gryn timer MD (2000) Lifelong ingestion of fluoride and its effect on bone quality. Presented at the American Society for Bone and Mineral Research, 22nd Annual Meeting, September 22nd–26th, Toronto, Canada.
- Chachra D**, Limeback H, Gross AE, Hutchison CH, Zukor D, Schwartz M, Gryn timer MD (2000) Does life-long ingestion of fluoridated water alter bone quality in humans? *Osteoporosis Int* **11 (Suppl 1)**: S155.
- Chachra D**, Limeback H, Gross AE, Hutchison CH, Zukor D, Schwartz M, Gryn timer MD (2000) Does life-long ingestion of fluoridated water alter bone quality in humans? *Osteoporosis Int* **11 (Suppl 1)**: S155.
- Chachra D**, Limeback H, Gross AE, Hutchison CH, Zukor D, Schwartz M, Gryn timer MD (2000) Does accumulated fluoride alter the mechanics and architecture of human bone? *J Dent Res* **79 (Spec Iss)**: Abstract 3681.
- Chachra D**, Limeback H, Gross AE, Hutchison CH, Zukor D, Schwartz M, Gryn timer MD (1999) Does fluoridated water alter the mechanical and material properties of human bone? Proceedings of the Fifth Canadian Connective Tissue Conference, Montreal; Abstract 77.
- Chachra D**, Limeback H, Gross AE, Hutchison CH, Zukor D, Schwartz M, Gryn timer MD (1999) Does fluoridated water alter the mechanical and material properties of human bone? Proceedings of the Fifth Canadian Connective Tissue Conference, Montreal; Abstract 77.
- Chachra D**, Limeback H, Gross AE, Hutchison CH, Zukor D, Schwartz M, Gryn timer MD (1999) Does fluoridated water alter the mechanical and material properties of human bone? *J Dent Res* **78 (Spec Iss)**: Abstract 3467.
- Chachra D**, Limeback H, Gross A, Hutchison C, Gryn timer MD (1998) Fluoride content, mechanical properties and hardness of human cancellous bone. *J Dent Res* **77 (Spec Iss B)**: Abstract 2181.
- Chachra D**, Turner CH, Dunipace AJ, Gryn timer MD. Effect of fluoride administration on bone mineral in rabbits. *J Dent Res* **77 (Spec Iss A)**: Abstract 1261.
- Chachra D**, Lee JM, Gryn timer MD (1997) The effect of insulin-like growth factor therapy on ovariectomized rats. *Bone* **20 (4 Suppl 1)**: P305.
- Chachra D**, Lee JM, Gryn timer MD (1996) IGF-I therapy in the mature ovariectomized rat. *Osteoporosis International* **6 (Suppl 1)**: 258.

CONFERENCE ABSTRACTS AND PRESENTATIONS CONT'D

- Turner CH, Garetto LP, Dunipace AJ, Zhang W, Wilson ME, Grynypas MD, **Chachra D**, McClintock R, Peacock M (1996) Fluoride treatment increased serum IGF-I and bone mass, but not bone strength, in rabbits. *J Bone Miner Res* **11** (Suppl 1): S349.
- Chachra D**, Kasra M, Lee JM, Grynypas MD (1996) The mechanical properties of vertebrae: an evaluation of the mature ovariectomized rat model of post-menopausal osteoporosis. *Proceedings of the Fifth World Biomaterials Congress, Toronto*, **I**:616.
- Chachra D**, Kasra M, Lee JM, Grynypas MD (1995) An evaluation of the mature ovariectomized rat model of post-menopausal osteoporosis: the mechanical properties of vertebrae. *Proceedings of the Canadian Biomaterials Society, 16th Annual Conference, Ottawa*, p. 82.
- Chachra D**, Kasra M, Vanin CM, MacLusky NJ, Casper RF, Grynypas MD (1994) The effect of different hormone replacement therapy regimens on the mechanical properties of rat vertebrae. *Proceedings of the 2nd World Congress of Biomechanics, Amsterdam*, **II**:236.
- Chachra D**, Pereira CA, Lee JM (1992) Applied stress increases the rate of aldehyde and epoxide crosslinking of bovine pericardial materials. *Proceedings of the Canadian Biomaterials Society, 13th Annual Conference, Kingston*, p. 14.
- Naimark WA, Lee JM, Courtman DW, Limeback H, **Chachra D**, Haberer SA, Pereira CA (1988) High strain rate mechanical testing and biochemical/structural analysis of pericardial tissue from four mammalian species. *Trans Soc Biomat* **15**:116.

SELECTED TALKS

- 'The Door is Open, But the Floor is Slippery,' Women in Science, Technology, Engineering and Mathematics Mentorship Program, **Harvard University**, Cambridge MA. February 3, 2011.
- 'The Science of Temperature and Cooking,' with Jeff Potter. **Benefit event for the Science Club for Girls**, Cambridge, MA, November 16, 2010.
- 'Gender and the engineering student experience: results from the Academic Pathways Study,' **California Polytechnic State University**, San Luis Obispo, CA, January 29, 2009.
- 'Biological Materials: Characterization of Composites and Biopolymers,' Squishy Physics Seminar Series, **Harvard University**, Cambridge MA. March 12, 2008.
- 'Design and Student Engagement: Some Differences by Gender,' **United States House of Representatives Caucus on STEM Higher Education**, Washington, DC. November 19, 2007.
- 'The Stuff of Nature,' Physics Colloquium, **Brandeis University**, Waltham, MA. October 30, 2007.
- 'The Stuff of Nature,' Sigma Xi Chapter, **Natick Soldier Center**, Natick, MA. June 7, 2007.
- 'Natural Materials,' **Needham Adult Education Program**, Needham, MA. December 7, 2006.
- 'Research and Development: Creating a New Bioengineering Program at Olin College,' Department of Bioengineering, **University of Illinois at Chicago**, Chicago, IL. October 6, 2006.
- 'Bricks and Mortarboards: Some Notes from the Making of a New Engineering College,' Faculty of Applied Science, **Queen's University**, Kingston, Ontario. November 22nd, 2005.
- 'Towards an In Vitro Model of Fracture Repair: Understanding the Behaviour of Orthopaedic Cells on Collagen Scaffolds.' Trinity Centre for Bioengineering, **Trinity College**, Dublin, Ireland. April 11th, 2005.