

Short Biography



Christine Ortiz is the Dean for Graduate Education and a Professor of Materials Science and Engineering at the Massachusetts Institute of Technology. Professor Ortiz obtained her BS from Rensselaer Polytechnic Institute in Troy, NY, and her MS and PhD from Cornell University in Ithaca, NY, all in the field of materials science and engineering. Dr. Ortiz's doctoral research focused on the synthesis, characterization, physics and mechanics of a new class of novel liquid crystalline thermosets and elastomers based on diglycidyl ether of 4,4'-dihydroxy- α -methylstilbene. During graduate school, Dr. Ortiz carried out collaborative research each summer at the University of Cambridge, Cavendish (physics) Laboratory in the UK. After graduation, she was granted an NSF-NATO postdoctoral fellowship which she used to carry out research in the Department of Polymer Chemistry, University of Groningen, in the Netherlands where she worked in the area of single molecule mechanics. Dr. Ortiz then joined the MIT Department of Materials Science and Engineering as a tenure-track faculty member and developed a research program that focuses on the multiscale mechanics of musculoskeletal and exoskeletal structural biological materials, with the primary goal being to quantify and understand new mechanisms, phenomena, and design principles and how they determine function, quality, and pathology. Dr. Ortiz has over 150 scientific publications in more than 20 academic journals, including *Nature Materials*, *Science*, *Nano Letters*, *Physical Review Letters*, *Proceedings of the National Academy of Sciences USA*, *Biophysical Journal*, *Tissue Engineering*, and the *Journal of Biomechanics*. She has given more than 125 invited lectures, over 35 of which were international and at nine topically different Gordon Research Conferences. Dr. Ortiz has supervised more than 80 students and 7 post-doctoral research associates from 10 different academic disciplines. She has received over 30 national and international honors, including the Sigma Xi Distinguished Lecturer Award, National Security Science and Engineering Faculty Fellow; she was a Lady Davis Fellow and visiting professor at the Hebrew University of Jerusalem in Israel, where she received the Hadassah Appreciation Medal; the MIT Martin Luther King Jr. Leadership Award; and the National Science Foundation Presidential Early Career Award for Scientists and Engineers, which was presented to her by President George W. Bush at the White House. She is also a fellow of the Defense Science Study Group. Dr. Ortiz currently serves on the editorial boards of *Science*, *Advanced Biomaterials*, *Transactions of the American Society of Mechanical Engineers*, *Applied Mechanics Reviews*, *Scientifica*, and *The Open Nanomedicine Journal*. She has served as a reviewer for the National Science Foundation, the National Institutes of Health, the National Aeronautics and Space Administration, and the Department of Defense. Dr. Ortiz is the founding and current faculty director of the MIT International Science and Technology Initiatives (MISTI) - Israel program. She has served on over 25 Institute and departmental committees and in her current role as Dean for Graduate Education manages areas which include personal support, professional development, fellowships, policies and procedures, compiling and disseminating best practices, academic performance, graduate admissions administration, diversity, immigration, community-building and Institute-wide data analysis.

Curriculum Vitae

Christine Ortiz

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WWW (Research) : <http://web.mit.edu/cortiz/www/>

Education

B.S., Materials Science and Engineering, Rensselaer Polytechnic Institute, 1992

M.S., Materials Science and Engineering, Cornell University, 1994

Ph.D., Materials Science and Engineering, Cornell University, 1997

Thesis Title: “*Mechanical Properties of Liquid Crystalline Networks based on Diglycidyl Ether of 4,4'-Dihydroxy-alpha-Methylstilbene*”

Professional Experience

- 2010- Dean for Graduate Education, Massachusetts Institute of Technology (MIT)
- 2010- (Full) Professor of Materials Science and Engineering with tenure, MIT
- 2008-2010 Chair, Graduate Program, Department of Materials Science and Engineering, MIT
- 2006- Founding and Current Faculty Director the MIT International Science and Technologies Initiatives international exchange program with Israel (MISTI MIT-Israel)
- 2006-2010 Associate Professor with tenure, Materials Science and Engineering, MIT
- Spring 2008 Visiting Professor and Lady Davis Fellow, Hebrew University of Jerusalem (Israel)
- 2004-2006 Associate Professor without tenure, Materials Science and Engineering, MIT
- 1999-2004 Assistant Professor, Materials Science and Engineering, MIT
- 1997-1999 Post-Doctoral Research Associate, University of Groningen, Netherlands
- 1995, 1996 Summer Graduate Research Associate, University of Cambridge, Cavendish Laboratory (UK)
- 1992 Summer Institutes in Applied Science: Lawrence Livermore National Laboratory / U.C. Davis
- 1991-1993 Summer Graduate Researcher, National Institute of Standards and Technology (Gaithersburg, MD)

Research Program: *Multiscale Mechanics of Structural Biological Materials* : <http://web.mit.edu/cortiz/www/>
Musculoskeletal Tissues, Biological Exoskeletons, Solid/Continuum Mechanics, Micromechanics, Nanomechanics, Structural Biological Materials, Single Molecule Imaging, Single Cell Mechanics, Bioadhesion, Proteoglycans, Cartilage, Bone, Nacre, Ganoine, Bio-inspired Materials, Biomimetics, Architectural Materials Design, Evolutionary Biology, Regenerative Medicine

Teaching Interests

Solid Mechanics; Mechanical Behavior of Materials; Continuum Mechanics; Plasticity; Polymer Mechanics, Rubber Elasticity; Nanomechanics, Educational Technology

Diversity Interests

Under-represented minority issues in higher education and academia; Mentoring best practices, Developing an inclusive campus climate

ADMINISTRATIVE AND LEADERSHIP EXPERIENCE

DEAN FOR GRADUATE EDUCATION – AUGUST 1, 2010 TO PRESENT
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

The dean leads the Office of the Dean for Graduate Education (ODGE) which supports all graduate students (approximately 6,500 enrolled), graduate programs (approximately 35 including 10 interdisciplinary graduate programs) in MIT's 5 schools (Architecture and Planning, Engineering, Humanities Arts and Social Sciences Science, Sloan School of Management). MIT maintains a decentralized graduate educational structure and, hence, ODGE works collaboratively across the Institute with numerous administrative offices, all schools and academic departments, individual faculty, various committees and student government. The scope of the ODGE includes personal support, professional development, fellowships, policies and procedures, compiling and disseminating best practices, fostering educational innovation and interdisciplinary interactions, academic performance, graduate admissions administration, diversity, immigration, community-building and Institute-wide data analysis. The dean reports to the Chancellor and serves on numerous Institute committees including; Academic Council (chaired by the President), Academic Appointments Group (promotion and tenure review), Deans Group (chaired by the Provost), the Enrollment Management Group, the Council on Educational Technology, the Committee on Graduate Programs, The Graduate Academic Performance Group, the Office of Minority Education Advisory Board and the International Advisory Committee.

Major accomplishments of the Office of the Dean for Graduate Education 2010-2012;

- *Strategic Planning:* Completed an Institute-wide listening tour and strategic plan for graduate education; presented strategic plan at faculty meetings to individual academic departments and other stakeholder groups;
- *Electronic Initiatives:* Identified a software platform, assembled and led a graduate admissions team (i.e. developers, faculty, staff) in the adoption of an Institute-wide online electronic graduate admissions system; Successful transition to an electronic immigration system which affected more than 2,500 international students at MIT;
- *Professional Development:* Developed a centralized, online video library of graduate student professional development content and created new opportunities for graduate student participation in prestigious international professional development activities; Developed a 5-10-15-20 year alumni survey on career trajectories and skills;
- *Interdisciplinary Interactions:* Facilitated interdisciplinary interactions through targeted support of various interdepartmental seminars, workshops, and conferences.
- *Communications:* Developed a comprehensive virtual and f2f communications plan including an updated content management website, news and video elements, “Graduate Student Snapshots,” social media presence and monthly student email digest (the latter, in collaboration with the Chancellor, the Dean for Undergraduate Education and the Dean for Student Life)
- *Personal Support:* Doubled staffing in the area of personal support; expanded outreach to departments to disseminate resource information
- *Fund-Raising and Finances:* Key partner in the acquisition of numerous new fellowships (e.g. Clare Booth Luce Foundation, Howard Hughes Medical Institute, Schlumberger Foundation, Chinese Scholarship Council, National Commission of Scientific and Technological Research of the Republic of Chile, Iraqi Women's Fellowship Foundation); Acquired a new graduate fellowship staff position;
- *Diversity:* Expanded a collaborative multi-year diversity fellowship program with the academic school deans, garnered five years of financial support for the MIT Summer Research Program (MSRP), developed a working group which brought approximately 30 key administrators and faculty from Minority Serving Institutions to MIT; hosted GEM Grad Lab in 2011, 2012
- *International Engagements:* Researched and disseminated a report on best practices for graduate student involvement in international engagements Institute-wide and nationally;
- *Staff Recognition:* Developed a Staff Rewards and Recognition program, 2 ODGE staff awarded “Infinite Mile Awards” in 2012;

FOUNDING AND CURRENT FACULTY DIRECTOR, MIT INTERNATIONAL SCIENCE AND TECHNOLOGIES INITIATIVES (MISTI) – ISRAEL – JULY 2006 TO PRESENT
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Conceived of the idea and vision for the program, wrote the initial proposal which garnered necessary donor funding; collaborated with the managing director, Mr. David Dolev, on implementation and growth including; fund-raising, donor stewardship, recruitment of students, host companies and universities, programmatic, reporting and communications.

<http://web.mit.edu/misti/mit-israel/>

<http://web.mit.edu/cortiz/www/MISTI/MISTIMIT-IsraelAnnualReport2011-2012.pdf>

Major accomplishments of the MISTI-Israel Program:

- Key partner in fund-raising from private donors (approximately 25), alumni, host companies and universities;
- Recruited over 40 host companies and forged financial and programmatic agreements with Israeli universities and institutions;
- Increased the size of the program since its inception through aggressive recruitment efforts; in 2012, 68 students from 16 academic departments were placed in summer research positions in Israeli universities and companies; over 200 students have been placed since the program's inception;
- Developed a programmatic infrastructure to deepen international learning, including a selective admissions process (e.g. submission of cultural essays and statement of personal and professional goals, in-person interview, etc.), pre-departure preparatory training including a “tool-kit” of language, culture, politics, safety, etc., personalized internship matching, hands-on experiential research experience and personal and professional development, a 5-day in-country traveling retreat, MIT alumni mentor matches, final project report, reflection and opportunities for continued interactions;
- Added new supplementary programs; the MISTI MIT-Israel Global Teaching Lab, through which MIT students teach high school students in Israel, MIT-MEET program, sending MIT students, via MISTI, as instructors of Israeli and Palestinian high school students in Jerusalem.
- Created public relations material including website, DVD, annual report for supporters, flyers for on-campus programs and articles for MIT press, electronic newsletter;
- Presented programs to MIT alumni, faculty, staff and students;
- Sponsored or co-sponsored approximately ten Israel-related events on the MIT Campus annually.

CHAIR, DEPARTMENTAL COMMITTEE OF GRADUATE STUDENTS, MATERIALS SCIENCE AND ENGINEERING – 2008 – 2010

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

MIT's Department of Science and Engineering graduate program maintains a ranking of #1 (US News and World Report) with an enrollment of approximately 220 graduate students; Responsible for the graduate curriculum, qualifying exams, academic performance issues, graduate departmental policies, managing conflicts and complaints involving graduate students, presentation of graduate program to Visiting Committee (which evaluates the department every two years), interaction with the graduate student advocacy group, played key role in orientation and community-building activities of new graduate students.

Major accomplishments of DMSE Departmental Committee of Graduate Students 2008-2010:

- Carried out an extensive two year long evaluation and revision of its graduate doctoral curriculum, the first in over a decade, to a more flexible “personalized” model. Garnered faculty input and formulated three candidate curricular models; solicited faculty proponents of each model for presentation at a faculty retreat, led the discussion of each model and voting process,

which resulted in an overwhelming consensus support for a single model. Wrote faculty newsletter article summarizing curriculum revision (<http://web.mit.edu/fnl/volume/223/ortiz.html>);

- Adopted a new research-based qualifying exam format; general philosophy, criteria and execution;
- Developed policies to increase transparency and fairness of award nomination process, based on feedback from under-represented minority graduate students.

TEAM LEADER, MIT NSF CENTER FOR MATERIALS SCIENCE AND ENGINEERING, INTERDISCIPLINARY RESEARCH GROUP (IRG)

“MECHANOMUTABLE HETERONANOMATERIALS” – 2006 – 2014

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Conceived of the proposal concept, assembled a team of faculty, took the lead in writing the proposal, successfully presented and defended the proposal to a review panel at NSF (five IRGs presented and this IRG was one of three funded); Led a research team of six faculty from four disciplines (Professors Mary Boyce, Department Head, Mechanical Engineering, Markus Buehler, Civil and Environmental Engineering, Robert Cohen, Chemical Engineering, Paula Hammond, Chemical Engineering, Krystyn Van Vliet, Materials Science and Engineering) and approximately 15 students and postdocs, compiled annual progress reviews, presenting team research at site visits, leading research team meetings, organized a team Wiki, served as a member of the Center Advisory Board.

Major accomplishments of the NSF-IRG “Mechanomutable Heteronanomaterials”:

- Developed a new class of "mechanomutable heteronanomaterials"; defined as possessing spatially localized and controlled nanoscale units of different types of materials which change their mechanical properties reversibly in response to an external stimulus; model systems including pH-Responsive polyelectrolyte multilayer tube forests, chemo(mechano)responsive Belousov-Zhabotinsky self-oscillating gels, electrochemically responsive macromolecular systems, architecturally-mutable materials and composites via 3D printing;
- Fabricated, tested and simulated mechanomutable materials; discovered new fundamental mechanisms to control and tune mechanical properties, in particular utilizing the coupling between inherent material mechanomutable and architectural (geometric) design; provided an understanding and control of responsive mechanochemical transduction processes;
- Published over 55 scientific articles in peer-reviewed journals to date including; Nature, Nature Materials, Advanced Materials, ACS-Nano, Nano Letters, PNAS, Angewandte Chemie, Biomaterials, etc.

MIT Committees (Current)

Sept. 2013	– present	Excellence Awards Selection Committee, Representative of Academic Council
May 2012	– present	<i>Ad hoc</i> committee on Roadmap for MITx
Jan. 2011	– present	Walker Memorial Assessment Team (WMAT)
Sept. 2010	– present	Graduate Academic Performance Group (GAPG, Chair)
Sept. 2010	– present	Goodwin Medal Selection Committee (Chair)
Sept. 2010	– present	Student Systems Steering Committee (SSSC, co-chair with the Dean for Undergraduate Education)
Sept. 2010	– present	Teaching Assistant Enhancement Group (co-Chair, with Dean for Undergraduate Education)
Sept. 2010	– present	Textbook Information Provision Project (TIPP) Steering Committee and Working Group
Sept. 2010	– present	Singapore-MIT Alliance 3 (SMA3) Governing Board
Sept. 2010	– present	Compton Lecture Advisory Committee
Sept. 2010	– present	International Advisory Committee (IAC)
Sept. 2010	– present	Enrollment Management Group (EMG)
Sept. 2010	– present	MIT Council on Educational Technology (MITCET)
Sept. 2010	– present	Dean’s Group
Sept. 2010	– present	Committee on Graduate Programs (CGP)

Sept. 2010 – present Academic Appointments Sub-Group
 Sept. 2010 – present Academic Council (AC)
 Sept. 2010 – present Health Science and Technology (HST) Governing Council
 2006 – present Faculty Advisory Committee for the MIT Office of Minority Education (OMEFAC)
 Oct. 2011 – present MIT Department of Materials Science and Engineering Awards Committee

MIT Committees Assembled By and Reporting to the Dean for Graduate Education

April 2012 – Sept. 2012 Committee on Student Entrepreneurship (CSE)
 Jan 2012 – Jan. 2014 Committee on Graduate Admissions (CGA)
 Jan 2012 – Dec. 2012 Task Force on Graduate Student Professional Development (TFPRO)
 May 2011 – Mar. 2012 Committee on Teaching and Learning Spaces (TLS, co-reporting to the Dean for Undergraduate Education, Associate Provost and Director of Libraries)
 May 2011 – Jan. 2012 Committee on Masters in Technology-Enabled Education (co-reporting to the Dean for Undergraduate Education)
 Jan. 2011 – May 2011 Task Force on Improving Graduate Admissions

Graduate Education: Written Articles and Letters to the MIT Community

November / December 2012, MIT Faculty Newsletter Article, “*The Millennials@MIT: Discussions on the Generational Changes in the Graduate Student Population*” co-written with Eilan Spero, MIT Doctoral Student in the Program in History, Anthropology, Science, Technology and Society

November 2012, Letter to all MIT Students in Monthly Student Life and Learning Digest, “*The Past and Future of Interdisciplinary Research and Education at MIT*”

September/October 2012, MIT Faculty Newsletter Article, Vol. XXV No. 1, “*From the Dean for Graduate Education: From Imagination to Impact: Empowering Graduate Students to Create the Future: A Five-Year Strategic Plan*” (<http://web.mit.edu/fnl/volume/251/ortiz.html>)

March 16, 2012, Letter to All MIT Students in Student Life and Learning Digest: *Professional Development & Entrepreneurship*, <http://web.mit.edu/student/digest/March2012Letter.html>

February 21, 2012, Letter to all MIT Faculty: *Three new committees to start work*; <http://odg.mit.edu/dean/letters/letter20120221-faculty.php>

○ February 17, 2012, *Committee on Graduate Admissions (CGA)*
<http://odg.mit.edu/dean/letters/letter20120217-1CGA.php>

○ February 17, 2012, *Committee on Student Entrepreneurship (CSE)*, Christine Ortiz, Dean for Graduate Education, Daniel Hastings, Dean for Undergraduate Education, Claude Canizares, Vice President for Research and Associate Provost
<http://odg.mit.edu/dean/letters/letter20120217-2CSE.php>

○ February 17, 2012, *Task Force on Graduate Student Professional Development (TFPRO)*,
<http://odg.mit.edu/dean/letters/letter20120217-3TFPRO.php>

December 2011, Letter to all MIT Students for Student Life and Learning Digest, “*Take care of yourself*”
<http://web.mit.edu/student/digest/Dec2011Letter.html>

December 2011, Letter to All MIT Faculty: “*Progress on Education Systems Projects*,” co-written with the Dean for Undergraduate Education and the Director of Information and Systems Technology
<http://odg.mit.edu/dean/letters/letter20111201.php>

November / December 2011, MIT Faculty Newsletter Article, Vol. XXIV No. 2, “*Improving Graduate Admissions Processes at MIT*” (<http://web.mit.edu/fnl/volume/242/ortiz.html>)

September, 2011, Letter to the MIT Community, “Responsible Conduct of Research (RCR) Training and Academic Integrity Standards at MIT” (<http://odge.mit.edu/dean/letters/speech20110919.php>)

September, 2011, Invited National Article; Council for Graduate Schools Communicator, “*Case Study: The Involvement of Graduate Students in International Engagements at the Massachusetts Institute of Technology*” (http://www.cgsnet.org/portals/0/pdf/comm_2011_10.pdf)

March / April, 2011, MIT Faculty Newsletter Article Vol. XXIII No. 4 “*Practical Considerations for the Involvement of Graduate Students in MIT’s International Engagements*,” co-written with Ulric J. Ferner (2010-2011 President of the MIT Graduate Student Council) (http://web.mit.edu/fnl/volume/234/ferner_ortiz.html)

November 2010, “*Academic Integrity: Community Expectations and Resources*,” co-written with the Dean for Undergraduate Education (<http://odge.mit.edu/dean/letters/index.php>)

November / December 2010 MIT Faculty Newsletter Article Vol. XXIII No. 2, “*Affordable Course Materials*,” co-written with Daniel Hastings, Dean for Undergraduate Education (http://web.mit.edu/fnl/volume/232/hastings_ortiz.html)

January / February 2010, MIT Faculty Newsletter Article Vol. XXII No. 3, “*Towards a Personalized Graduate Curriculum*” (<http://web.mit.edu/fnl/volume/223/ortiz.html>)

Graduate Education: Speeches and Presentations

March 2013, European University Association Council for Doctoral Education (EUA-CDE) Global Strategic Forum on Doctoral Education (Dublin, Ireland)

March, 2013, National Science Foundation, Invited Distinguished Lecture Math and Physics Sciences Directorate, “*Diversity, Technology and the Modern Research University*” (Arlington, VA)

November, 2012, Invited Speaker, Association of Chinese Graduate Schools (ACGS), Second International Forum on “*Graduate Education Quality Assurance System*” and “*Vocational Need and Professional Degree Graduate Education in Global Context*” (Hangzhou, China)

November, 2012, Invited Speaker, The MIT-China Innovation and Entrepreneurship Forum “*Innovation and Entrepreneurship and The Value of the Modern Research University*” (Cambridge MA)

October, 2012 Opening Remarks and Chair, MIT Symposium for the Inauguration of President L. Rafael Reif on the “*Future of Education*” (Cambridge, MA)

October, 2012, Opening Keynote Speaker, “*How to Succeed in Graduate School*,” GEM (National Consortium for Graduate Degrees for Minorities in Science and Engineering) GRAD Lab (Boston, MA)

October, 2012, Series of three invited plenary presentations, “*Current Trends in Graduate Education*,” “*From Knowledge Generation to Knowledge Utilization: Professional Development in Graduate Education*,” “*Graduate Program Metrics, Assessment and Value*,” Workshop on the 21st Century Higher Education, Ministry of Education (Kingdom of Bahrain)

September, 2012, Invited Speaker, Association of American Universities Association of Graduate Schools (AGS) 64th Annual Meeting, “*The Value of the Modern Research University: MIT as a Case Study*,” Session on “*Tsunami After the Earthquake: Economic Recovery, Demands Accountability, Showing Value*” (New Orleans, Louisiana)

September 2012, Invited Plenary Speaker and Workshop, “*From Knowledge Generation to Knowledge Utilization: Professional Development in Graduate Education*,” Vitae Researcher Development International Conference on personal, professional and career development of researchers and the successful implementation of the UK Concordat to Support the Career Development of Researchers in the UK (Manchester, UK)

September, 2012, Speaker and Panel Moderator, MIT Alumni Leadership Conference (ALC) and Corporation Development Committee (CDC) Annual Meeting, “*MIT Graduate Education; Past, Present and Future*” (Cambridge, MA)

July 2012, Opening Remarks and Chair, plenary session Council of Graduate Schools Summer Workshop on “*Social Networking and Technology: Opportunities and Risks*” (Boston, MA)

June, 2012, Opening plenary session, panelist, American Society of Engineering Education (ASEE), “*Preparing Students for Industrial Practice*” (San Antonio, Texas)

May 2012, Speaker, “*MIT Council on Education Technology: Modularized Online Experiments*” Workshop on “*Online Learning for an MIT Education: At the intersection of Residential Education and MITx*” (Cambridge, MA)

May, 2012 Invited Speaker, National Science Foundation IGERT (The Integrative Graduate Education and Research Traineeship (IGERT) program Annual Meeting, “*Diversity, Technology and the Modern Research University*”(Washington DC)

March, 2012, Invited Speaker, University-wide invited seminar, Imperial College London, “*Graduate Education at the Massachusetts Institute of Technology: Towards a Networked Apprentice Model*” (London, UK)

January, 2012, Speaker and Panel Moderator, 5th Annual MIT Institutional Intelligence Forum, “*Graduate Education; Past, Present and Future*” (Cambridge, MA)

December, 2011 opening plenary session, “*Diversity, Technology and the Modern Research University*” session on “*Diversity, Innovation and Leadership*,” Council for Graduate Schools Annual Meeting (Scottsdale, Arizona)

December, 2011, Invited Speaker, University Materials Council of Department Heads in US and Canada, Annual Materials Research Society Meeting, “*Effective Strategies for Increasing Diversity*” (Boston, MA)

November, 2011: MIT Alumni Club of South California, “*Graduate Education at MIT; Past, Present and Future*” (Long Beach, CA)

November, 2011, Invited Speaker, “*How to Succeed in Graduate School*,” Professional Development Workshop for Underrepresented Minority Masters and Doctoral Engineering Students and their Faculty/Staff Advisors, sponsored by Quality Education for Minorities (QEM) Network (Baltimore, MD)

November, 2011: MIT Alumni Club of South California, “*Graduate Education; Past, Present and Future*” (Long Beach, CA)

November 2011, MIT-China Innovation and Entrepreneurship Forum (MIT-CHIEF) Banquet Dinner, Opening Remarks (Cambridge, MA)

October, 2011, Invited speaker, “*The Future of Women in Science and Engineering*,” Faculty for the Future, Fellows Mini-Forum, Schlumberger Foundation (Cambridge, MA)

October, 2011, speaker, League of European Research Universities (LERU), “*Past and Future of Graduate Education at MIT*” University of Zurich, Switzerland

September, 2011, Opening Keynote Speaker, “*How to Succeed in Graduate School*,” GEM (National Consortium for Graduate Degrees for Minorities in Science and Engineering) GRAD Lab (Boston, MA)

August, 2011 Invited Speaker, GEM (National Consortium for Graduate Degrees for Minorities in Science and Engineering), 35th Annual Anniversary Conference and Gala, “*How to Succeed in Graduate School*” and presenter at Gala

July, 2011, co-facilitator, Council for Graduate Schools Summer Workshop, “*Using Technology to Communicate with Graduate Students*,” (Monterey, CA)

July, 2011 Invited Speaker (“*The Unwritten Rules of the Path to Professorship*”) and Mentor, Future Faculty Workshop: Diverse Leaders of Tomorrow (Workshop co-sponsored by MIT, Carnegie Mellon University and University of Massachusetts-Amherst)

July, 2011, Opening Remarks, MIT-Imperial Global Fellows Programme (Cambridge, MA)

June, 2011, Technology Day Luncheon for MIT Alumni, “*Graduate Education; Past, Present and Future*” (Cambridge, MA)

March, 2011 Invited Speaker, Professional Development Workshop for Underrepresented Minority Undergraduate Engineering Students and their Faculty/Staff Advisors, sponsored by Quality Education for Minorities (QEM) Network (Baltimore, MD)

February, 2011, Invited Participant and Speaker, MIT150 Panel on “*Human Diversity and Social Order*” Minorities in the United States “*The Role of Citizenship for Hispanics in U.S. Higher Education*”

December, 2010, Invited Talk, Council for Graduate Schools Annual Meeting, “*Accelerated Bachelor’s/Master’s Degrees*,” (Washington, D.C.)

October, 2010 invited speaker, “*Opportunities for Educational Technology in Graduate Education*,” Workshop on a Collaboration between MIT Faculty and FOKAL for “*Educating the Educators*” Initiative in Haiti (Cambridge, MA)

August 2010, 2011 MIT Summer Research Program (MSRP) banquet speaker, “*An Era for Bold Scholars*”

August, 2010 *Project Interphase* Banquet speaker, “*An Era for Bold Scholars*”

June 2010, 2011, MIT Future Faculty Workshop: Diverse Leaders of Tomorrow, “*Steps to an Academic Career*”

Education: External Professional Activities

November, 2012-pres. Commissioner for the New England Association of Schools and Colleges Commission on Institutions of Higher Education, accreditation for colleges and universities in the six New England states: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.

December, 2012, Invited Participant, Massachusetts Water Innovation Mission to Israel

December, 2012 Invited Participant, 80th National Leadership Forum for Women Administrators sponsored by the Inclusive Excellence Group of the American Council on Education (ACE) (Arlington, VA)

2011-pres. Board of Directors, Standing Chair, Programs Committee, Executive Committee, GEM (National Consortium for Graduate Degrees for Minorities in Science and Engineering)

November, 2011 Council for Graduate Schools Consultation, Dartmouth College, Graduate School Review

September, 2011 University of Cincinnati, graduate program external review as part their strategic planning process for the University UC2019: Strategy for Excellence in Doctoral Education

Teaching

Fall Term 2009	–	Fall Term 2009	<i>Mechanical Properties of Materials</i> - Graduate course, Lecturer
Spring Term 2000	–	Spring Term 2010	<i>Nanomechanics of Materials and Biomaterials</i> – developed new undergraduate restricted elective course, Lecturer
Fall Term 2006	–	Fall Term 2006	<i>Mechanics of Materials</i> and <i>Organic and Biomaterials Chemistry</i> – Laboratory Instructor, organized and managed all undergraduate laboratories for one semester (two courses), which involved 4 teaching assistants, 2 lecturers, 2 laboratory technicians
Fall Term 1999	–	Fall Term 2005	<i>Mechanics of Materials</i> –undergraduate core class, Lecturer

Educational Innovation: New Technology-Enabled Pedagogical Methods Enhancing Residential Education

It is well known that pedagogies which incorporate active cognitive engagement strategies enhance students learning process at all educational levels; i.e. students must do more than just listen to lectures, write down notes, read textbooks, and memorize solutions to problems; they should carry out higher order thinking tasks such as in-depth analysis, peer debate, complex multistep problem solving, evaluation, conceptual application, and understanding of the broader context of course content. One of my approaches to achieving this goal has been to use of a variety of different technology-enabled mechanisms such as, for example, audio / video podcasting, tablet PC presentation and virtual demonstrations, message boards, and teleconference office hours. It is becoming increasingly apparent that new types of information and communication technologies, both inside of and outside of the classroom, can improve learning. In addition, since students have diverse learning styles (in particular, female and underrepresented minority students), the use of multiple methods and modes of instruction (e.g. visual, auditory, kinaesthetic, and read/write) is beneficial. A series of educational audio podcasts were developed in conjunction with the course “*Nanomechanics of Materials and Biomaterials*”. The “NanoNewton” podcast series was utilized as follows. During the semester, students were asked to listen to one podcast approximately each week. Each podcast highlighted one recent scientific publication in the literature (typically published within the last year) related to that week's lecture material. The podcast was an informal discussion with four or five MIT students and one or more of the authors of the highlighted paper either visiting MIT in person or via teleconferences. The podcasters in this series represented both graduate and undergraduate students from a variety of different departments. Such podcasts provided students with an opportunity to have the chosen publication explained to them directly from top scientists around the world (e.g. participants included scientists from Ireland, England, Israel, and Germany) and represent a conduit for which the most recent and exciting research can be infused into undergraduate-level courses. There is much evidence that effective learning is supported when classroom activities are connected to research, since students are provided a broader context for which to understand topics. In addition to undergraduates taking the Nanomechanics course, the NanoNewton podcast series has been an outstanding resource for graduate students from around the world, in particular those just starting out their doctoral studies in related areas; currently the podcast website has received hits from over 76 countries and 7 continents.

Honors

2013	Distinguished Lecture, Math and Physics Sciences Directorate National Science Foundation (Arlington, VA)
2012	Plenary Speaker, Workshop of Higher Education for the 21 st Century (Kingdom of Bahrain)
2012	Plenary Speaker, Vitae Researcher Development International Conference (Manchester, UK)
2012	MacCannell Memorial Distinguished Lecturer, Portland State University (Portland, Oregon)
2012	Top 20 Innovators, Feature Story on <i>NBC Latino</i>
2012	Page Morton Hunter Distinguished Lecturer, Clemson University (Clemson, SC)
2012	Featured Article in Hispanic Outlook in Higher Education Magazine, “ <i>Latina Faculty Reshaping Higher Education</i> ”
2011-2012	Sigma Xi Distinguished Lecturer

- 2011 Plenary Speaker, The 4th International Conference on Mechanics of Biomaterials & Tissues (Waikoloa, Hawaii)
- 2011 Keynote Speaker, American Society of Biomechanics Annual Meeting (Long Beach, CA)
- 2011 Invited Speaker, MIT150 “*Leaders in Science and Engineering: The Women of MIT*” (Cambridge, MA)
- 2011 Grace Hopper Lecturer, University of Pennsylvania (Philadelphia, PA)
- 2011 Woman of Courage Award, La Alianza Hispana (Boston, MA)
- 2011 Governor’s Citation, The Commonwealth of Massachusetts in recognition of extraordinary support of the Latino Community in The Commonwealth of Massachusetts
- 2011 Certificate of Recognition, City of Boston, for contributions to the Latino Community in the City of Boston
- 2011 City of Boston Council Official Resolution Certificate, for contributions to the Latino Community in the City of Boston
- 2010 Invited Speaker, National Academy of Engineering, Frontiers of Engineering Symposium (Kharagpur, India)
- 2010 Invited Keynote Speaker, SMART (Science, Math And Relevant Technology) Girls Summit for middle school girls sponsored by Girls, Inc. of Lynn, MA
- 2009 Curie Lecturer, University of Florida (Gainesville, FL)
- 2009 Martin Luther King, Jr. Leadership Award, MIT
- 2008-2013 National Security Science and Engineering Faculty Fellow (NSSEFF)
- 2008-2009 Defense Science Study Group (DSSG)
- 2008 Hebrew University - Hadassah Appreciation Medal (Jerusalem, Israel)
- 2008 Lady Davis Fellow, Hebrew University of Jerusalem (Israel)
- 2008 The Shraga Dirnfeld Lecture, Technion - Israel Institute of Technology (Haifa, Israel)
- 2007 The Dow Distinguished Lecturer, University of California, Santa Barbara
- 2003 Invited Keynote Speaker, MIT Society of Hispanic Professional Engineers (SHPE) Annual Awards Banquet
- 2002 NSF-PECASE Award (National Science Foundation-Presidential Early Career Award for Scientists and Engineers), presented at the White House by former President George W. Bush
- 2001 MIT Department of Materials Science and Engineering John Wulff Lectureship Award
- 2000 NSF-CAREER Award (Faculty Early Career Development in Engineering and Science)
- 1999-2005 John Chipman Career Development Chair
- 1998 Recognition Award for “Outstanding Alumni” given by the National Consortium for Graduate Degrees for Minorities in Engineering and Science (GEM)
- 1997 Post-Doctoral Fellowship – NSF and the North Atlantic Treaty Organization
- 1997 Post-Doctoral Fellowship – Association Pour la Recherche sur le Cancer at the Institute Curie (Paris, France)
- 1995 NSF Incentives for Excellence Scholarship Prize (awarded to Rensselaer Polytechnic Institute, Department of Materials Science and Engineering in honor of alumni C. Ortiz)
- 1994 3-year Ph.D. Fellowship – GEM
- 1994 3-year Ph.D. Fellowship – Ford Foundation and National Research Council
- 1994 3-year Ph.D. Fellowship – NSF
- 1993 Cornell University Engineering Minority Programs Office, Certificate of Academic Achievement
- 1992 2-year M.S. Fellowship – GEM
- 1988 Elsbeth Kroeber Memorial Award in the Biological Sciences awarded by the New York Biology Teachers Association

Editorial and Journal Advisory Board Service

- 2012-present Section Editor, Transactions of the American Society of Mechanical Engineers (ASME), *Applied Mechanics Reviews*
- 2011-present Editorial Board, *Scientifica*, Hindawi Publishing Corporation
- 2010-present Editorial Board, *Science* published by the American Association for the Advancement of Science (AAAS)
- 2009-present Advisory Board Member, “*The Open Nanomedicine Journal*” published by Bentham Open.
- 2008-present Editorial Board, *Advanced Biomaterials* published by WILEY-VCH GmbH & Co KGaA

- 2010-2011 Editorial Board, *Marine Biotechnology*, published by Springer NY.
- 2009-2010 Guest Editor, *Materials*, special issue, “*SPM in Materials Science*,” published by Molecular Diversity Preservation International (MDPI)
- 2006-2010 Editorial Board, *International Journal Surface Science and Engineering (IJSurfSE)* published by (Insures)-Inderscience
- 2006-2010 Coeditor, *Biointerphases* published by the American Vacuum Society (AVS)
- 2005-2006 Guest Coeditor, *Journal of Materials Research* Focus Issue “*Mechanics of Biological and Biomimetic Materials at Small Length Scales*” published by the Materials Research Society

Professional Service (Research)

- 2012 Invited Participant, Joint Science and Technology-Strategy Workshop, Basic Research, Department of Defense, “Envisioning How Basic Science Will Enable Changes in Technology and Society” (Washington DC)
- 2012 Scientific Committee, The 12th International Symposium on Biomineralization “BIOMIN’12” (Freiberg, Germany)
- 2012 Session Chair, 15th European Conference on Composite Materials, Session on Maintenance and Repair through Vascular Networks (Venice, Italy)
- 2012 U.S. Army Corps of Engineers Engineer Research and Development Center (ERDC) research proposal peer review
- 2012 NIH Study Section, ZRG1 F10B (Physiology and Pathobiology of Musculoskeletal, Oral, and Skin Systems)
- 2012 Chairperson and Organizer, Workshop on “*Property Amplification in Biomaterials*” sponsored by the Army Research Office (Cambridge, MA)
- 2011 Session Chair, Multiscale experimental & computational characterization of biological tissues, 4th International Conference on the Mechanics of Biomaterials and Tissues (Waikola, Hawaii)
- 2011 Air Force Office of Scientific Research (AFOSR) Nanobiomanufacturing Strategic Vision Workshop (Dayton, Ohio)
- 2011 Committee of Visitors, National Science Foundation Division of Materials Research, Arlington VA
- 2010-2011 International Advisory Board, US Materials Education Symposium, Granta Design
- 2010 Invited Participant, Emerging Soldier Technologies (EST) Workshop and Future Soldier Initiative (FSI) Capability Exercise (CapEx), The U.S. Army Natick Soldier RD&E Center (NSRDEC), Natick, MA
- 2010 Invited Speaker and Roundtable Participate, MIT/Kauffman Senior Congressional and Executive Branch Staff Seminar “*The New Biology: Pathways to Convergence in the Life Sciences*” (Cambridge, MA)
- 2010 Invited Speaker and Roundtable Participant, “*Future of Manufacturing Innovation - Advanced Technologies*,” sponsored by the Council on Competitiveness, MIT (Cambridge, MA)
- 2010 Invited Participant, Director of Defense Research and Engineering (DDR&E) Horizons Workshop (Arlington, VA)
- 2009 – 2010 Co-organizer, Symposium on “*Functional Biointerphases*,” European Materials Research Society (E-MRS) (Strasbourg, France)
- 2009 Judge, Graduate Student Gold and Silver Medal Awards for the Fall Materials Research Society (Boston, MA)
- 2009 Panelist, Reverse Site Visit for NSF-MRSEC Program (Materials Research Science and Engineering Center)
- 2009 Proposal Reviewer/Panelist, for the National Security Science and Engineering Faculty Fellowship Program (NSSEFF) program (Falls Church, VA)
- 2008 Proposal Reviewer/Panelist, NSF Civil, Mechanical and Manufacturing Innovation Material Design and Surface Engineering (MDSE) (Arlington, VA)
- 2007 Session Chair, APS March Meeting, Session U4: Interfaces with Synthetic and Biological Polymers, Division of Polymer Physics (Denver, Colorado)
- 2007 Proposal Reviewers/Panelist, NSF-CAREER (Faculty Early Career Development in Engineering and Science) Division of Materials Research (Arlington, VA)

- 2007 Organizer, Short Course on “*Advances on the Use of Atomic Force Microscopy for Studies of the Physics of Macromolecular Materials,*” at the 2007 American Physical Society Meeting (Denver, Colorado)
- 2006 Panelist, NSF-CAREER (Faculty Early Career Development in Engineering and Science) Committee of Visitors Review Panel (Arlington, VA)
- 2006 Proposal Reviewers/Panelist, NSF-CAREER (Faculty Early Career Development in Engineering and Science) Proposal (Arlington, VA)
- 2006 Invited Participant/Speaker, Workshop on “*Autonomic Structural Systems for Threat Mitigation*” sponsored by AFOSR, ARO, NSF, ONR and the European Science Foundation (Nice, France)
- 2005 Guest Panelist, NIH Study Section: *Molecular Imaging*
- 2005 Organizer, Short course in *Nanomechanics of Materials and Biomaterials*, Facultad de Ciencias Veterinarias, Universidad de Chile (Santiago, Chile)
- 2004 Panelist, National Nanotechnology Initiative Interagency Grand Challenge Workshop on Instrumentation and Metrology, NIST (Gaithersburg, MD)
- 2004 Proposal Reviewer/Panelist, NSF Adhesion
- 2002 Proposal Reviewer/Panelist, NSF-CAREER (Faculty Early Career Development in Engineering and Science) Division of Materials Research (Arlington, VA)
- 2002 International Advisory Board and Session Chair, Fourth International Symposium on Natural Polymers and Composites (São Pedro, Brazil)
- 2002 Session Chair, Annual March Meeting of the American Physical Society, Division of Polymer Physics–Division of Biological Physics, Symposium on *Cell-Polymer Interactions* (Indianapolis, IN)
- 2002 Review Panelist, NBEI (NASA Bioscience Engineering Institute Review)
- 2001 Proposal Reviewer/Panelist, NSF-NSEC (Nanotechnology Science and Engineering Center) (Arlington, VA)
- 2000 Chair, Molecular Mechanics Section, Ringberg Workshop: *Micro-Nano-Bio: Common Methods and Mechanisms in Materials and Bio Sciences* (Munich, Germany)
- 1999 Proposal Reviewer/Panelist, NSF-SBIR/STTR (Small Business Innovation Research, Small Business Technology Transfer) (Arlington, VA)

Research Consulting

- 2008- Institute for Defense Analysis (IDA); Active Security Clearance

Ad hoc Reviewer (*Journals*) ACS-Nano, Acta Biomaterialia, Advanced Biomaterials, Advanced Materials, Biointerphases, Biomacromolecules, Biomaterials, Biomechanics and Modeling in Mechanobiology, Biophysical Journal, Clinical Medicine and Research, Colloids and Surfaces A, European Journal of Mechanics A: Solids, International Journal of Solids and Structures, Journal of Biomechanics, Journal of Cell Biology, Journal of Crystal Growth, Journal of Investigative Dermatology, Journal of Materials Processing Technology, Journal of Materials Science, Journal of Materials Science: Materials in Medicine, Journal of the Mechanical Behavior of Biomedical Materials Journal of the Mechanics and Physics of Solids, Journal of Polymer Science Part B: Polymer Physics, Journal of the Royal Society Interface, Journal of Structural Biology, Langmuir, Macromolecules, Marine Biotechnology, Nano Letters, Nanotechnology, Nature Chemistry, Nature Materials, Polymer Reviews, Polymers, Proceedings of the National Academy of Sciences (PNAS) USA, Science, Small, Soft Matter

(*Grant Agencies*) Austrian Science Fund, DOD (ARO, ARO-PECASE, NSSEFF, AFOSR), German Israeli Foundation for Scientific Research and Development, NASA (NBEI), NSF (SBIR/STTR, NSEC, CAREER, DMR, CMMI, MRCT), NIH, Petroleum Research Fund

Professional Societies

American Chemical Society (ACS), American Physical Society (APS), Materials Research Society (MRS), American Association for the Advancement of Science (AAAS), Society of Hispanic Professional Engineers (SHPE), American Society of Engineering Education (ASEE), American Society of Mechanical Engineers (ASME)

MIT Service (Past)

Jan 2010 – Sept. 2012 Organizer, Faculty of Color Dinners
June 2012 – Sept. 2012 *Ad hoc* committee on amicus brief for the Supreme Court case Fisher v. Univ. of Texas on the use of race as a factor in admissions
July 2012 – July 2012 MIT Deshpande Center for Technological Innovation Proposal Review
April 2012 – April 2011 Judge, MIT Ideas Competition
Aug. 2011 – Aug. 2011 Invited Speaker, MIT Career Reengineering Program – Faculty Exploration Series
Jan. 2010 – May 2010 MIT DMSE Faculty Search Committee
Aug. 2009 – Sept. 2009 Principal Research Scientist Promotion Committee at the MIT Institute for Soldier Nanotechnologies
Jan. 2009 – May 2010 School of Engineering, Committee on International Programs (CIP, Reporting to the Dean for Engineering)
Sept. 2008 – July 2010 Materials Council, Advisory to the MIT Department of Materials Science and Engineering Department Head
Sept. 2008 – May 2010 Global Studies Council (Reporting to the Provost)
Sept. 2008 – May 2010 MIT Middle Eastern Studies Working Group
Sept. 2008 – May 2009 MIT Institute Global Studies Council (Reporting to the Provost)
July 2008 – July 2010 MIT DMSE Teaching Assignments Committee
July 2008 – July 2010 Chair, MIT Department of Materials Science and Engineering Committee on Graduate Students
Sept. 2007 – May 2010 MIT Institute Committee on Graduate Programs (CGP)
Mar. 2007 – May 2010 MIT Diversity Initiative (reporting to the Provost)
Jan. 2007 – Jan 2007 Sesquicentennial MIT150 Planning Committee
Sept. 2006 – Dec. 2007 MIT Institute Committee on Commencement / Student Marshall
Sept. 2006 – May 2007 DMSE Departmental Committee on Graduate Studies
Sept. 2006 – May 2007 DMSE Graduate Registration Officer, Chair of Bio- and Polymeric Materials Academic Program
Sept. 2006 – Sept. 2006 Presentation / Panel at MIT New Faculty Orientation on “*Advising Graduate Students*”
Oct. 2006 – Oct. 2006 Panel member for Orientation for new Members of the Corporation on Faculty Life at MIT
Jan. 2005 – May 2005 MIT DMSE Strategic Planning Education Committee
Sept. 2004 – May 2007 MIT DMSE Undergraduate Adviser
May 2003 – May 2005 MIT DMSE Wulff Lecture Organizer
May 2002 – May 2005 MIT DMSE Undergraduate Recruitment Officer
Jan. 2002 – May 2005 MIT Program in Polymer Science and Technology Seminar Series (PPST) Organizer
Sept. 2000 – May 2001 MIT DMSE Distinguished Lecturer Series Organizing Committee
Apr. 2000 – Apr. 2000 MIT Campus Preview Weekend Speaker
Feb. 2000 – Dec. 2007 MIT Undergraduate Advisor for the Biomedical Engineering Minor
Sept. 1999 – Dec. 2007 MIT DMSE Undergraduate Committee
Sept. 1999 – May 2002 MIT DMSE Undergraduate Adviser
Sept. 1999 – Sept. 2000 MIT DMSE Subcommittee for Undergraduate Core Curriculum

Diversity: Underrepresented Minority

- 2012 Invited Speaker, National Science Foundation IGERT (The Integrative Graduate Education and Research Traineeship) program Annual Meeting, “*Diversity, Technology and the Modern Research University*”
- 2012 Invited presentation, The Louis Stokes Alliance for Minority Participation (LSAMP) Center (Portland, Oregon)
- 2012 Invited Speaker, ACES (Achieving Careers in Science and Engineering) (Cambridge, MA)
- 2011 Mentor, Undergraduate *Laureates and Leaders* Program, Office of Minority Education
- 2011 Invited Speaker, MITE2S (MIT Minority Introduction to Science and Engineering Summer Program), MSRP (Minority Summer Research Program Banquet) and Interphase
- 2011 Invited Speaker and Mentor, Future Faculty Workshop: Diverse Leaders of Tomorrow (MIT, Cambridge, MA)
- 2011 Invited Speaker, Professional Development Workshop for Underrepresented Minority Undergraduate Engineering Students and their Faculty/Staff Advisors, sponsored by Quality Education for Minorities (QEM) Network (Baltimore, MD)
- 2011 National GEM Consortium, 35th Annual Anniversary Conference and Gala and awards presenter at Gala
- 2011, 2012 GEM Grad Lab, Opening Keynote Speaker (Cambridge, MA)
- 2011 Invited Speaker, North Carolina A&T Student Recruitment at MIT (Cambridge, MA)
- 2011 Invited Speaker, Professional Development Workshop for Underrepresented Minority Masters and Doctoral Engineering Students and their Faculty/Staff Advisors, sponsored by Quality Education for Minorities (QEM) Network (Baltimore, MD)
- 2011 Invited Speaker, Council for Graduate Schools Plenary Session, “*Diversity, Innovation and Leadership*,” (Scottsdale, Arizona)
- 2011 Invited Speaker, University Materials Council of Standing Materials Science Department Heads in US and Canada
- 2011 Invited Speaker, MIT150 Diversity Panel; “*Human Diversity and Social Order*”
- 2010 Dinner Presentation for the NOBCCHE-MIT, the National Organization for the Professional Advancement of Black Chemists and Chemical Engineers
- 2010 Invited Speaker, MITE2S and MSRP
- 2010 MIT Mujeres Latinas Club “Latinas in STEM,” “*Experiences in Academia*”
- 2010 Lunch Presentation for the School of Engineering Visiting Workshop for the Monterrey Technological Institute, Mexico
- 2010 Office of the Dean for Graduate Education, Power Lunch Series Panel on “*Steps to an Academic Career*”
- 2010 Invited Participant, “*Laureates and Leaders*” Roundtable, sponsored by the MIT Office of Minority Education to encourage underrepresented minority students to pursue graduate education
- 2010 Panelist and Participant, 2-Day Workshop, “*Working Together: Conversations about Improving the College Experience and Academic Success of Underrepresented Minority Students*” (MIT, Cambridge, MA)
- 2010 Mentor and Invited Speaker, MIT Future Faculty Workshop: Diverse Leaders of Tomorrow (UMass, Amherst)
- 2010 Invited Speaker, Society of Hispanic Professional Engineers (SHPE), MIT Chapter and MIT Lincoln Laboratory Joint Workshop
- 2010 Invited Speaker, NSF Engineering Directorate Minority Faculty Development Workshop “*Engineering Faculty Success*” (MIT, Cambridge, MA)
- 2010 MIT Committee on Race and Diversity, Subcommittee on Mentoring
- 2010 MIT Summer Research Program (MSRP) banquet speaker
- 2009 Martin Luther King, Jr. Leadership Award, MIT
- 2009 Invited Speaker/Panelist, Quality Education for Minorities (QEM) Mentoring Workshop (Baltimore, MD)
- 2009 Mentor and Invited Speaker; 3-Day “*Future Faculty Workshop: Diverse Leaders of Tomorrow*”
- 2009 Invited Speaker, MIT Office of the Dean for Graduate Education Power Lunch
- 2009 MIT Graduate Student Council Diversity Subcommittee series “*Rethinking Interactions*,” “*Personal Experiences in Academia: Evolution, Perspectives, and Prospectives*.”

- 2008 Mentor and Invited Speaker; MIT 3-Day “*Future Faculty Workshop: Diverse Leaders of Tomorrow*”
- 2008 Invited Participant; “*Advancing and Empowering Scholars: Transforming the Landscape of the American Academy through Faculty Diversity*,” symposium at Harvard University (Cambridge, MA)
- 2008 MIT Diversity Congress Planning Committee (Reporting to the President)
- 2007-2011 MIT Initiative on Faculty Race and Diversity (Reporting to the Provost)
- 2007 Invited Speaker; “*Diversity at the Departmental Level*,” MIT Department of Materials Science and Engineering General Faculty Meeting
- 2007 Invited Speaker and Moderator of Institute-Wide Round Table Presentation; “*Facilitating a Path to and through Graduate School for Underrepresented Minorities*,” University of California, Santa Barbara
- 2007 Invited Banquet Speaker; CONVERGE (graduate preview weekend for underrepresented minority undergraduate students that provide a series of information sessions, workshops, and tours of the MIT campus)
- 2007 Invited Panelist; National Science Foundation (NSF) / Department of Energy (DOE) / National Institutes of Health (NIH) Workshop on *Achieving Racial & Ethnic Equity in Chemistry* (Arlington, VA)
- 2007 Departmental Graduate Student Recruitment at SACNAS (Society for Advancement of Chicanos and Native Americans in Science)
- 2007 Summer Intern Supervisor for MSRP (MIT Minority Summer Research Program)
- 2007 Invited Speaker at Reception for Underrepresented Minority Students and their Parents. Campus Preview Weekend
- 2007 Invited Participant, MIT9 Conference Focusing on Diversity (Washington, DC)
- 2006-2008 Invited Speaker and Admissions, MITE2S (MIT Minority Introduction to Science and Engineering Summer Program)
- 2006- Member; Faculty Advisory Committee for the MIT Office of Minority Education (OME-FAC)
- 2006 Invited Speaker and Departmental Graduate Student Recruitment, SACNAS
- 2006 Invited Speaker, MSRP (MIT Minority Summer Research Program)
- 2006 MIT Committee for the Review of the Martin Luther King Visiting Professors and Scholars (Reporting to the Provost)
- 2005 Faculty Advisory Committee for MIT Minority Education (reporting to the Chancellor)
- 2005 Summer Intern Research Supervisor, MSRP (MIT Minority Summer Research Program)
- 2005 Admissions, MIT Institute Committee on the future of MITE2S (MIT Minority Introduction to Science and Engineering Summer Program)
- 2004-2005 Member; MIT Faculty Advisory Committee for Minority Education
- 2003-2004 Invited Speaker and Admissions, MIT Institute Committee on the future of MITE2S (MIT Minority Introduction to Science and Engineering Summer Program) and Project Interphase (Reporting to Provost)
- 2003, 2005 “Facilitator” for a group of ~30 MIT freshman leading a discussion of “*Conversations on Race and Ethnicity*”
- 2003 Invited Keynote Speaker, MIT Office of Minority Education Welcome Luncheon for Incoming Minority Student and Families
- 2003 Invited Keynote Speaker, MIT Society of Hispanic Professional Engineers (SHPE) Annual Awards Banquet
- 2000 Invited Speaker, SACNAS

Diversity: Gender

- 2012 Graduate Women at MIT (GWAMIT) Panel Moderator, “*Leadership in Academia and Industry*”
- 2010-2012 Graduate Women at MIT (GWAMIT) Mentor to Female Graduate Students
- 2012 Invited Speaker, Women@MIT Mentoring Program Closing
- 2011 Invited Speaker, MIT150 “*Leaders in Science and Engineering: The Women of MIT*” (Cambridge, MA)
- 2011 Distinguished Grace Hopper Lecture, University of Pennsylvania (Philadelphia, PA)

- 2010 Invited Keynote Speaker, SMART (Science, Math And Relevant Technology) Girls Summit for middle school girls sponsored by Girls, Inc. of Lynn, MA
- 2009 The Curie Lecture and Round Table with Female Graduate Students, University of Florida Gainesville, FL
- 2008, 2009 WOMs (Women of Materials Science) Luncheon Panelist with MIT DMSE Female Graduate Students
- 2008 Invited Speaker, “Path to Professorship” Workshop for Women Graduate Students, sponsored by the MIT Office of the Dean for Graduate Education, “Demystifying the Tenure Process”
- 2006, 2007 Judge, MIT Chapter of the Society of Women Engineers (SWE) annual scholarship applications
- 2005 Ran Laboratory sessions for high school students: MIT Women in Science and Engineering (WISE)

Outreach

- 2013 Invited Speaker, 2013 National Science Bowl (NSB) is sponsored by the US Department of Energy (DOE), High School Science Day (Chevy Chase, MD)
- 2012 Invited Speaker, Math Prize for Girls, More than 250 high school girls converge on the MIT campus for competition and community (Cambridge, MA)
- 2012 Invited Speaker, Grades 11 and 12, Health and Sciences High School (Portland, Oregon)
- 2012 Science and Creativity Advisory Committee, Studio 360, New York Public Radio
- 2011 Interviewee, U.S. Military Channel Documentary
- 2011 Judge, MIT TechFair THINK, “Technology for Humanity guided by Innovation, Networking, and Knowledge” Competition for high school students nationally, “Catalyze Your Community”
- 2010 Exhibition at Expo World Innovation at Youth Innovation Center, Huangpu River, Shanghai
- 2009 Filmed for the PBS WGBH/NOVA television show “Stuff” produced by Powderhouse Productions
- 2009 Filmed for the Popular Science Discovery Channel show “The Future of ... (Combat)”
- 2008 Advisory board for development of daily animated children’s PBS Television series and multimedia project “Wild Kratts”, involving the use of animals to explain fundamental science concepts to children ages 6-10 years old
- 2007 Museum of Science Guest Speaker, “Nature is an incredible engineer” (Cambridge, MA)
- 2004 K-6 teacher video project “Essential Science for Teachers - Physical Science - Session 8 -Extending the Particle Model” produced by the Harvard-Smithsonian Center for Astrophysics
- 2003 Technical presentation and meeting with MIT Science and Engineering Program for High School Teachers sponsored by the MIT Council on Primary and Secondary Education, (Cambridge, MA)

Student Advising

Acted as research advisor to more than 80 students and 7 post-doctoral research associates from 10 different academic disciplines

Patents:

3. Hadi Takavoli Nia, S. Bozchaloui, E. Frank, K. Youcef-Toumi, C. Ortiz, and A. Grodzinsky, Patent Application No, 15412K, on “High-Frequency Rheology System.”
2. Christine Ortiz, Mary C. Boyce, Juha Song, Steffen H. Reichert, 2010, Provisional Patent App. M0925.70294US00, “Articulating protective system for resisting mechanical loads.”
1. Haimin Yao and Christine Ortiz, 2010, U.S. Patent Application No. 12/958,188, “Protective Articles for Resisting Mechanical Loads and Related Methods.”

Selected Invited Research Talks (out of 125+ total, 35+ international)

7 Materials Research Society, 3 American Physical Society, 5 American Chemical Society, 1 Orthopaedic Research Society, 9 Gordon Research Conferences: Biomineralization, Chemistry at the Interface,

Polymers East, Biomaterials Biocompatibility and Tissue Engineering, Proteoglycan, Musculoskeletal Biology and Bioengineering, Science of Adhesion, Elastomer, Thin Film and Small Scale Mechanical Behavior

International:

2013	European Science Foundation (ESF)-European Molecular Biology Organization (EMBO) Symposium on “ <i>Biological Surfaces and Interfaces</i> ”	Costa Brava, Spain
2013	Congress of the European Polymer Federation (EPF 2013)	Pisa, Italy
2012	15th European Conference on Composite Materials, Session on Regeneration and Remodeling of Structural materials	Venice, Italy
2011	Eidgenössische Technische Hochschule Zürich Symposium on “ <i>Bioinspired Materials</i> ”	Zurich, Switzerland
2010	National Academy of Engineering Indo-American Frontiers of Engineering Symposium, Indian Institute of Technology	Kharagpur, India
2008	Technion - Israel Institute of Technology, The Shraga Dirnfeld Lecture	Haifa, Israel
2008	Hebrew University of Jerusalem	Jerusalem, Israel
2008	Weizmann Institute of Science	Rehovot, Israel
2006	Workshop on “ <i>Autonomic Structural Systems for Threat Mitigation</i> ” sponsored by Air Force Office of Scientific Research (AFOSR) / Army Research Office (ARO) / National Science Foundation (NSF) / Office of Naval Research (ONR) and the European Science Foundation	Nice, France
2005	Short course in <i>Nanomechanics of Materials and Biomaterials</i> , Facultad de Ciencias Veterinarias, Universidad de Chile	Santiago, Chile
2005	Institute of Physics, “ <i>Physics 2005 – A Century after Einstein</i> ,” University of Warwick	Warwick, UK
2004	University of Toronto, Department of Chemical Engineering and Applied Chemistry Distinguished Lecture Series	Toronto, Canada
2004	POLYCHAR- World Forum on Advanced Materials	Guimarães, Portugal
2003	Symposium on “ <i>Advances in Bio-Materials</i> ” sponsored by the Brazilian Materials Research Society (MRS)	Rio de Janeiro, Brazil
2003	Universidad de Guanajuato, Instituto de Física, Departmental Seminar	León Guanajuato, México
2003	XXIII National Congress of The Mexican Society for Surfaces and Vacuum Science, Plenary Lecture and Biomaterials Session	Huatulco, México
2003	6th Annual UNESCO (United Nations Educational, Scientific and Cultural Organization) School & IUPAC (International Union of Pure and Applied Chemistry) Conference on Macromolecules & Materials Science	Mpumalanga, South Africa
2002	Embrapa Instrumentação Agropecuária, São Carlos	São Paulo, Brazil
2002	The Fourth International Symposium on Natural Polymers and Composites	São Pedro, Brazil
2002	Technische Hochschule Zürich (ETH), Swiss Federal Institute of Technology, Oberflächentechnik, Laboratory for Surface Science and Technology, Eidgenössische	Zurich, Switzerland
2002	Firmenich, Inc.	Geneva, Switzerland
2002	Department of Materials Science and Engineering, Cambridge University	Cambridge, UK
2002	Department of Physical and Theoretical Chemistry, Oxford University, Soft Matter, Biomaterials, And Interfaces Seminar Series	Oxford, UK
2001	University of Laval, Macromolecular Science and Engineering Research Center	Quebec City, Quebec, CA

2000	University of Geneva-Switzerland, Department of Analytical and Biophysical, Environmental Chemistry, Analytical and Biophysical, Environmental Chemistry Section	Geneva, Switzerland
2000	Ringberg Workshop: Micro-Nano-Bio: Common Methods and Mechanisms in Materials and Bio Sciences	Munich, Germany
1999	The Dutch Chemical Society (Macromolecules)	Luntern, Netherlands
1998	Conference Nederlands: Recent Developments in Instrumental Analysis	Groningen, Netherlands
1998	6th Annual Dutch Symposium For Scanning Probe Microscopy,	Nijmegen, Netherlands
1998	Max Planck Institute for Polymer Research	Mainz, Germany
1997	Department of Polymer Chemistry, University of Groningen	Groningen, Netherlands
1997	University of Strasbourg, Institute Charles Sadron and LUDFC	Strasbourg, France
1997	Universitaet Ulm, Abteilung Fuer Experimentelle Physik	Ulm, Germany
1997	Universitaet Muenchen, Institut fuer Physikalische Chemie	Muenchen, Germany
1997	Deformation, Fracture, and Rheology of Polymers, Churchill College, Cambridge University	Cambridge, UK
1996	Physics Department, Cavendish Laboratory, Cambridge University	Cambridge, UK

Peer-Reviewed Publications and Thesis Supervised

(including, e.g.; Nature Materials (Cover), Science, PNAS, Nano Letters, ACS-Nano, Physical Review Letters, Biophysical Journal, Advanced Materials, etc.)

159. Li, L., and **Ortiz**, C., “Biological Design for Simultaneous Optical Transparency and Mechanical Robustness in the Shell of *Placuna placenta*,” submitted 2012.

158. Nia, H.T., Li, Y., Wang, Y., Soltani, I., Chubinskaya, S., Youcef-Toumi, K., **Ortiz**, C., and A.J. Grodzinsky, “A Sensitive Differentiator of Soft Tissue Degradation via Nanoscale Wide Frequency Rheology,” submitted 2012.

157. Batista, M., Nia, H.T., Cox, K., Grodzinsky, A., **Ortiz**, C., Heinegård, D., Han, L. “Role of Chondroadherin in Nanoscale Tissue Assembly and Biomechanics of Murine Articular Cartilage,” submitted, 2012.

156. Song, J., Li, Y., Wund, M., Araya, S., Boyce, M. C., and C. **Ortiz**, “Functional Diversity and Dynamic Biomechanical Mechanisms of the Threespine Stickleback Armor,” submitted 2012.

155. Lee, B., Han, L., Frank, E. H., Grodzinsky, A. J., and C. **Ortiz**, “Time-Dependent Evolution of the Tissue-Engineered Cartilage-like Matrix of Individual Bone Marrow Stromal Cells during Differentiation,” submitted 2012.

154. Browning, A., **Ortiz**, C., Boyce, M., “Mechanics of Composite Elasmoid Fish Scale Assemblies and their Bioinspired Analogues,” accepted to Journal of the Mechanical Behavior of Biomedical Materials, 2012.

153. Batista, M., Nia, H.T., Cox, K., Grodzinsky, A. J., **Ortiz**, C., Heinegård, D., and L. Han, “Role of Chondroadherin in Nanoscale Tissue Assembly and Biomechanics of Murine Articular Cartilage,” Accepted to the Annual Transactions of the 2013 Annual Orthopaedic Research Society, Paper 0111, Podium Presentation.

152. Nia, H.T., Han, L., Bozchalooi, I., Youcef-Toumi, K., Grodzinsky, A.J., and C. **Ortiz**, “Frequency-dependent Nanomechanical Behavior of Aggrecan Demonstrates that Aggrecan is the Dominant Constituent Responsible for the Frequency Dependence of Cartilage Poroelasticity,” Accepted to the Annual Transactions of the 2013 Annual Orthopaedic Research Society, Poster Presentation 0558.

151. Nia, H.T., Li, Y., Wang, Y., Soltani, I., Chubinskaya, S., Youcef-Toumi, K., **Ortiz**, C., and A.J. Grodzinsky, "Depth-Dependent Self-Stiffening, Energy Dissipation and Poroelastic Properties of Normal Human Cartilage via Broad-Spectrum Dynamic Nanoindentation," Accepted to the Annual Transactions of the 2013 Annual Orthopaedic Research Society, Paper 0309, Podium Presentation.
150. Han, L., Yin, J., Wang, L., Chia, K.K., Cohen, R. E., Rubner, M. F., **Ortiz**, C., and M.C. Boyce, "Geometrically Controlled Stimulus-Responsive Surface Friction," accepted at the 23rd International Congress of Theoretical and Applied Mechanics (ICTAM2012, Beijing, China) 2012.
149. Li, Y., **Ortiz**, C., and M.C. Boyce, "A Generalized Mechanical Model for Suture Interfaces of Arbitrary Geometry," accepted to the Journal of the Mechanics and Physics of Solids, 2012.
148. Zhang, Y., Yao, H., **Ortiz**, C., Xu, J., and M. Dao, "Bio-inspired Interfacial Strengthening Strategy through Geometrically Interlocking Designs," Journal of the Mechanical Behavior of Biomedical Materials 15, Pages 70-77, 2012. [PDF](#)
147. Zolotovskiy, K. "BioConstructs—Methods for Bio-Inspired and Bio-Fabricated Design," M. S. Thesis, Department of Architecture, Massachusetts Institute of Technology, August 2012 (**Ortiz** co-Supervisor, Oxman co-Supervisor).
146. Browning, A. "Mechanics and Design of Flexible Composite Fish Armor," M. S. Thesis, Department of Mechanical Engineering, Massachusetts Institute of Technology, June 2012 (**Ortiz** co-Supervisor, Boyce co-Supervisor).
145. Wong, S., Han, L., Timachova, K., Veselinovic, J., Hyder, Md. N., **Ortiz**, C., Klibanov, A., and P.T. Hammond, "Drastically Lowered Protein Adsorption on Microbicidal Hydrophobic/Hydrophilic Polyelectrolyte Multilayers," Biomacromolecules, 13, 3, 1525-7797 (2012). [PDF](#)
144. Li, Y., **Ortiz**, C. and M. C. Boyce "Bioinspired, Mechanical, Deterministic Fractal Model for Hierarchical Suture Joints," Physical Review E 85, 031901 (2012). [PDF](#)
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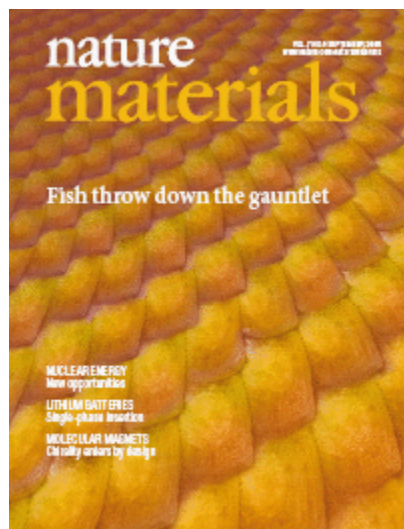
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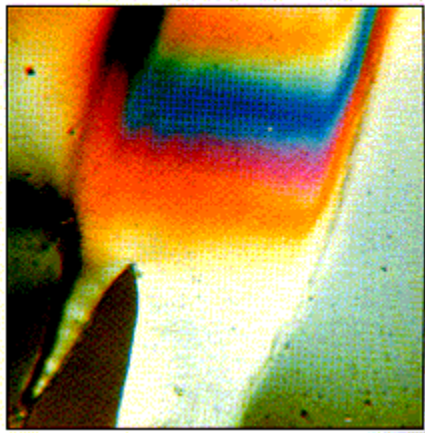
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