

# Curriculum Vitae

**Christine Ortiz**

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## 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

## Positions Held

Spring 2008 Visiting Professor and Lady Davis Fellow, Hebrew University of Jerusalem (Israel)  
2006-pres. Founding Faculty Director the MIT International Science and Technologies Initiatives international exchange program with Israel (MISTI MIT-Israel)  
2006-pres. Associate Professor with tenure, Materials Science and Engineering, MIT  
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 Interests

Solid/Continuum Mechanics, Micromechanics, Nanomechanics, Structural Biological Materials, Musculoskeletal Tissues, Biological Exoskeletons, Single Molecule Imaging, Single Cell Mechanics, Bioadhesion, Proteoglycans, Cartilage, Bone, Nacre, Ganoine

## Teaching Interests

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

## Diversity Interests (see: Ortiz Group Diversity Webpage:

<http://web.mit.edu/cortiz/www/Diversity/mitdiversityhome.html>)

Best practice pedagogies for underrepresented minority students; Convolution of race and gender in academia; Effect of diversity on the academic enterprise

## Editorial Service

2008-pres. Editorial Board, *Advanced Biomaterials* by WILEY-VCH GmbH & Co KGaA  
2006-pres. Editorial Board, *International Journal Surface Science and Engineering* by (Insures)-Inderscience  
2006-pres. Coeditor, *Biointerphase* by AVS  
2005-2006 Guest Coeditor, *Journal of Materials Research* Focus Issue "Mechanics of Biological and Biomimetic Materials at Small Length Scales" by Materials Research Society

## Honors

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

- 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)
- 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-yr 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

### **Selected Ortiz Group Student Awards**

- 2009 Fei Liang, Chyn Duog Shiah Fellowship
- 2008 Hsu-Yi Lee, Whitaker Health Sciences Fund Fellowship
- 2008 Lin Han, Finalist for the Orthopaedic Research Society’s New Investigator Recognition Awards (NIRA) at the 54<sup>th</sup> Annual Meeting of the Orthopaedic Research Society
- 2006 Kuangshin Tai, Materials Research Society (MRS) Graduate Student Silver Medal
- 2006 Julian Villarreal, 2nd place in student technical presentation contest at the 2006 Society of Hispanic Professional Engineers (SHPE) Northeast Regional Conference
- 2005 Jennifer Vandiver, 1<sup>st</sup> place Poster Presentation Award: Materials Research Society, Symposium K “*Engineered Biointerface?*”
- 2005 Benjamin Bruet, Materials Research Society (MRS) Fall Conference Nominee for Best Poster Award
- 2004 Delphine Dean, Materials Research Society (MRS) Graduate Student Gold Medal
- 2003 Benjamin Bruet, Robert Guenassia Award
- 2003 Celia Macias, 1<sup>st</sup> place Poster Presentation Prize: Society of Hispanic Professional Engineers (SHPE) Eastern Technical Career Conference

### **Professional Service**

- 2009 – 2010 Co-organizer, Symposium on “*Functional Biointerphases,*” European Materials Research Society (E-MRS) (Strasbourg, France)
- 2009 – pres. Board of Directors, Technion-MIT Hibur Program
- 2008 NSF Civil, Mechanical and Manufacturing Innovation Material Design and Surface Engineering (MDSE), Proposal Reviewer and Panelist (Arlington, VA)
- 2007 Session Chair, APS March Meeting, Denver, Colorado, Session U4: Interfaces with Synthetic and Biological Polymers, Division of Polymer Physics
- 2007 NSF-CAREER (Faculty Early Career Development in Engineering and Science) Division of Materials Research Proposal Reviewer and Panelist (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 NSF-CAREER (Faculty Early Career Development in Engineering and Science) Committee of Visitors Review Panel (Arlington, VA)
- 2006 NSF-CAREER (Faculty Early Career Development in Engineering and Science) Proposal Reviewer and Panelist (Arlington, VA)
- 2006 Participant in Workshop on “*Autonomic Structural Systems for Threat Mitigation?*” sponsored by AFOSR, ARO, NSF, ONR and the European Science Foundation (Nice, France)
- 2005 Guest Panelist on NIH Study Section: *Molecular Imaging*

2005	Organizer, Short course in <i>Nanomechanics of Materials and Biomaterials</i> , 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	NSF Adhesion Proposal Reviewer and Panelist
2002	NSF-CAREER (Faculty Early Career Development in Engineering and Science) Division of Materials Research Proposal Reviewer and Panelist (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 <i>Cell-Polymer Interactions</i> (Indianapolis, IN)
2002	Review Panelist, NBEI (NASA Bioscience Engineering Institute Review)
2001	NSF-NSEC (Nanotechnology Science and Engineering Center) Proposal Reviewer and Reverse Site Visit Panelist (Arlington, VA)
2000	Chair, Molecular Mechanics Section, Ringberg Workshop: <i>Micro-Nano-Bio: Common Methods and Mechanisms in Materials and Bio Sciences</i> (Munich, Germany)
1999	NSF-SBIR/STTR (Small Business Innovation Research, Small Business Technology Transfer) Proposal Reviewer and Panelist (Arlington, VA)
<i>Reviewer</i>	Science, Nano Letters, Petroleum Research Fund, NSF, NIH, Macromolecules, Langmuir, Journal of Cell Biology, Proceedings of the National Academy of Sciences USA, Biomacromolecules, Journal of Structural Biology, Biomaterials, Colloids and Surfaces A, Journal of Polymer Science Part B: Polymer Physics, Journal of Investigative Dermatology, Advanced Materials, ARO

### Professional Societies

American Chemical Society, American Physical Society, Materials Research Society, American Association for the Advancement of Science

### MIT Service – Current

Jan. 2009	– present	School of Engineering, Committee on International Programs (CIP)
Sept. 2008	– present	Materials Council, Advisory to the Department of Materials Science and Engineering Department Head
Sept. 2008	– present	Middle Eastern Studies Working Group (Reporting to the Associate Provost)
July 2008	– present	Chair, MIT Department of Materials Science and Engineering Graduate Program
Mar. 2008	– present	Director, MIT Institute of Soldier Nanotechnologies Summer Internship Program at Army Laboratories
Sept. 2007	– present	Institute Committee on Graduate Programs (CGP)
Mar. 2007	– present	Diversity Initiative Committee (reporting to the Provost)
Jan. 2006	– present	Founding Faculty Director of the MIT International Science and Technology Initiatives international exchange program with Israel (MISTI MIT-Israel)

### MIT Service – Past

Aug. 2009	–	Sept. 2009	Principal Research Scientist Committee at the MIT Institute for Soldier Nanotechnologies
Sept. 2008	–	May 2009	Institute Global Studies Council (Reporting to the Provost)
Jan. 2007	–	May 2007	Search Committee for Dean for Graduate Education (reporting to the Chancellor)
Sept. 2006	–	Dec. 2007	Institute Committee on Commencement / Student Marshall
Sept. 2006	–	May 2007	Departmental Committee on Graduate Studies
Sept. 2006	–	May 2007	Graduate Registration Officer, Chair of Bio- and Polymeric Materials Academic Program
Sept. 2006	–	Sept. 2006	Presentation / Panel at MIT New Faculty Orientation on “ <i>Advising Graduate Students</i> ”
Oct. 2006	–	Oct. 2006	Panel member for Orientation for new Members of the Corporation on Faculty Life at MIT

Jan. 2005	–	May 2005	DMSE Strategic Planning Education Committee
Sept. 2004	–	May 2007	DMSE Undergraduate Adviser
May 2003	–	May 2005	DMSE Wulff Lecture Organizer
May 2002	–	May 2005	DMSE Undergraduate Recruitment Officer
Jan. 2002	–	May 2005	Program in Polymer Science and Technology Seminar Series Organizer
Sept. 2000	–	May 2001	DMSE Distinguished Lecturer Series Organizing Committee
Apr. 2000	–	Apr. 2000	MIT Campus Preview Weekend Speaker
Feb. 2000	–	Dec. 2007	Undergraduate Advisor for the Biomedical Engineering Minor
Sept. 1999	–	Dec. 2007	DMSE Undergraduate Committee
Sept. 1999	–	May 2002	DMSE Undergraduate Adviser
Sept. 1999	–	Sept. 2000	DMSE Subcommittee for Undergraduate Core Curriculum

## Diversity

2009	Mentor and Invited Speaker; MIT 3-Day “ <i>Future Faculty Workshop: Diverse Leaders of Tomorrow</i> ”
2009	Invited Speaker, MIT Office of the Dean for Graduate Education Power Lunch
2009	MIT Graduate Student Council Diversity Subcommittee series “ <i>Rethinking Interactions</i> ,” “ <i>Personal Experiences in Academia: Evolution, Perspectives, and Prospectives</i> .”
2008	Invited Speaker, “ <i>Path to Professorship</i> ” Workshop for Women Graduate Students, sponsored by the Office of the Dean for Graduate Education, “ <i>Demystifying the Tenure Process</i> ”
2008	Mentor and Invited Speaker; MIT 3-Day “ <i>Future Faculty Workshop: Diverse Leaders of Tomorrow</i> ”
2008	Invited Participant; “ <i>Advancing and Empowering Scholars: Transforming the Landscape of the American Academy through Faculty Diversity</i> ,” symposium at Harvard University (Cambridge, MA)
2008	Diversity Congress Planning Committee (Reporting to the President)
2007-pres.	MIT Diversity Initiative Committee (Reporting to the Provost)
2007	Invited Speaker; “ <i>Diversity at the Departmental Level</i> ,” MIT Department of Materials Science and Engineering General Faculty Meeting
2007	Invited Speaker and Moderator of Institute-Wide Round Table Presentation; “ <i>Facilitating a Path to and through Graduate School for Underrepresented Minorities</i> ,” 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 <i>Achieving Racial &amp; Ethnic Equity in Chemistry</i> (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 Attendee Focusing on Diversity (Washington, DC)
2006-2008	Invited Speaker and Admissions, MITE2S (MIT Minority Introduction to Science and Engineering Summer Program)
2006-2007	Judge, MIT Chapter of the Society of Women Engineers (SWE) annual scholarship applications
2006-2007	Member; Faculty Advisory Committee for the Office of Minority Education
2006	Invited Speaker and Departmental Graduate Student Recruitment, SACNAS
2006	Invited Speaker, MSRP (MIT Minority Summer Research Program)
2006	Committee for the Review of the Martin Luther King Visiting Professors and Scholars (Reporting to the Provost)
2005	Faculty Advisory Committee for 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 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

### Outreach

- 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 Judge for MIT Chapter of the Society of Women Engineers (SWE) annual scholarship applications
- 2007 Museum of Science Guest Speaker (Cambridge, MA)
- 2006 Judge for MIT Chapter of the Society of Women Engineers (SWE) annual scholarship applications
- 2005 Ran Laboratory sessions for high school students: Women in Science and Engineering (WISE)
- 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.

### Teaching

- Spring Term 2000 – Spring Term 2009 *Nanomechanics of Materials and Biomaterials* – developed new undergraduate restricted elective course, Lecturer
- Fall Term 2006 – Fall Term 2006 *Mechanics of Materials* and *Organic and Biomaterials Chemistry* – 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 *Mechanics of Materials* –undergraduate core class, Lecturer

### Selected Invited Talks (100+ total, 30 international)

- 2005, 2008, 2009 Materials Research Society
- 2003, 2007 American Physical Society
- 5 American Chemical Society (ACS): 2001, 2002(2), 2006(2)
- 2004 Orthopaedic Research Society
- 8 Gordon Research Conferences: Biomineralization, Chemistry at the Interface, Polymers East, Biomaterials Biocompatibility and Tissue Engineering, Proteoglycan, Musculoskeletal Biology and Bioengineering, Science of Adhesion, Elastomer

### International:

- 2008 Technion - Israel Institute of Technology, Haifa, Israel  
The Shraga Dirnfeld Lecture
- 2008 Hebrew University of Jerusalem Jerusalem, Israel
- 2008 Weizmann Institute of Science Rehovot, Israel
- 2006 Workshop on “*Autonomic Structural Systems for Threat Mitigation*” Nice, France

	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	
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 Netherlands: 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, University of Cambridge	Cambridge, UK

## Publications

113. Lee, B., Han, L., Frank, E. H., Chubinskya, S., **Ortiz**, C., and A. J. Grodzinsky, "Dynamic Mechanical Properties of the Tissue-Engineered Matrix Associated with Individual Chondrocytes," in review, 2009.
112. Yao, H., Dao, M., Carnelli, D., Tai, K., Suresh, S., and C. **Ortiz**, "Characteristics of Size-Dependent Nanoscale Heterogeneity for Mechanical Performance of Bone," in review, 2009.
111. Yao, H., Dao, M., Imholt, T., Huang, J., Wheeler, K., Suresh, S., and C. **Ortiz**, "Protection Mechanisms Informed by the Unique Iron-Plated Armor of a Deep Sea Hydrothermal Vent Gastropod," in review, 2009.
110. Wang, L., Song, J., **Ortiz**, C., and M. C. Boyce, "Anisotropic Design of a Multilayered Biological Exoskeleton," in review, 2009.
109. Schmidt, D. J., Cebeci, F., Kalcioğlu, I., Wyman, S. G., **Ortiz**, C. Van Vliet, K. J., and Hammond, P. T., "Electrochemically-Controlled Swelling and Mechanical Properties of a Polymer Nanocomposite," ACS-Nano, 3(8), 2207-2216, 2009.
108. Lee, B., "Time-dependent mechanical behavior of newly developing matrix of bovine primary chondrocytes and bone marrow stromal cells using Atomic Force Microscopy," Ph.D. Thesis, Department of Civil and Environmental Engineering, Massachusetts Institute of Technology, May 2008 (**Ortiz** co-supervisor, A. J. Grodzinsky co-supervisor).
107. Carnelli, D., Yao, H., Dao, M., Vena, P., Contro, R. and C. **Ortiz**, "Mechanical Anisotropy of Individual Osteons in Bone Tissue at High Spatial Resolutions," Proceedings of the American Society of Mechanical Engineers Summer Bioengineering Conference (SBC2009), June 17-21, Squaw Creek, Lake Tahoe, CA, 2009 (peer-reviewed).
106. Lee, H.-Y., Kopesky, P. W., Plaas, A. H. K., Diaz, M. A., Sandy, J. D., Kisiday, J. D., Frisbie, D. D., **Ortiz**, C. and A. J. Grodzinsky, "Adult Equine MSCs Synthesize Aggrecan having Nanomechanical Compressibility and Biochemical Composition Characteristic of Young Growth Cartilage," Podium Presentation, Transactions of the 55th Annual Orthopaedic Research Society, Las Vegas, NV, 2009, 34, Paper no. 2732 (peer-reviewed).
105. Lee, H.-Y., Roughley, P. J., Grodzinsky, A. J., and C. **Ortiz**, "Variations in Single Molecule Human Aggrecan Molecular Structure and Conformation after Removal of Chondroitin Sulfate and Keratan Sulfate," Transactions of the 55th Annual Orthopaedic Research Society, Las Vegas, NV, 2009, 34, Paper no. 2767 (peer-reviewed).
104. Lee, B., Hung, H.-H., Kopesky, P. W., Vanderploeg, E. J., Kurz, B., Frank, E., Grodzinsky, A. J., and C. **Ortiz**, "Mechanical Properties of Stem Cells and their PCM During Chondrogenesis in 3D-Gel Culture," Transactions of the 55th Annual Orthopaedic Research Society, Las Vegas, NV, 2009, 34, Paper no. 2810 (peer-reviewed).
103. Han, L., Plaas, A. H. K., Sandy, J. D., Frank, E. H., Hung, H. K., Anemaet, W. K., **Ortiz**, C. and A. J. Grodzinsky, "Nanomechanics of Murine Knee Joints Reveals Effects of Maturation and Inflammation," Transactions of the 55th Annual Orthopaedic Research Society, Las Vegas, NV, 2009, 34, Paper no. 2835 (peer-reviewed).
102. Choi, Jae, "Nanomechanical Properties of Hydrated Organic Thin Films," Ph.D. Thesis, Department of Civil and Environmental Engineering, Massachusetts Institute of Technology, May 2008 (**Ortiz** Supervisor).
101. Ye, Miao, "Molecular Design and Nanomechanical Testing of Biomimetic Stimulus-Responsive Macromolecular Architectures," Ph.D. Thesis, Department of Materials Science and Engineering, Massachusetts Institute of Technology, January 2008 (**Ortiz** Supervisor).
100. Bruet, Benjamin, "Multiscale Structural and Mechanical Design of Mineralized Biocomposites," Ph.D. Thesis, Department of Materials Science and Engineering, Massachusetts Institute of Technology, January 2008 (**Ortiz** Supervisor).

99. Wheeler, Kevin, "The Brittle-Compliant Junction and Fracture of the Shell from a Deep-sea Hydrothermal Vent Gastropod," Bachelor's Thesis, Department of Materials Science and Engineering, Massachusetts Institute of Technology, May 2008 (**Ortiz** Supervisor).
98. Lee, B., Han, L., Frank, E. H., Chubinskaya, S., **Ortiz**, C. and A. J. Grodzinsky, "Dynamic Mechanical Properties of Growth Factor-stimulated Chondrocytes After 3D-Gel Culture," Transactions of the 54th Annual Orthopaedic Research Society, San Francisco, CA, 2008, 33, Paper no. 0151 (peer-reviewed).
97. Han, L., Greene, J. J., Frank, E. H., Hung, H. K., Grodzinsky, A. J. and C. **Ortiz**, "Effect of Length Scale on Frequency-dependent Cartilage Oscillatory Nanomechanics," Transactions of the 54th Annual Orthopaedic Research Society, San Francisco, CA, 2008, 33, Paper no. 0448. Selected as a finalist for the Orthopaedic Research Society's New Investigator Recognition Awards (NIRA) (peer-reviewed).
96. Lee, H.-S., Kopesky, P., Daher, L., Mosquera, A., Frisbie, D., Kisiday, J., Grodzinsky, A. J. and C. **Ortiz**, "Morphology of Aggrecan Produced by Adult Equine Mesenchymal Stem Cells and Chondrocytes in Self-assembling Peptide Hydrogels," Transactions of the 54th Annual Orthopaedic Research Society, San Francisco, CA, 2008, 33, Paper no. 0553 (peer-reviewed).
95. Lee, H.-S., Han, L., Daher, L., Bonaparte, R., Roughley, P., **Ortiz**, C. and A. J. Grodzinsky, "Age-Related Changes in Human Aggrecan Molecular Structure and its Nanomechanical Properties," Transactions of the 54th Annual Orthopaedic Research Society, San Francisco, CA, 2008, 33, Paper no. 0064 (peer-reviewed).
94. Tai, K., Pelled, G., Sheyn, D., Bershteyn, A., Han, L., Kallai, I., Zilberman, Y., **Ortiz**, C. and D. Gazit, "Nanobiomechanics of Repair Bone Regenerated by Genetically Modified Mesenchymal Stem Cells," Tissue Engineering : Part A 14(10), 1709-1720, 2008.
93. Han, L., Dean, D., Daher, L. A., Grodzinsky, A. J. and C. **Ortiz**, "Cartilage Aggrecan Can Undergo Self-Adhesion," Biophysical Journal 95(10), 4862-4870, 2008.
92. Bruet, B. J. F.; Song, J.; Boyce, M. C.; **Ortiz**, C., "Materials Design Principles of Ancient Fish Armor," Nature Materials, 7(9), 748-756, 2008 (Cover of Issue) (Featured in: K.D. Jandt, "Fishing for Compliance," Nature Materials, 7(9), 692-693, 2008).
91. Arslan, M., Boyce, M.C, Qi, H. J. and C. **Ortiz**, "Constitutive Modeling of the Stress-Stretch Behavior of Two-Dimensional Triangulated Macromolecular Networks Containing Folded Domains," Journal of Applied Mechanics 75(1), 011020, 2008.
90. **Ortiz**, C. and M. C. Boyce, "Bioinspired Structural Materials," Science 319(5866), 1053-1054, 2008.
89. Han, Lin, "Nanomechanics of Cartilage Extracellular Matrix Macromolecules," Ph.D. Thesis, Department of Materials Science and Engineering, Massachusetts Institute of Technology, September 2007 (**Ortiz** Supervisor).
88. Tai, Kuangshin, "Nanomechanics and Ultrastructural Studies of Cortical Bone: Fundamental Insights Regarding Structure-function, Mineral-organic Force Mechanics Interactions, and Heterogeneity," Ph.D. Thesis, Department of Materials Science and Engineering, Massachusetts Institute of Technology, March 2007 (**Ortiz** Supervisor).
87. Lee, B., Han, L., Frank, E., **Ortiz**, C. and A. J. Grodzinsky, "Temporal Evolution of Viscoelastic Properties of Individual Cartilage Chondrocytes and Their Pericellular Matrix In Vitro," Transactions of the 53rd Orthopaedic Research Society San Diego, CA, 2007, 32, Paper no. 0149 (peer-reviewed).
86. Tai, K., Pelled, G., Bershteyn, A., Sheyn, D., Kallai, I., Zilberman, Y., **Ortiz**, C. and D. Gazit, "Nanobiomechanical Analysis of Stem Cell-Based Non-Union Fracture Repair," Transactions of the 53rd Orthopaedic Research Society, San Diego, CA, 2007, 32, Paper no. 0128 (peer-reviewed).

85. Tai, K., Ulm, F. and C. **Ortiz**, “Cohesive-Frictional Plasticity Arising From The Nanogranular Nature in Bone,” Transactions of the 53rd Orthopaedic Research Society, San Diego, CA, 2007, 32, Paper no. 0314 (peer-reviewed).
84. Tai, K., Dao, M., Suresh, S., and C. **Ortiz**, “Nanomechanical Heterogeneity As A Toughening Mechanism In Bone,” Transactions of the 53rd Orthopaedic Research Society, San Diego, CA, 2007, 32, Paper no. 1358(peer-reviewed).
83. Han, L., Greene, J., Frank, E., Hung, H.-H., Grodzinsky, A. J. and C. **Ortiz**, “Nanostructure and Time-Dependent Nanomechanics of Bovine Cartilage and Its Type II Collagen Network,” Transactions of the 53rd Orthopaedic Research Society, San Diego, CA, 2007, 32, Paper no. 0099 (peer-reviewed).
82. Han, L., Dean, D., **Ortiz**, C. and A. J. Grodzinsky, “Lateral Nanomechanics of Cartilage Aggrecan Macromolecules,” Biophysical Journal 92(4), 1384-1398, 2007.
81. Ng, L., Hung, H., Sprunt, A., Chubinskaya, S., **Ortiz**, C. and A. J. Grodzinsky, “Nanomechanical Properties of Individual Chondrocytes and Their Developing Growth Factor-Stimulated Pericellular Matrix,” Journal of Biomechanics 40(5), 1011-1023, 2007.
80. Tai, K., Dao, M., Palazoglu, A., Suresh, S. and C. **Ortiz**. “Nanoscale Heterogeneity Promotes Energy Dissipation in Bone,” Nature Materials 6(6), 454-462, 2007.
79. Pelled, G., Tai, K., Sheyn, D., Zilberman, Y., Kumbar, S., Nair, L. S., Laurencin, C. T., Gazit, D. and C. **Ortiz**, “Structural and Nanoindentation Studies of Stem Cell-based Tissue Engineered Bone,” Journal of Biomechanics 40(2), 399-411, 2007.
78. Han, L., Dean, D., Mao, P., **Ortiz**, C. and A. J. Grodzinsky, “Nanoscale Shear Deformation Mechanisms of Opposing Cartilage Aggrecan Macromolecules,” Biophysical Journal 93(5), L23-L25, 2007.
77. Ulm, F.-J., Vandamme, M., Bobko, C., Ortega, J. A., Tai, K. and C. **Ortiz**, “Statistical Indentation Techniques for Hydrated Nanocomposites: Concrete, Bone and Shale,” Invited review article, Journal of the American Ceramic Society 90(9), 2677-2692, 2007.
76. Vandiver, Jennifer, “Molecular Origins of Bioactivity in Synthetic Hydroxyapatite-based Bone Implant Materials,” Master’s Thesis, Department of Materials Science and Engineering, Massachusetts Institute of Technology, May 2006 (**Ortiz** Supervisor).
75. Kearney, Cathal “Anisotropic Nanoscale Plasticity of Aragonite,” Master’s Thesis, Department of Mechanical Engineering, Massachusetts Institute of Technology, May 2006 (**Ortiz** Supervisor).
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