

**Curtis R. Taylor, Ph.D.**

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**Summary**

Dr. Curtis R. Taylor, Ph.D. is the Associate Dean for Student Affairs for the Herbert Wertheim College of Engineering, Associate Professor of Mechanical and Aerospace Engineering, and Associate Professor of Engineering Education at the University of Florida (UF). Dr. Taylor leads and manages the Office of Student Affairs which provides student services that support academic, professional, and extra-curricular activities in the College. He teaches undergraduate and graduate courses in solid mechanics. Dr. Taylor directs the nanomechanics research lab at UF. The application of this research seeks to develop advanced manufacturing capabilities and new technologies that utilize the unique properties of nanomaterials (i.e., lightweight, durable nano coatings, multifunctional nanocomposites, etc.) and soft materials for healthcare. Before joining Florida, he was an Assistant Professor at the Virginia Commonwealth University (VCU) in Richmond, Virginia. He received his B.S. degree (1998) in mechanical engineering from the University of Maryland, and his M.S. (2002) and Ph.D. (2005) as a National Science Foundation (NSF) Integrated Graduate Education, Research, and Training (IGERT) Fellow in physics (microelectronics-photonics) from the University of Arkansas. Before coming to Arkansas in 2000, he worked for one year as an information technology/engineering project manager at Capital One Financial Corporation in Richmond, Virginia. Dr. Taylor has also held research appointments with the U.S. Air Force, United Technologies Corporation, and the National Center for Electron Microscopy at Lawrence Berkeley National Lab. Research interests include advanced manufacturing, mechanical characterization of materials by nanoindentation and ion/electron microscopy, and surface science using atomic force microscopy.

Professor Taylor uses his expertise, knowledge, and talents to serve the University and the larger community. He strives to inspire and motivate students of all ages to pursue careers in science and technology.

**Research Interests:** Advanced Manufacturing; Mechanical Behavior of Materials; Engineering Education

**Education**

UNIVERSITY OF ARKANSAS, Fayetteville, AR

Ph.D. in Physics (Microelectronics-Photonics)--2005

National Science Foundation IGERT Fellow

Dissertation Title: *Investigation of Nanoindentation for the Directed Self-Assembly of Nanostructures*

UNIVERSITY OF ARKANSAS, Fayetteville, AR

M.S. in Physics (Microelectronics-Photonics) with Electronics Manufacturing Certificate--2002

UNIVERSITY OF MARYLAND, College Park, MD

B.S. in Mechanical Engineering with Honors—1998

Minor in Total Quality Management

*Executive and Leadership Training*

Department Chairs Workshop, Institute for Academic Leadership, Florida State University, 2016

Masters of Business Administration and Professional Coursework

- Strategic Communication
- Technological Entrepreneurship
- Executive Presence

**Professional Experience**

- *Associate Dean for Student Affairs*, Herbert Wertheim College of Engineering, 2015-present  
University of Florida, Gainesville, FL
  - The Associate Dean reports to the Dean of the College of Engineering and is responsible for all undergraduate student service activities in the College and supervising staff involved in these areas. These responsibilities pertain to over 7,700 undergraduates across 11 departments; management of budgets in excess of \$2M; and supervision of 15 full-time staff members. These engineering activities include the following:
    - academic advising and counseling
    - undergraduate curricular and co-curricular programs
    - international/study abroad programs
    - liaison and oversight of 50+ engineering student organizations and design teams
    - student evaluation of faculty and courses
    - engineering scholarships
    - new student recruitment
    - conflict resolution
    - admissions

- retention programs
  - graduation processing, certification, and events
  - career and professional development
  - college representative for undergraduate education university committees
- *Diversity and Inclusion Officer--Campus Diversity Liaison*, University of Florida, 2018-present
  - Provide leadership to the campus and Herbert Wertheim College of Engineering in strategy development, best practices, and training in inclusion, diversity, equity, and access.
  - Responsible for assessment and data analysis of inclusion, diversity, equity, and access initiatives in the Herbert Wertheim College of Engineering
- *Associate Professor*, Mechanical and Aerospace Engineering, 2014-present  
University of Florida, Gainesville, FL
  - Soft Matter Engineering Group - performing research in additive manufacturing and mechanics of soft matter for healthcare applications
- *Associate Professor*, Engineering Education, 2019-present  
University of Florida, Gainesville, FL
- *Assistant Professor*, Mechanical and Aerospace Engineering, 2008-2014  
University of Florida, Gainesville, FL
  - Center for Manufacturing Innovation and Nanoscience Institute for Medical and Engineering Technology
  - Micro- and nano-scale manufacturing and mechanical behavior of materials
- *Assistant Professor*, Mechanical Engineering, 2005-2008  
Virginia Commonwealth University, Richmond, VA
  - Established and directed NanoManufacturing (NanoMan) Research Lab
- *Faculty Fellow*, United States Air Force Research Lab, Summer 2007  
Wright-Patterson Air Force Base, Dayton, OH
  - Performed research in controlled self-assembly of quantum structures
- *Research Associate*, National Center for Electron Microscopy, 2004  
Lawrence Berkeley National Lab, Berkeley, CA
  - Performed transmission electron microscopy (TEM) characterization via conventional and dual-beam focused ion beam (FIB) techniques
  - Analyzed mechanical properties of materials using nanoindentation
- *Research and Teaching Assistant*, Department of Mechanical Engineering, 2002-2005  
University of Arkansas, Fayetteville, AR
  - Filed provisional patent on directed self-assembly technique

- Studied directed self-assembly of quantum dots via nanoindentation
- Directed research of three undergraduates
- *Research Assistant*, High Density Electronics Research Center, 2000-2001  
University of Arkansas, Fayetteville, AR
  - Responsible for mechanical design and low temperature material selection for new superconducting radio frequency (RF) filter
- *Project Manager*, 1999-2000  
Capital One Financial Services Inc., Richmond, VA
  - Managed software development and hardware maintenance for telephony applications

### Teaching Experience

**Overall Instructor Rating = 4.5/5.0 (all courses (~ 1000+ students) in last 4 years);** highest ratings in (i) *respect and concern for students*, (ii) *enthusiasm for subject*, (iii) *communication of ideas and information*

### Courses Taught at University of Florida

Prof. Taylor primarily teaches large (100-250 students) courses at the sophomore, junior and senior level and smaller graduate level courses. The premise of the Prof. Taylor's teaching philosophy is *learning by doing*. The communication of technical information and student engagement is facilitated through in-class group problem solving and experiments.

### IDH 2930 Honors Common Read - Think and Grow Rich (Fall 2017)

This course seeks to engage students in exploring their personal goals and developing an actionable plan for their education at UF and their career beyond. Prior to class students will read one chapter a week in the book "Think and Grow Rich" and participate in lively discussion during class. Each student is encouraged to keep a journal to track their thoughts and ideas throughout the course. Assignments consist of weekly readings, posting to online class discussion/idea boards, short essays or questionnaires, and a final presentation.

### CHM 2045 General Chemistry 1 (STEPUP) (Summer 2017, 2019)

CHM 2045 is an accelerated course to prepare incoming students for success in chemistry. The class size is approximately 40 students and meets for 1 hour, four days per week. CHM2045 serves to teach: the scientific method, skills for problem solving, general chemistry knowledge, and a connection to the principles that govern the natural world.

### EGM 2511 Engineering Statics (Fall 2010)

EGM 2511 is a 3-hour per week lecture based sophomore-level undergraduate course that is required for all mechanical and civil engineering students, and is an elective course for other engineering disciplines. The class size was approximately 140 students. This course teaches

fundamental concepts of forces and how to ensure that structures and objects are in static equilibrium.

### **EGM 3520 Mechanics of Materials**

**(Fall 2008, Spring 2009, Fall 2009, Spring 2011, Spring 2012, Fall 2012, Fall 2014-2 sections)**

EGM 3520 is a 3-hour per week lecture based sophomore-level undergraduate course that is required for all mechanical and civil engineering students, and is an elective course for other engineering disciplines. The class size varies from approximately 120-250+ students. The purpose of the course is to provide students with the means of analyzing and designing various machine and load bearing structures within a margin of safety.

### **EML 4220 Vibrations**

**(Spring 2013, Spring 2014, Spring 2015—2 sections, Fall 2015)**

EML 4220 is a 3-hour per week lecture based junior and senior-level undergraduate course that is required for all mechanical engineering students, and is an elective course for other engineering disciplines. The class section size varies from approximately 80-120 students. This course introduces students to analytical, experimental, and numerical treatment of vibration phenomena.

### **EGM 6934 Nanomechanics Simulation and Experimental Methods**

**(Fall 2009, Fall 2011, Fall 2013)**

Prof. Taylor developed this graduate level course with Dr. Youping Chen in the MAE department to introduce fundamental computational and experimental techniques for the study of nanoscale mechanics of materials. The course was team taught (50/50) with Dr. Chen. This class met 3 hours per week and had ~12 students enrolled. One significant outcome of this course was the publication of work from a class project in the American Physical Society (APS) Journal of Applied Physics (Deformation Mechanisms in Silicon Nanoparticles, Journal of Applied Physics, 2011) on the nanomechanics of silicon nanoparticles with 6 students in the class.

### **EML 6934 Nanomechanics and Nanoscale Characterization of Materials**

**(Fall 2008)**

Dr. Taylor developed this graduate level course to equip each student with fundamental knowledge of the increasingly important field of nanomechanics (i.e. nanoscale contact mechanics, deformation, and fracture) and nanoscale characterization principles. This class met 3 hours per week and had 11 students enrolled. This is a very unique course, and nationally it is estimated that fewer than 6 universities offer such a course with any regularity.

### **EGM 6936 Graduate Seminar**

**(Fall 2012, Spring 2013, Fall 2013)**

EGM 6936 is a 1-hour per week course that is required for mechanical and aerospace engineering Ph.D. students. This course traditionally involved students sitting through invited research seminars with very little interaction. In Spring 2013, Dr. Taylor revamped the content to engage students in making technical presentations in addition to research seminar attendance. The positive effect on students is reflected in the increased evaluation ratings for this course (from 3.91 to 4.4).

### **Integrated Product and Process Design Coach (IPPD) (2014-2015)**

Dr. Taylor served as Faculty Coach for the 2014-2015 IPPD team working with client MedTronics Inc. The team was coached for 1-3 hours per week.

## **Courses Taught at Virginia Commonwealth University**

### *Undergraduate Courses*

- Engineering Statics
- Mechanics of Materials
- Materials Science for Engineers

### *Graduate Courses*

- Quantum Theory for Nano Engineering
- Advanced Characterization of Materials

## **Research and Innovation in Education**

### **The HapNan Interactive Learning Environment**

Nanotechnology is a relatively new, exciting, and growing area of research in which governments, educators and researchers alike, are interested in attracting K-12 and undergraduate students to pursue future careers. In order for the U.S. to remain competitive in the 21st century it must attract, retain, and educate students in STEM fields--specifically in nanotechnology. However, learning how things interact and behave at the nano-scale can be difficult for students to understand and conceptualize, as objects at this scale are not directly observable or accessible in the classroom environment. Traditional methods of teaching are also potentially limited in their engagement of students, whom have a diversity of learning styles. To address these issues, Dr. Taylor partnered with UF Art and Music faculty (James Oliverio) at the Digital Worlds Institute ([www.digitalworlds.ufl.edu](http://www.digitalworlds.ufl.edu)) to develop the "HapNan (Haptics and Nanotechnology)" Interactive Learning Environment. It is a new way to teach K-12 students about science and nanotechnology through the design and development of virtual reality environments that allow for physical interaction (touch or haptics). Involvement of multiple senses in learning is thought to play a significant role in transitioning from concrete to abstract thinking and may reduce the cognitive load and thereby support greater information processing and retention\*. By using a joystick-like controller called the Falcon, the user - ideally children between 5 and 17 years old - controls exploration with a virtual reality environment. The Falcon mimics the high power atomic force microscope that is used in nanoscience to obtain images of material surfaces. This instrument has the ability to observe features as small as atoms. The Falcon is like the needle on a record player, and lets the user feel the grooves, bumps, and tiny features on the object at the nanoscale. In addition, the joystick is equipped with 3 orthogonal motors that allow the user to feel the unique nanoscale forces and interaction.

The first prototype of the learning environment was produced in 2008 and a second prototype in 2011. The interactive learning environment includes 10 levels of scale, from the global scale down to the atomic scale, that provide animated haptic exploration scenarios and quizzes at each level for students to exhibit their understanding of key learning objectives.

\*S. Loucks-Horsley, Kapitan, R., Carlson, M., Kuerbis, P., Clark, R., Melle, G., Sache, T., &

Walton, E., "Elementary school science for the '90s," *Alexandria, VA: Association for Supervision and Curriculum Development*. 1990. \*J. Sweller, "Cognitive load theory, learning difficulty and instructional design," *Learning and Instruction*, vol. 4, pp. 295-312, 1994.

### Software

- HapNan 1.0 Educational Software Developed, 10/2012

### Exhibitions/Performances

- Miami Museum of Science, Miami, FL, January – March 2014
- South Florida Science Center and Aquarium, West Palm Beach, FL, April – May 2013
- UF Harn Museum, *Art in Engineering* HapNan Display/Kiosk, October 11, 2012
- Season 3, LiveVibe TV appearance, November 17, 2011, "What's HAPNAN? Arts and Sciences in the Digital Age" interview and discussion of the HapNan project.

### Awards/Reviews of the HapNan Environment

- 2015 Book Chapter—*Engaging Learners Through Rational Design of Multisensory Effects*.
- Selected for presentation in the Outstanding Contributions to Mechanical Engineering Education at the 2009 American Society of Engineering Education (ASEE) Annual Conference and Exposition
- 2009 ASEE Professional Interest Council I Best Paper Award
- 2009 ASEE Mechanical Engineering Division Best Paper Award
- National Science Foundation (NSF) Educational Opportunities Using the Cyberinfrastructure and Virtual Reality Engineering Education Grant (Awarded ~ \$200,000; 2009-2012)
- *New Courses Developed and Taught:*
  - EGM 6934 (Fall 2009)—Nanomechanics Simulation and Experimental Methods  
This course introduced fundamental computational and experimental techniques for the study of nanoscale mechanics of materials. This class met 3 hours per week and had 12 students enrolled. One significant outcome of this course was the publication of a peer-reviewed journal article on the nanomechanics of silicon nanoparticles by 6 students in the class.
  - EGRM 609 (Fall 2007)--Advanced Characterization of Materials was developed at VCU to provide a much-needed graduate course in techniques for materials characterization across material systems and scale boundaries (macro-nano scale).
  - ENGR 692 (Spring 2007)--Quantum Theory for Nano Engineering was developed at VCU to provide engineering graduate students with the fundamentals of quantum mechanics and its applications to the study and engineering of nanotechnology and nanoscale scientific research.
- *Integration of Research and Education:* Research in nanomanufacturing was implemented into "EGRM 309 - Materials Science for Engineers" and "EGM 3520 – Mechanics of

Materials” course via a nanomanufacturing module, which included theory and classroom use of atomic force microscopy, nanoindentation for hardness and fracture toughness characterization of thin films and nanostructures, and an introduction to transmission electron microscopy. Lectures were also provided, which introduced nanomechanics and nanofabrication using scanning probes.

- *Technology in Education*: Implemented use of Wimba Live Classroom webcasting software that allowed for webcasting of several international experts from Purdue University, U.S. Air Force Research Lab, and the University of Cambridge (London, England) as guest lecturers in EGRM 609 Characterization of Materials course. Wimba Live Classroom is also used once per week throughout the semester to provide virtual recitation sessions for students.

### **Faculty Peer Review and Mentoring**

Dr. Taylor developed a new course (EML 6934) with Dr. Youping Chen in the MAE department to introduce fundamental computational and experimental techniques for the study of nanoscale mechanics of materials. The course was team taught (50/50) with Dr. Chen. Prof. Taylor also served as a peer reviewer and mentor for teaching methodology to Dr. Chen in this course.

### **Advising and Mentoring**

*Current Undergraduate Researchers:*

- Natalie Franklin
- John Morin
- Sam Nawy

*Former Graduate Students:*

- Yifan Zhang, Ph.D.; 2016-2020
  - Dissertation: *Tribological Studies on Shape Memory Photonic Crystals*
- Yongliang Ni, Ph.D.; 2013-2018
  - Dissertation: *Investigation of the Shape Memory Mechanisms of a Series of Polymer Macroporous Photonic Crystals*
- Edward McCumiskey, Ph.D.; 2008-2013
  - Dissertation: *Visualizing Subsurface Deformation in Three Dimensions Via Representative Transmission Electron Microscope Tomography*
- Bijoyraj Sahu, Ph.D.; 2008-2013
  - Dissertation: *Design, Fabrication, and Characterization of a Scanning Probe Microscopy Cantilever with an Integrated Electrothermally Actuated Microgripper for Automated Tool-tip Exchange*
- Jared Hann, M.S. student; 2010-2012
  - Thesis: *Nanoscale Stress Field Interactions in Purview of Nanomechanical Fabrication Methods*
- Jean-Michel Boccard, M.S. (Universite de Franche-Comte, France), 2010
  - Thesis: *Design, Fabrication, and Characterization of a New Plasmonic Metamaterial Gas Sensor*



- Ankit Sharma, M.S. (non-thesis), 2010
- Edward McCumiskey, M.S.; 2006-2008
  - Thesis: *Nanomechanics of CdSe Nanocomposite Films*
- Dongshan Yu, M.S., 2007-2009
  - Thesis: *Controlled Synthesis of ZnO Nanowires Towards the Fabrication of Solar Cells*

#### *Former Post-Doctoral Scholars*

- Dr. Abir Bhattacharya, Ph.D., Assistant Professor, Department of Metallurgical & Materials Engineering, Indian Institute of Technology Jodhpur
- Dr. Tarek Trad, Ph.D., Associate Professor, Department of Chemistry, Sam Houston State University

#### *Former Undergraduate Scholars Advised*

Dr. Taylor has supervised and mentored over 30 undergraduate students (20 underrepresented/minority students) in various research activities over the past five years. These students include two presidents of Tau Beta Pi Florida Alpha. These undergraduates have won a high number of research awards. Their success is due in part through Dr. Taylor's mentorship and coaching. A complete list of students is found below.

#### **Honors Theses and Undergraduate Research Projects**

<b>Name</b>	<b>Program</b>	<b>Date</b>	<b>Awards/Graduate School</b>
Kyle LeBlanc	Undergraduate Research	2015-2016	<i>Cal-Berkeley</i>
Jason Bice	NSF REU	2013-2015	<i>Purdue University</i>
Richard Meaux	Undergraduate Research	2013-2014	
Khaalid McMillan	Undergraduate Research	2013-2014	
Arnaldo Pastrana	Undergraduate Research	2013	
Mallory Daly	University Scholars Program	2013	<i>University Scholar</i>
Nagid Brown	NSF REU	2012-2014	
Derick Ortiz	Undergraduate Research (individual study 3 credits)	2012-2013	
Mel Tatar	Undergraduate Research	2013-2014	
Diana Jimenez	Undergraduate Research	2013-2014	

Eric Moale	Undergraduate Research (individual study 3 credits)	2013 - 2014	
Luis Alvarez	Undergraduate Research (individual study 3 credits)	2009-2013	<i>Gates Millennium Fellowship, Mass. Inst. of Tech. (MIT) 2013</i>
Mina El-Harab Hanna	Undergraduate Research	2010-2013	<i>National Science Foundation Fellowship, Stanford 2013</i>
Domenique Lumpkin	Undergraduate Research	2011-2013	<i>GEM Fellowship, Purdue 2013</i>
Christian Cousin	Undergraduate Research	2013 - 2014	<i>UF MAE</i>
Bailey Shawbitz	Undergraduate Research	2013 - 2014	
Ebony Blaize	UF Student Science Training Program	2013	
Eric Hou	UF Student Science Training Program	2013	
Daniel Ross	Undergraduate Research	2011-2013	
Deanna Gierzak	Undergraduate Research	2012	
Harold Graffe	Undergraduate Research	2012	
Andrew Simpson	Undergraduate Research	2012	
Jonathan Klevan	Undergraduate Research	2012	
Contessa Middleton	Undergraduate Research	2011	
Christopher Cantaloube	Undergraduate Research (individual study 3 credits)	2010-2011	
Joshua Simpson	Undergraduate Research	2009-2011	<i>Attributes of a Gator Engineer Awardee</i>
Adish Padhani	Undergraduate Research (individual study 3 credits)	2010-2011	

Anjelica Warren	Undergraduate Research	2009-2010	<i>Best Poster Pi Tau Sigma Research Symposium</i>
Jonathan Stratton	Undergraduate Research	2009	
Diego Moreno	Undergraduate Research (individual study 3 credits)	2009-2010	
Lisa Morin	Undergraduate Research	2009-2010	<i>1<sup>st</sup> Place Poster NanoFlorida Conference</i>
Rich Winslow	Senior Honors Thesis	2008-2009	<i>UC-Berkeley 2009-2014</i>
Nikolai Eroshenko	Undergraduate Research	2005 -2008	<i>Harvard University 2008-2014</i>
Ade Aiyelawo	Undergraduate Research	2005 -2008	
Jonathan Kodedek	Undergraduate Research	2006-2008	
Malcolm Bressendorf	Undergraduate Research	2005 - 2006	<i>Columbia University 2008-2014</i>

#### *Student Academic Advising*

- Served as VCU academic advisor to more than 30 mechanical engineering students

#### *Student Organizations Advised*

- Dr. Taylor serves as Faculty Advisor for the following student organizations (2015-present):
  - UF Engineering Ambassadors
  - Benton Engineering Council
  - National Society of Black Engineers
  - Engineering Student Advisory Council.
- Dr. Taylor serves as Faculty Advisor for the Tau Beta Pi Florida Alpha Chapter (from 2008-present). He has served as the Chief Advisor of Tau Beta Pi from 2010-2014. Tau Beta Pi is the oldest and most prestigious national honor society for all engineering disciplines. Over 150 engineering students at UF were involved in a variety of social and service activities

each year. This role involved oversight of all finances and membership and assisting in retreat planning, officer training, team-building, developing a mission statement, conflict resolution, and various outreach activities. Dr. Taylor served as the Keynote speaker during the annual banquets for 2008 and 2009. *During his time of advising, the chapter was named the national R.C. Mathews Outstanding Chapter for 2011-2012 and 2008-2009, hosted the 2011 Southern District Tau Beta Pi Conference in Gainesville, and received the Tau Beta Pi Chapter Performance Scholarship for outstanding service 2008-2011.*

- Dr. Taylor served as the UF Honors Program Faculty Mentor for Hume Hall 3rd Floor students (~60) (2015).

### **K-12 Outreach and Service**

- Outreach with Engineering Ambassadors to Gainesville High School, November 2018-19
- UF Harn Museum Art in Engineering program (2016-present); Co-Director
- University of Florida Student Science Training Program (US-SSTP), 2013-2015, 2017  
Advisor of research for two high school students each summer
- Lab Host for the Annual Florida Junior Science, Engineering and Humanities Symposium (JESHS) (2011 - 2015)
- Research Advisor to Morgan Monroe, Episcopal High School, Jacksonville, FL, 2011
  - Project: *Improving Piezoelectric Nanogenerators: Nucleation of Nanocatalysts for the Synthesis of Ni-doped Zinc Oxide Nanowires*
    - 1<sup>st</sup> Place 2011 Florida Regional Science Fair
    - Chosen to represent the region in the Florida State Science Fair and the International Science and Engineering Fair in Los Angeles, CA in May 2011
- UF Harn Museum *Art in Engineering* program exhibition of the HapNan teaching system (2011-2012)
- Host and speaker for University of Florida College of Engineering Brooklyn middle school visit; excerpts broadcast on local WCJB TV NEWS 20 (2010)
- Advisor to six high school students working on nanotechnology research as part of Richmond High School Summer Research Program (RAPME)
- Served as mentor and senior thesis advisor for Richmond Community High School senior Malcolm Bressendorf (now on full-scholarship at Columbia University)
- NanoQuest advisor for ten elementary and middle school-aged home school students
- Presented lecture on the statics and design of truss structures to Charles City High School (Charles City, VA) physics class

### **Awards and Honors**

- 2020 UF Career Influencer Award Finalist
- 2019 Outstanding Support of Women in Engineering, Herbert Wertheim College of Engineering
- 2012 University of Florida Anderson Scholar Faculty Honoree
- Certificate of Appreciation for Symposium Organizer, American Society of Mechanical Engineers, Manufacturing Science and Engineering Conference, 2012

- Certificate of Appreciation for Track Chair, American Society of Mechanical Engineers, Manufacturing Science and Engineering Conference, 2012
- 2011 American Society of Engineering Education New Faculty Research Award (Southeast Region)
- Selected for presentation in the Outstanding Contributions to Mechanical Engineering Education at the 2009 American Society of Engineering Education (ASEE) Annual Conference and Exposition
- 2009 ASEE Professional Interest Council I Best Paper Award
- 2009 ASEE Mechanical Engineering Division Best Paper Award
- 2009 Certificate of Appreciation, McKnight Scholars Program
- Selected by President of Virginia Commonwealth University as University Nominee (1 of 2) for the 2008 Virginia Outstanding Faculty (Rising Star) Award Sponsored by the State Council of Higher Education for Virginia
- ASEE and United States Air Force Summer Faculty Fellow (2007)
- National Science Foundation (NSF) IGERT Fellowship (2000-2005)
- National Science Foundation (NSF) Graduate Research Fellowship - Honorable Mention (1999)
- National Engineering Honor Society (Tau Beta Pi)
- Mechanical Engineering Honor Society (Pi Tau Sigma)
- Outstanding Academic Achievement Award, University of Maryland (1998)
- Nomination by President William Clinton and Admission to the United States Naval Academy (1994)

### **Research Interests**

Nanomechanics; Advanced Manufacturing; Mechanical Behavior of Materials; Engineering Education

### **Funded Grants and Contributions**

1. Peng Jiang and Curtis Taylor, *Scalable Nanomanufacturing of Reconfigurable Photonic Crystal*, National Science Foundation CMMI, Awarded (2016-2020) ~ \$449,787 total (\$224,893 Jiang; \$224,893 Taylor)
2. Curtis Taylor, Thomas Angelini, W. Gregory Sawyer, David Hahn, *Nanomechanics Laboratory*, Hysitron Inc. (2015) ~ \$1M+ (in-kind support)
3. Curtis Taylor, *Design of a Microdebrider Declogging System*, Medtronic Bakken Res Cte, 2014-2015 ~ \$16,500
4. Gloria Wiens, Irene Fassi, Curtis Taylor, et al. European Commission International Research Staff Exchange Program (IRSES) with Consiglio Nazionale Delle Ricerche Istituto Di Tecnologie Industriali E Automazione (Milan, Italy)-Collaboration Partnership Agreement Awarded (2010-2015) ~ (\$10,122 Taylor)

5. Curtis Taylor and Hitomi Greenslet, *Magnetic Field Assisted Nanomachining of Ultraprecision Surfaces*, National Science Foundation CMMI REU Supplement, Awarded (2011-2014) ~ \$12,000 total (\$6,000 Taylor; \$6,000 Greenslet)
6. Curtis Taylor and Hitomi Greenslet, *Magnetic Field Assisted Nanomachining of Ultraprecision Surfaces*, National Science Foundation CMMI, Awarded (2010-2014) ~ \$374,176 total (\$187,088 Taylor; \$187,088 Greenslet)
7. Curtis Taylor, James Oliverio, and Dianne Pawluk, *Use of Haptics in a Virtual Reality Environment for Learning of Nanotechnology*, National Science Foundation EEC (2009-2012) ~ \$200,000 total (\$126,351 Taylor)
8. Curtis Taylor and Andrew Rinzler, *Guided Self-Assembly of Nanostructures via Nanostamp Driven Droplet Diffusion and Dewetting of Metal Thin Films*, Research Opportunity Incentive Seed Fund, University of Florida; Awarded (2009-2011) ~ \$58,509 total
9. Curtis Taylor and Kam Leang, *A Novel Multifunctional SPM Probe with Modular Quick-Change Tips for Fully Automated Probe-Based Nanomanufacturing*, National Science Foundation (NSF) CMMI Nanomanufacturing Program; Awarded (2007-2011) ~ \$290,000 total – (\$145,000 Taylor; \$145,000 Leang)
10. Curtis Taylor, *U.S. Air Force Summer Faculty Program*, (2007); Awarded \$12,000 total
11. Curtis Taylor and Ajay Malshe, *Collaborative Research: Mechanically Biased Self-Assembly of 2-D and 3-D Quantum Structures Using a Novel Nanostamping Process*, National Science Foundation (NSF) CMMI Nanomanufacturing Program (2006-2009); Awarded (2006-2009) ~ \$250,000 total—(\$150,000 Taylor; \$100,000 Malshe)
12. Curtis Taylor (PI), *Low Pressure CVD System for Nanostructure Synthesis*, VCU Higher Education Trust Fund, Awarded (2006) ~ \$60,000 total

### Professional Affiliations

- Member, Materials Research Society (MRS)
- Member, American Society of Mechanical Engineers (ASME)
- Member, American Society of Engineering Education (ASEE)

### Leadership in the Profession

#### a. International

##### *Chair and Board Membership*

Accreditation Board for Engineering and Technology (ABET)/American Society of Mechanical Engineering (ASME) Mechanical Engineering Program Evaluator  
2020 - present

Chair, Research Committee on Nanomanufacturing Technology, Board on Research and Technology Development (BRTD), American Society of Mechanical

Engineers. 2011-2014 The Committee facilitates the development and application of technology in areas of interest to ASME members and to the engineering profession by encouraging partnering between industry, government, and academia.

Notable accomplishments as Chair include:

- Design, deployment, and analysis of National Industrial Needs Nanomanufacturing Survey in 2012
- Publication of industrial survey article in ASME News December 2012
- National Nanotechnology Infrastructure Network (NNIN) 2012 Panel at ASME International Mechanical Engineering Congress

Executive Committee Member, Board on Research and Technology Development (BRTD), American Society of Mechanical Engineers (ASME), 2011-2013

Member, Board on Research and Technology Development (BRTD), American Society of Mechanical Engineers, 2010-2012

#### *Conference Organizer*

Co-Chair, National Association of Multicultural Engineering Program Advocates (NAMEPA) 2019 Annual Conference, University of Florida, September 2019

Technical Chair, Micro and Nano Technologies, 2016 ASME Manufacturing Science and Engineering Conference (MSEC) June 2016

Co-Organizer and Facilitator, Workshop on Scalable Nanomanufacturing: Benchmarks, Standards, and Metrics, August 17, 2014, Advanced Design and Manufacturing Impact Forum, ASME IDETC 2014, Buffalo, NY

Track Chair, Micro and Nano Technologies, 2012 ASME Manufacturing Science and Engineering Conference (MSEC) June 13-17, 2012, University of Notre Dame, IN

Co-Organizer for Symposium on Nanomaterials, Nanofabrication and Their Applications, 2012 ASME Manufacturing Science and Engineering Conference (MSEC) June 13-17, 2012, University of Notre Dame, IN

Co-Organizer for Symposium on Nanomaterials, Nanofabrication and Their Applications, 2011 ASME Manufacturing Science and Engineering Conference (MSEC) and 2011 International Conference of Materials and Processing (ICMP) of JSME, June 13-17, 2011, Oregon State University, OR

Organizer for the Multidisciplinary Engineering, Technology and Management (METM) Workshop, June 10-11, 2010, University of Maryland, College Park, MD

International Organizing Committee, 2010 Villa Conference on Interaction Among

Nanostructures (VCIAN-2010), June 21-25, 2010, Santorini, Greece

Program Committee for Nano-, Bio-, Info-Tech Sensors and Systems Symposium, 2009 SPIE International Symposium on The 15th International Symposium on: Smart Structures and Materials & Nondestructive Evaluation and Health Monitoring, March 9-12, 2009

Organizer for Symposium on Nanomanufacturing, 2009 ASME International Manufacturing Science and Engineering Conference (MSEC), October 4-7, 2009, Purdue University, West Lafayette, IN

Organizing Committee Member, Nano Integrated Manufacturing Committee, ASME 2008; Advanced Technology Workshop for Nanomanufactured Product Realization

Organizer for Symposium M--*Quantum Dots: Growth, Behavior, and Applications*, 2006 Fall Material Research Society (MRS) Meeting, November 27-December 1, 2006 Boston, MA

Organizer for Symposium on *Nano and Micro Mechanical and Related Hybrid Tools for Nanomanufacturing*, 2006 ASME International Conference on Manufacturing Science and Engineering, University of Michigan, Ann Arbor, MI

*Session Chair*

ASME Manufacturing Science and Engineering Conference (MSEC) June 13-17, 2012, University of Notre Dame, IN

ASME Manufacturing Science and Engineering Conference (MSEC) and 2011 International Conference of Materials and Processing (ICMP) of JSME, June 13-17, 2011, Oregon State University

Villa Conference on Interaction Among Nanostructures (VCIAN-2011), April 21-25, 2011, Las Vegas, NV, 2011

Villa Conference on Interaction Among Nanostructures (VCIAN-2010), June 21-25, 2010, Santorini, Greece, 2010

Villa Conference on Interaction Among Nanostructures (VCIAN-2009), September 6-11, 2009, St. Thomas, Virgin Islands, 2009

ASME International Manufacturing Science and Engineering Conference (MSEC), October 4-7, 2009, Purdue University, West Lafayette, IN

b. National

*Chair and Board Membership*



Diversity and Culture of Inclusion (DCI) Board member for the newly established Internet of Things for Precision Agriculture (IoT4Ag) Engineering Research Center (ERC), November 2020 – present

President-elect, Arkansas Academy of Microelectronics-photonics, 2019-present

Industrial Advisory Board, University of Arkansas, Microelectronics-photonics Program, 2009-2010

*National Panelist and Proposal Reviewer*

National Science Foundation (NSF) Review Panelist 2019—Provides review and recommendation for funding of National Centers

National Science Foundation (NSF) Review Panelist for Nanoscale Engineering Research Centers (Site Visit), 2018—Provides review and recommendation for funding of National Centers

National Science Foundation (NSF) Review Panelist for Nanoscale Engineering Research Centers (Reverse Site Visit), April 2012—Provides review and recommendation for funding of National Centers (\$55M to 3 Centers)

National Science Foundation (NSF) Review Panelist for Division of Civil, Mechanical and Manufacturing Innovation (CMMI) Nanomanufacturing program, 2008 - 2012

National Science Foundation (NSF) Review Panelist for CMMI Scalable Nanomanufacturing program, 2011

Reviewer for the Electronic/Photonic Materials Program, Division of Materials Research, National Science Foundation, 2007-2009

Selected panelist and reviewer for site visit to the Nanoscale Science and Engineering Center for High-Rate Nanomanufacturing at Northeastern University, May 27-29, 2008

**University Governance and Service**

- University of Florida Provost Important Research Group on Academic Integrity, (2020 – present)
- University of Florida Title IX Committee (2019-present)
- University of Florida Campus Diversity Liaison (2018-present)
- University of Florida Admission Appeals Committee (2017-2019)
- University of Florida Digital Worlds Institute Tenure and Promotion Committee, (2016-2017)
- University of Florida Advisory Council for Undergraduate Affairs (2015-present)

- University of Florida Undergraduate Curriculum Committee (2015-present)
- University of Florida Dean of Students Out-of-State Working Group (2016-2017)
- University of Florida Associate Deans Advisory Committee (2015-present)
- University of Florida Honors Program Scholarship Committee (2016-2017)
- College of Engineering Undergraduate Student Affairs Strategic Planning Committee, member 2015
- Faculty Advisor, Tau Beta Pi National Engineering Honor Society, Florida Alpha Chapter (2008-present), Chief Advisor (2010-2014)
- Faculty Advisor, Engineering Ambassadors (2015-present)
- Faculty Advisor, Benton Engineering Council (2015-present)
- College of Engineering Safety Committee (2014-2016), Safety Officer, Department of Mechanical and Aerospace Engineering
- Chemical Engineering Faculty Search Committee (2015-2016)
- Mechanical and Aerospace Graduate Recruitment Committee (2014-2016)
- Digital Worlds Director Search Committee (2014-2015)
- UF Career Resource Center Advisory Board (2012-2014)
- UF Campus Security Authority (2011-present)
- Electrical and Computer Engineering Faculty Search Committee (2014-2015)
- Chair, Mechanical and Aerospace Engineering, Seminar Committee (2011-2014)
- Member, Major Analytical Instrumentation Center Advisory Committee (2011 – 2014)
- Member, Mechanical Engineering Curriculum and Program Committee (November 2012-2016)
- Engineering Leadership Institute Director Search Committee (2012-2014)
- Nanoscale Institute for Medical and Engineering Technology (NIMET) Director Search Committee (2012)
- Lead Organizer, Tenure Accruing Faculty Luncheons (August 2011 – May 2012)
- Member, Manufacturing Faculty Search Committee (1 August 2011 – 2012)
- Member, Department Chair Search Committee (2011)
- University of Florida Commencement Marshal (2008-2010)
- Speaker, University of Florida College of Engineering Successful Transition through Enhanced Preparation for Undergraduates Program (STEPUP), 2008-2010, 2013
- Guest speaker at Florida Alpha Tau Beta Pi Banquet, 2009, 2010, 2011
- Member, Department of Mechanical and Aerospace Engineering, Seminar Committee (2009-2014)
- Member, Department of Mechanical and Aerospace Engineering, Statics Course Committee (2010-2014)
- Member, VCU Department of Mechanical Engineering Graduate Program Committee (2006-2007)
- Member, VCU Department of Mechanical Engineering Faculty Search Committee (2007-2008)
- Member, VCU School of Engineering Career Center Director Search Committee (2007)
- Advised three Senior Capstone Design Projects
  - Senior Design Project Advisor for *Technologies to Defeat Improvised Explosive Devices* Group (2 groups)

- Senior Design Project Advisor for *Self-Actuating Scalpel with Integrated LED Illumination for Improved Surgical Safety* Group
- Keynote Speaker, VCU National Society of Black Engineers Awards Banquet (2005-2006)
- Guest speaker at 2006-2007 ASME Seminar Series VCU Student Section: “Nanomanufacturing: Building Things Extremely Small”, November 11, 2006
- Guest lecturer for VCU Honors Seminar Series: “Nanomanufacturing at VCU”, February 2007
- Guest speaker at Theta Tau Professional Development Seminar: “Lessons in Success and Nanomanufacturing Research”, April 2007

### **Research Collaborations (2013-2019)**

- Prof. James Oliverio, Music and Digital Arts and Sciences, University of Florida, FL
- Dr. Valentin Craciun, Laser Department, National Institute for Laser, Plasma, and Radiation Physics, Magurele, Romania
- Dr. Laurie Gower, University of Florida, FL
- Dr. Kurt Eyink, US Air Force Research Lab, OH
- Dr. Hitomi Greenslet, University of Florida, FL
- Dr. Kam Leang, University of Utah, UT
- Dr. Philippe Lutz, Universite de Franche-Comte, France
- Dr. Vito Basille, ITTIA, Bari, Italy
- Dr. Dianne Pawluk, Virginia Commonwealth University, VA
- Dr. Gregory Sawyer, University of Florida, FL
- Dr. Ghatu Subhash, University of Florida, FL
- Dr. Jiang Peng, University of Florida, FL
- Dr. Thomas Angelini, University of Florida, FL

### **Reviewer for Journals**

- Advanced Materials
- ACS Applied Materials and Interfaces
- IOP Journal of Physics D: Applied Physics
- AIP Journal of Applied Physics
- IOP Journal of Micromechanics and Microengineering
- ASME Journal of Manufacturing Science and Engineering
- Superlattices and Microstructures
- Applied Physics Letters
- Nanoscale Research Letters
- ASME Journal of Electronic Packaging
- Journal of Engineering Materials and Technology
- Journal of Materials Science
- Applied Surface Science

### **International Activities**

- **Faculty Advisor**, Osnabrück University of Applied Sciences Study Abroad Program,

Osnabrück, Germany

- Summer 2019
- **Principal Investigator**, Brazil Scientific Mobility Program, Institute of International Education
  - Host of Research Assistants Gabriella Maria Da Silva Coelho and Lucas Barros June 2015 – August 2015
- **Principal Investigator**, European Commission International Research Staff Exchange Program (IRSES) with Consiglio Nazionale Delle Ricerche Istituto Di Tecnologie Industriali E Automazione (Milan, Italy)-Collaboration Partnership Agreement (Sept. 2013-present)
- **Principal Investigator**, European Commission International Research Staff Exchange Program (IRSES) with Université De Franche-Comté (Besançon, France). (Sept. 2013-present)
- **International Short Term Scholar with Gazi University (Ankara, Turkey)**
  - Host and collaborator with Dr. Ahmet Taskesen, Assist. Professor, Gazi University, Faculty of Technology, Department of Manufacturing Engineering, August 12, 2013 – December 31, 2013
- **Co-Principal Investigator/Partner**, European Commission International Research Staff Exchange Program (IRSES) with Consiglio Nazionale Delle Ricerche Istituto Di Tecnologie Industriali E Automazione (Milan, Italy).
  - Host of Claudia Pagano (Research Fellow) Summer 2011 and Fall 2012. Resulted in one joint publication (*Claudia Pagano, and Curtis R. Taylor. 2013. Nanomechanical Property Analysis of Silica Aerogels. The ASME 2013 International Design Engineering Technical Conferences (IDETC) and Computers and Information in Engineering Conference (CIE)*).
- **Co-Principal Investigator/Partner**, European Commission International Research Staff Exchange Program (IRSES) with Université De Franche-Comté (Besançon, France).
  - Host and M.S. Thesis Advisor: Jean-Michel Boccard, M.S. (Université De Franche-Comté, France), 2010
    - Thesis: “Design, Fabrication, and Characterization of a New Plasmonic Metamaterial Gas Sensor” (work performed at UF summer 2010).
- **National Science Foundation East Asia and Pacific Summer Institutes for U.S. Graduate Students**
  - Summer 2008, Thesis Advisor for Edward McCumiskey (advised Ph.D. student) Summer visit and formal collaboration with Singapore Institute of Materials Research and Engineering resulted in 1 journal publication with N. Chandrasekhar (*E. McCumiskey(g), N. Chandrasekhar, and C. Taylor. 2010. Nanomechanics of*

*CdSe Quantum Dot-Polymer Nanocomposites Films. Nanotechnology. 21: 225703)*

### Editor

- **Guest Editor**—Journal of Manufacturing Science and Engineering, Special issue on Nanomanufacturing, 2010

### Service to Schools

- **University of Florida Student Science Training Program (US-SSTP)**, Summer 2015, Advisor of research for two high school students (Derek Ro and Tristan Wu)
- **Presenter at Florida Alliance for Art Education Careers Workshop for Middle and High School Students, Digital Worlds Institute**, University of Florida, March 14, 2015 8:30 am -1:00 p.m
- **University of Florida Student Science Training Program (US-SSTP)**, Summer 2014, Advisor of research for two high school students (Chris Walker and Nick Fechtel)
- **University of Florida Student Science Training Program (US-SSTP)**, Summer 2013, Advisor of research for two high school students (Eric Hou and Ebony Blaize)
- **Lab Host for the Annual Florida Junior Science, Engineering and Humanities Symposium (JESHS) (2011 - 2015)**
- **Research Advisor** to Morgan Monroe, Episcopal High School, Jacksonville, FL, 2011
  - Project: *Improving Piezoelectric Nanogenerators: Nucleation of Nanocatalysts for the Synthesis of Ni-doped Zinc Oxide Nanowires*
    - 1<sup>st</sup> Place 2011 Florida Regional Science Fair
    - Chosen to represent the region in the Florida State Science Fair and the International Science and Engineering Fair in Los Angeles, CA in May 2011

### Service to the State of Virginia

- **Co-organizer** for the National Science Foundation--Partnership for Innovation Nanotechnology Initiative for implementation of state-wide nanotechnology course curriculum among Virginia Tech, U. Virginia, Old Dominion, George Mason, VCU, and College of William and Mary (2006)
- **Board member:** State of Virginia, Department of Education, Perkins Federal Grant State Plan Committee for K-12 Career and Technical Education (2007-2008)

### Service to the State of Florida

- **Certificate of Appreciation—Speaker** The Florida Education Fund's Twenty-Fourth Annual McKnight Fellows Meeting and Twelfth Annual Graduate School Conference, 2008

## Patents

**U.S. Patent No.: 11,027,483**

**Title: VALVE INCORPORATING TEMPORARY PHRASE CHANGE MATERIAL**

Date of Patent: June 8, 2021

Curtis Taylor, Wallace G. Sawyer, Thomas Angelini, Joshua Muse, Meghan Hughes, Tapomoy Bhattacharjee, Kyle Schulze

**U.S. Provisional Patent Application Serial No. 63/079,101, filed September 16, 2020**

**Title: MICROPOROUS DRY ADHESIVE FILMS, METHODS OF MAKING, AND METHODS OF USE**

Peng Jiang, Yifan Zhang, Calen Leverant, and Curtis Taylor

**U.S. National Phase Patent Application Serial No. 16/969,655, filed August 13, 2020**

**Title: CHROMOGENIC MATERIALS, METHODS OF MAKING CHROMOGENIC MATERIALS, AND METHODS OF USE**

Peng JIANG, Ruochen LIU, Rao FEI, Wei ZHANG, Sin-Yen LEO, Calen LEVERANT, Helena JIANG, Curtis TAYLOR, and Yifan ZHANG

**PCT Patent Application PCT/US2019/017862, filed February 13, 2019**

**"Chromogenic Impact Sensors, Methods of Making, and Methods of Use"**

Peng JIANG, Ruochen LIU, Rao FEI, Wei ZHANG, Sin-Yen LEO, Calen LEVERANT, Helena JIANG, Curtis TAYLOR, Yifan ZHANG

## Consulting

- TestMasters Inc., Instructor, Fundamental of Engineering Exam Review Course (2006-present)
- NanoCuffs Inc. (2012-2014)

## Books, Contributor of Chapter(s)

1. Reese, D. D., Pawluk, D. T. V., & Taylor, C. R. (2015). *Engaging learners through rational design of multisensory effects*. In S. Tettegah, & S. U. Noble (Eds.), *Emotions, Technology, and Design*. New York: Elsevier.
2. Tarek M. Trad, Rose M. Alvarez, Edward J. McCumiskey, Curtis R Taylor, *Capped CoFeO Nanoparticles: Non-Hydrolytic Synthesis, Characterization, and Potential Applications as Magnetic Extractants and In Ferrofluids*. *Advances in Nanomaterials and Nanostructures: Ceramic Transactions* (2011), vol. 229, pp. 155-162, John Wiley & Sons, Inc.

## Refereed Abstracts

1. Mina A. Hanna(g), **Curtis R. Taylor**, Bei Chen(&), Hae-Sun La(&), Joshua J. Maraj(&), Cody R. Kilar(&), Bradley J. Behnke(&), Michael D. Delp(&), and Judy M. Muller-Delp(&). 2013. Structural Remodeling of Coronary Resistance Arteries: Effects of Age and Exercise Training (1079.24). *The FASEB Journal*. 28(1). April 2014.

2. Mina Hanna(g), John N Stabley, Danielle J McCullough, James M Dominguez, III, Judy M Muller-Delp, Bradley J Behnke, **Curtis R Taylor** and Michael D Delp. 2012. Effects of spaceflight on vasoconstrictor and mechanical properties of mouse cerebral arteries (1b660). *The FASEB Journal*. 26(1). April 2012.

## Journal Publications

(g) *indicates student advised*

1. Baek B. Choi, Jae Hyeon Jo, Jason Bice, Curtis Taylor, Peng Jiang, Sung Jong Yoo. 2021. Monitoring electrochemical methanol oxidation and CO coverage using Pt deposited SPR sensor platform. *International Journal of Energy Research*. Online 19 July 2021. <https://doi.org/10.1002/er.7047>
2. Calen J. Leverant, Yifan Zhang (g), Maria A. Cordoba, Sin-Yen Leo, Nilesh Charpota, Curtis Taylor, and Peng Jiang. 2021. Macroporous Superhydrophobic Coatings with Switchable Wettability Enabled by Smart Shape Memory Polymers, *Advanced Materials Interfaces*, 8(13), 20021111. <https://doi.org/10.1002/admi.202002111>
3. Yifan Zhang (g), S. Tori Ellison, Senthilkumar Duraivel, Cameron D. Morley, Curtis R. Taylor, Thomas E. Angelini, 3D printed collagen structures at low concentrations supported by jammed microgels, *Bioprinting*, Volume 21, 2021. <https://doi.org/10.1016/j.bprint.2020.e00121>
4. Bhattacharya, Abir, O'Bryan, Chris, Ni, Yongliang (g), Taylor, Curtis, and Angelini, Thomas. Hydrogel Compression and Polymer Osmotic Pressure, *Biotribology*, Volume 22, June 2020, 100125. <https://doi.org/10.1016/j.biotri.2020.100125>
5. CrystalsY Zhang (g), X Lyu, Y Ni (g), D Li, SY Leo, Y Chen, P Jiang, CR Taylor. Switchable Friction Coefficient on Shape Memory Photonic Crystals, *MRS Advances* 5 (14-15), 2020, 757-763. <https://doi.org/10.1557/adv.2020>.
6. Gu, Zhuxiao; Kothary, Pratik; Sun, Chih-Hung; Gari, Abdullateef; Zhang, Yifan (g); Taylor, Curtis; Jiang, Peng. 2019. Evaporation-Induced Hierarchical Assembly of Rigid Silicon Nanopillars Fabricated by a Scalable Two-Level Colloidal Lithography Approach. *ACS Applied Materials & Interfaces*, 11(43), 40461-40469 2019 <https://doi.org/10.1021/acsami.9b12388>
7. Jovan Tatar, **Curtis R. Taylor**, H. R. Hamilton. 2019. A Multiscale Micromechanical Model of Adhesive Interphase between Cement Paste and Epoxy Supported by Nanomechanical Evidence, *Composites Part B: Engineering*, Volume 172, 1 September 2019, pp 679-689. <https://doi.org/10.1016/j.compositesb.2019.05.038>
8. Leverant, Calen; Leo, Sin-Yen; Cordoba, Maria; Zhang, Yifan; Charpota, Nilesh; **Taylor, Curtis**; Jiang, Peng. 2018. Reconfigurable Anti-Counterfeiting Coatings Enabled by Macroporous Shape Memory Polymers. *ACS Applied Polymer Materials*, 1(1), pp 36-46. <https://doi.org/10.1021/acsapm.8b00021>
9. Ni, Yongliang(g); Zhang, Yifan (g); Leo, Sin-Yen; Fang, Yin; Zhao, Mingzhen; Yu, Long; Schulze, Kyle; Sawyer, Wallace; Angelini, Thomas; Jiang, Peng; **Taylor, Curtis**. 2018. Unconventional Shape Memory Mechanisms of Nanoporous Polymer Photonic

- Crystals: Implications for Nanooptical Coatings and Devices, *ACS Applied Nano Materials*, 1(11), pp. 6081-6090. <https://doi.org/10.1021/acsanm.8b01105>
10. Brian Wingender, Yongliang Ni (g), Yifan Zhang (g), **Curtis Taylor**, and Laurie Gower. 2018. Hierarchical Characterization and Nanomechanical Assessment of Biomimetic Scaffolds Mimicking Lamellar Bone via Atomic Force Microscopy Cantilever-Based Nanoindentation, *Materials*, 11(7), 1257. <https://doi.org/10.3390/ma11071257>
  11. Jovan Tatar, Christa E. Torrence, John J. Mecholsky, Jr., **Curtis R. Taylor**, H. R. Hamilton. 2018. Effects of Silane Surface Functionalization on Interfacial Fracture Energy and Durability of Adhesive Bond Between Cement Paste and Epoxy, *International Journal of Adhesion and Adhesives*, 84, pp. 132-142. <https://doi.org/10.1016/j.ijadhadh.2018.02.009>
  12. Jovan Tatar, Natassia R. Brenkus, Ghatu Subhash, **Curtis R. Taylor**, H. R. Hamilton. 2018. Characterization of Adhesive Interphase between Epoxy and Cement Paste via Raman Spectroscopy and Mercury Intrusive Porosimetry, *Cement and Concrete Composites*, Vol. 88, pp. 187-199. <https://doi.org/10.1016/j.cemconcomp.2018.01.012>
  13. Sin-Yen Leo, Wei Zhang, Yifan Zhang, Yongliang Ni (g), Helena Jiang, Cory Jones, Peng Jiang, Vito Basile, **Curtis Taylor**. 2018. Chromogenic Photonic Crystal Sensors Enabled by Multi-Stimuli-Responsive Shape Memory Polymers, *Small*, 1703515. <https://doi.org/10.1002/sml.201703515>
  14. Christopher O'Bryan, Tapomoy Bhattacharjee, Sean Niemi, Sidhika Balachandar, Nicholas Baldwin, S. Tori Ellison, **Curtis R. Taylor**, W. Gregory Sawyer, and Thomas E. Angelini. 2017. Three-Dimensional Printing with Sacrificial Materials for Soft Matter Manufacturing, *MRS Bulletin* 42(8), p. 571-577. <https://doi.org/10.1557/mrs.2017.167>
  15. Leo, Sin-Yen; Ni, Yongliang(g); Xu, Can; Zhang, Yifan(g); Dai, Yuqiong; Qi, Pengxu; Basile, Vito; **Taylor, Curtis**; Jiang, Peng. 2017. Programmable Macroporous Photonic Crystals Enabled by Swelling-Induced All-Room-Temperature Shape Memory Effects, *Advanced Functional Materials*, 27(41), 1703522 <http://dx.doi.org/10.1002/adfm.201703522>
  16. Yin Fang, Sin-Yen Leo, Yongliang Ni(g), Junyu Wang, Bingchen Wang, Long Yu, Zhe Dong, Yuqiong Dai, Vito Basile, **Curtis Taylor**, and Peng Jiang. 2017. Reconfigurable Photonic Crystals Enabled by Multi-Stimuli-Responsive Shape Memory Polymers Possessing Unconventional Room Temperature Shape Processability, *ACS Applied Materials and Interfaces*, 9(6), pp. 5457-5467. <http://dx.doi.org/10.1021/acsami.6b13634>
  17. Kyle J. LeBlanc(g), Sean R. Niemi, Alexander I. Bennett, Kathryn L. Harris, Kyle D. Schulze, W. Gregory Sawyer, **Curtis Taylor**, Thomas E. Angelini. 2016. Stability of High Speed 3D Printing in Liquid-Like Solids, *ACS Biomaterials Science and Engineering*, 2(10), 1796-1799. <http://dx.doi.org/10.1021/acsbiomaterials.6b00184>
  18. Y. Fang, Y.L. Ni(g), S.Y. Leo, B. Wang, V. Basile, **C. Taylor**, P. Jiang. 2015. Direct Writing of Three-Dimensional Macroporous Photonic Crystals on Pressure-Responsive Shape Memory Polymers, *Applied Materials and Interfaces* 7(42), 23650-23659. <http://dx.doi.org/10.1021/acsami.5b07220>
  19. Y. Fang, S.Y. Leo, Y.L. Ni(g), L. Yu, P.X. Qi, B.C. Wang, V. Basile, **C. Taylor** and P.



- Jiang. 2015. Optically Bistable Macroporous Photonic Crystals Enabled by Thermoresponsive Shape Memory Polymers, *Advanced Optical Materials*. 3(11), 1509-1516. [selected as front cover of the journal] <http://dx.doi.org/10.1002/adom.201500277>
20. Yin Fang, Yongliang Ni(g), Baek Choi, Sin-Yen, Leo, Jian Gao, Beverly Ge, **Curtis Taylor**, Vito Basile, and Peng Jiang. 2015. Chromogenic Photonic Crystals Enabled by Novel Vapor-Responsive Shape Memory Polymers. *Advanced Materials*. (early publication) <http://dx.doi.org/10.1002/adma.201500835>
21. Yin Fang, Yongliang Ni(g), Sin-Yen Leo, **Curtis Taylor**, Vito Basile, and Peng Jiang. 2015. Reconfigurable Photonic Crystals Enabled by Novel Pressure-Responsive Shape Memory Polymers. *Nature Communications*. 6:7416 <http://dx.doi.org/10.1038/ncomms8416>
22. D. Craciun, G. Socol, E. Lambers, E. J. McCumiskey(g), **C. R. Taylor**, C. Martin, N. Argibay, P. Ionescu, D. Pantelica, and V. Craciun. 2015. Optical and mechanical properties of nanocrystalline ZrC thin films grown by pulsed laser deposition, *Applied Surface Science*. 352, 28-32. <http://dx.doi.org/10.1016/j.apsusc.2015.01.076>
23. Sahu, B.(g), Riddle R., Ross D., Sheplak M., Leang K.K., **Taylor. C.R.** 2015. Design and Analysis of Scanning Probe Microscopy Cantilevers with Microthermal Actuation. (*IEEE*) *Journal of Microelectromechanical Systems*. 24(6), 1768-1781. <http://dx.doi.org/10.1109/JMEMS.2015.2438825>
24. Gabriela Dorcioman(&), Gabriel Socol(&), Doina Craciun(&), Nicolas Argibay(&), Eric Lambers(&), Mina Hanna(g), **Curtis Taylor**, Valentin Craciun(&). 2014. Wear tests of ZrC and ZrN thin films grown by pulsed laser deposition. *Applied Surface Science*. 306:33-36. <http://dx.doi.org/10.1016/j.apsusc.2013.12.048>
25. Mina A. Hanna(g), **Curtis R. Taylor**, Bei Chen(&), Hae-Sun La(&), Joshua J. Maraj(&), Cody R. Kilar(&), Bradley J. Behnke(&), Michael D. Delp(&), and Judy M. Muller-Delp(&). 2014. Structural Remodeling of Coronary Resistance Arteries: Effects of Age and Exercise Training, *Journal of Applied Physiology*. 117(6):616-623. <http://dx.doi.org/10.1152/jappphysiol.01296.2013>
26. Doina Craciun(&), Gabriel Socol(&), Aurelian C Galca(&), Mina Hanna(g), **Curtis R Taylor**, Eric Lambers(&), Valentin Craciun(&). 2014. Pulsed laser deposition of nanocrystalline SiC films. *Applied Surface Science*. 306: 66-69. <http://dx.doi.org/10.1016/j.apsusc.2014.01.201>
27. D. Craciun(&), G. Socol(&), N. Stefan(&), G. Dorcioman(&), M. Hanna(g), **C. R. Taylor**, E. Lambers(&), and V. Craciun(&). 2014. The effect of deposition atmosphere on the chemical composition of TiN and ZrN thin films grown by pulsed laser deposition. *Applied Surface Science*. 302:124-128. <http://dx.doi.org/10.1016/j.apsusc.2013.10.095>
28. Edward McCumiskey(g), Nicholas Rudawski(&), Gregory Sawyer(&), and **Curtis Taylor**. 2013. Three-Dimensional Visualization of Nanoscale Structure and Deformation. *Journal of Materials Research*. 28(18): 2637-2643. <http://dx.doi.org/10.1557/jmr.2013.245/>
29. Raul E. Riveros(g), Jared N. Hann(g), Hitomi Yamaguchi(&), and **Curtis R. Taylor**. 2013. Nanoscale Surface Modifications by Magnetic Field-Assisted Finishing. *Journal of*

- Manufacturing Science and Engineering.* 135(5):051013.  
<http://dx.doi.org/10.1115/1.4025190>
30. Viswanath Sankar(&), Justin C. Sanchez(&), Edward McCumiskey(g), Nagid Brown(g), **Curtis R. Taylor**, Gregory J. Ehlert(&), Henry A. Sodano(&), and Toshikazu Nishida(&). 2013. A Highly Compliant Serpentine Shaped Polyimide Interconnect for Front-end Strain Relief in Chronic Neural Implants. *Frontiers in Neurology.* 4(124):1-10.  
<http://dx.doi.org/10.3389/fneur.2013.00124>
  31. Shashank Sawant(g), Naigang Wang(&), Mina Hanna(g), **Curtis Taylor**, and David Arnold(&). 2013. Fabrication, Characterization, and Modeling of Fully-Batch-Fabricated Piston-Type Electrodynamic Microactuators. *Journal of Microelectromechanical Systems.* PP(99): 1-10. <http://dx.doi.org/10.1109/JMEMS.2013.2271293>
  32. V. Craciun(&), E. J. McCumiskey(g), M. Hanna(g), and **C. R. Taylor**. 2013. Very Hard ZrC Thin Films Grown by Pulsed Laser Deposition. *Journal of the European Ceramic Society.* 33: 2223–2226. <http://dx.doi.org/10.1016/j.jeurceramsoc.2013.01.001>
  33. **Curtis R. Taylor**, Mina Hanna(g), Bradley J. Behnke(&), John N. Stabley(&), Danielle J. McCullough(&), Robert T. Davis III(&), Payal Ghosh(&), Anthony Papadopoulos(&), Judy M. Muller-Delp(&), and Michael D. Delp(&). 2013. Spaceflight-Induced Alterations in Cerebral Artery Vasoconstrictor, Mechanical and Structural Properties May Contribute to Elevations in Cerebral Perfusion and Intracranial Pressure. *The FASEB Journal.* 27: 2282-2292. <http://dx.doi.org/10.1096/fj.12-222687>
  34. L. Ladani(&), E. Harvey(g), S. F. Choudhury(&), and **C. Taylor**. 2013. Effect of Varying Test Parameters on Elastic-Plastic Properties Extracted by Nanoindentation Tests. *Experimental Mechanics.* 3(8): 1299-1309 <http://dx.doi.org/10.1007/s11340-013-9732-7>
  35. D. Craciun(&), N. Stefan(&), G. Socol(&), G. Dorcioman(&), E. McCumiskey(g), M. Hanna(g), **C. Taylor**, G. Bourne(&), E. Lambers(&), K. Siebein(&), and V. Craciun(&). 2012. Very Hard TiN Thin Films Grown by Pulsed Laser Deposition. *Applied Surface Science.* 260: 2-6. <http://dx.doi.org/10.1016/j.apsusc.2011.11.128>
  36. Ning Zhang(g), Qian Deng(g), Yu Hong(g), Liming Xiong(g), Shi Li(g), Matthew Strasberg(g), Weiqi Yin(g), Yongjie Zhou(g), **Curtis R. Taylor**, Gregory Sawyer(&), and Youping Chen(&). 2011. Deformation Mechanisms in Silicon Nanoparticles. *Journal of Applied Physics.* 109: 063534. <http://dx.doi.org/10.1063/1.3552985>
  37. Justin A. Blaber(g), Dipankar Ghosh(g), Ghatu Subhash(&), Edward J. McCumiskey(g), and **Curtis Taylor**. 2011. Determination of Post-Yield Hardening Response in a ZrB<sub>2</sub> Ceramic. *Scripta Materialia.* 65:962-965.  
<http://dx.doi.org/10.1016/j.scriptamat.2011.08.020>
  38. T. Trad(p), K. Donley(&), D. Look(&), K. Eyink(&), D. Tomich(&), and **C. Taylor**. 2010. Low Temperature Deposition of Zinc Oxide Nanoparticles via Zinc-Rich Vapor Phase Transport and Condensation. *Journal of Crystal Growth.* 312: 3675-3679.  
<http://dx.doi.org/10.1016/j.jcrysgro.2010.08.062>
  39. Dongshan Yu(g), Tarek Trad(p), James T. McLeskey(&), and **Curtis R. Taylor**. 2010. ZnO Nanowires Synthesized by Vapor Phase Transport Deposition on Transparent Oxide Substrates. *Nanoscale Research Letters.* 5: 1333-1339.

<http://dx.doi.org/10.1007/s11671-010-9649-3>

40. Ajay P. Malshe(&), Kamalakar P. Rajurkar(&), Kumar Virwani(&), **Curtis Taylor**, David Bourell(&), and Valliappa Kalyanasundaram(&). 2010. Tip-Based Nanomanufacturing using Physical, Electrical, Chemical and Thermal Processes. *CIRP Annals – Manufacturing Technology*. 59: 628-651. <http://dx.doi.org/10.1016/j.cirp.2010.05.006>
41. E. McCumiskey(g), N. Chandrasekhar(&), and **C. Taylor**. 2010. Nanomechanics of CdSe Quantum Dot-Polymer Nanocomposites Films. *Nanotechnology*. 21: 225703. <http://dx.doi.org/10.1088/0957-4484/21/22/225703>
42. B. Sahu(g), K. Leang(&), and **C. Taylor**. 2010. Microfabricated Actuators for Nanoscale Manipulation, Assembly, and Manufacturing Processes. *Journal of Manufacturing Science and Engineering*. 132: 030917-1. <http://dx.doi.org/10.1115/1.4001662>
43. **C. Taylor**, E. Marega(&), E. Stach(&), G. Salamo(&), L. Hussey(&), M. Munoz(&), and A. Malshe(&). 2008. Directed Self-Assembly of Quantum Structures by Nanomechanical Stamping Using Probe Tips. *Nanotechnology*. 19: 015301. <http://dx.doi.org/10.1088/0957-4484/19/01/015301>
44. V. Radmilovic(&), **C. Taylor**, Z. Lee(&), A. Tolley(&), D. Mitlin(&), and U. Dahmen(&). 2007. Nanoindentation Properties and the Microstructure of Grain Boundary Precipitate-Free-Zones (PFZs) in an AlCuSiGe Alloy. *Philosophical Magazine*. 87: 3905-3919. <http://dx.doi.org/10.1080/14786430601153414>
45. **C. Taylor**, E. Stach(&), A. Malshe(&), and G. Salamo(&). 2005. Nanoscale Dislocation Patterning by Ultralow Load Indentation. *Applied Physics Letters*. 87: 073108. <http://dx.doi.org/10.1063/1.2009825>
46. **C. Taylor**, R. Prince(&), L. Riester(&), G. Salamo(&), S. Oh Cho(&), and A. Malshe(&). 2005. Characterization of Ultra-Low-Load ( $\mu\text{N}$ ) Nanoindenters in GaAs (100) Using a Cube Corner Tip. *Journal of Smart Materials and Structures*. 14: 963-970. <http://dx.doi.org/10.1088/0964-1726/14/5/034>

### Refereed Conference Proceedings

1. Jovan Tatar, Christa Torrence, John J. Mecholsky, Curtis R. Taylor, H. R. Hamilton. 2017. Improvement in Epoxy-Cement Paste Adhesive Bond Durability Through Silane Surface Functionalization. Fifth International Conference on Durability of Fiber Reinforced Polymer (FRP) Composites for Construction and Rehabilitation of Structures (CDCC 2017).
2. Jeremy A. Magruder Waisome, Juan E. Gilbert, Stephen E. Roberts, Darryl B. McCune and **Curtis Taylor**. 2017. *Building Communities through the Creation of Dialogues*. American Society for Engineering Education (ASEE) Zone II Conference, March 2-5, 2017, San Juan, Puerto Rico.
3. Claudia Pagano(f), and **Curtis R. Taylor**. 2013. Nanomechanical Property Analysis of Silica Aerogels. *The ASME 2013 International Design Engineering Technical Conferences (IDETC) and Computers and Information in Engineering Conference (CIE)*. 4 pgs.

4. Argibay, Nicolas, Krick, Brandon A., Harris, Kathryn L., Ewin, J. J., Pitenis, A. A., McCumiskey, E. J., TAYLOR, C., & Sawyer, W. G. *Exploring the Practical Limits of Wear of Polymer Composite Systems*. 5th World Tribology Congress held September 8-13, 2013, Torino, Italy.
5. Jared N. Hann(g), Raul E. Riveros(g), Hitomi Yamaguchi(&), and **Curtis R. Taylor**. 2012. Extension of a Microscale Indentation Fracture Model to Nanoscale Contact in Purview of Mechanical Nanofabrication Processes. *Proceedings of the ASME Manufacturing Science and Engineering Conference (MSEC)*. 6 pgs.
6. Raul Riveros(g), Jared Hann(g), Hitomi Greenslet(&), and **Curtis Taylor**. 2011. Nanoscale Surface Modifications by Magnetic Field-Assisted Finishing. *Proceedings of the American Society of Mechanical Engineering (ASME) 2011 International Manufacturing Science and Engineering Conference*. 6 pgs.
7. Bijoyraj Sahu(g), Robert Riddle(g), Kam Leang(&), and **Curtis Taylor**. 2011. Design and Fabrication of an Automatic Nanoscale Tool-Tip Exchanger for Scanning Probe Microscopy. *Proceedings of the American Society of Mechanical Engineering (ASME) International Manufacturing Science and Engineering Conference*. 4 pgs.
8. David Jackson(&), Dianne Pawluk(&), and **Curtis R. Taylor**. 2011. Development of Haptic Virtual Reality Gaming Environments for Teaching Nanotechnology. *Proceedings of the American Society for Engineering Education ASEE Annual Conference & Exposition*, June 26-29, 2011, Vancouver, BC, Canada. 7 pgs.
9. Dianne Pawluk(&), Marcia Hoffman(&), Maria McClintock(&), and **Curtis R. Taylor**. 2009. Development of a Nanoscale Virtual Environment Haptic Interface for Teaching Nanotechnology to Individuals who are Visually Impaired. Outstanding Contributions to Mechanical Engineering Education, *2009 American Society for Engineering Education (ASEE) Annual Conference & Exposition*. 6 pgs.
10. **Curtis Taylor** and Kam Leang(&). 2008. Design and Fabrication of a Multifunctional Scanning Probe with Integrated Tip Changer for Fully Automated Nanofabrication. *Proceedings of the 23rd Annual American Society of Precision Engineering (ASPE) Annual Meeting and 12th ICPE*. 4 pgs.
11. **Curtis Taylor**, Eric Stach(&), Euclides Marega(&), Gregory Salamo(&), and Ajay Malshe(&). 2006. Directed Self-Assembly of Quantum Dots by Nanostamping. *Proceedings of the 4th International Symposium on Nanomanufacturing (ISNM)*. 4 pgs.
12. Martin Munoz(&), Lindsay Hussey(&), Durig Lewis(&), **Curtis Taylor**, Euclides Marega(&), and Ajay Malshe(&). 2006. Raman Spectroscopy of InAs/GaAs Quantum Dots Patterned by Nanoindentation. *Bulletin of the American Physical Society*. BAPS.2006.MAR.P35.2. <http://meetings.aps.org/link/BAPS.2006.MAR.P35.2>. 1 pg.
13. **Curtis R. Taylor**, Ajay Malshe(&), Eric Stach(&), Euclides Marega(&), and Gregory Salamo(&). 2006. Mechanically Biased Self-Assembly of Quantum Dots. *Materials Research Society (MRS) Proceedings*. 921: 0921-T07-07. <http://dx.doi.org/10.1557/PROC-0921-T07-07>
14. **Curtis Taylor**, Eric Stach(&), Ajay Malshe(&), and Gregory Salamo(&). 2006. Nanoindentation-assisted Self-Assembly of Quantum Dots. *Proceedings of the American*

*Society of Mechanical Engineers (ASME) International Conference on Manufacturing Science & Engineering*. 4 pgs.

15. **Curtis R. Taylor**, Eric A. Stach(&), Ajay P. Malshe(&), and Gregory Salamo(&). 2005. Analysis of Nanoscale Deformation in GaAs(100): Towards Patterned Growth of Quantum Dots. *Materials Research Society (MRS) Proceedings*. 864: E5.7. <http://dx.doi.org/10.1557/PROC-864-E5.7>
16. **Curtis Taylor**, Robin Prince(&), Ajay P. Malshe(&), Laura Riester(&), Gregory J. Salamo(&), and Seong Oh Cho(&). 2002. Investigation of Ultralow-load Nanoindentation for the Patterning of Nanostructures. *Proc. SPIE 4936, Nano- and Microtechnology: Materials, Processes, Packaging, and Systems*. 4936: 424. <http://dx.doi.org/10.1117/12.476103>
17. **Curtis Taylor**, Hameed Naseem(&), and William Brown(&). 2002. Characterization of Adhesives for Low Temperature Microelectronics and Photonics Packaging. *Symposium on Polymers for Microelectronics at Winterthur*. 5 pgs.
18. Mark W. Rowland(&), and **Curtis Taylor**. 1998. Aerospace Fiber Optic Manufacturing. *Proceedings, Integrated Manufacturing Process and Control Technologies, American Helicopter Society 54th Annual Conference*. 4 pgs.

## Presentations at Professional Conferences and Meetings

### a. International

#### **Invited Presentations**

1. Curtis Taylor, *Low Temperature Physical Synthesis of ZnO Nanostructures*, 2011 Villa Conference on Interactions Among Nanostructures (VC-IAN), Las Vegas, Nevada, USA, April 21-25, 2011
2. Curtis Taylor, *Nanoscale Patterning and Characterization of Nanostructures via Probe Tips*, 2009 Villa Conference on Interactions Among Nanostructures (VC-IAN), St. Thomas, Virgin Islands USA, September 6-11, 2009
3. Curtis Taylor, *Nanofabrication and Measurement Using Nanoscale Tips*, 59<sup>th</sup> General Assembly of College International pour la Recherche en Productique (CIRP), STC-E, Boston, MA, August 23-29, 2009

#### **Presentations**

1. Curtis Taylor, *Shape Memory Behavior of Pressure-Sensitive Photonic Crystal Polymers Determined by Material Composition and Structural Geometry*, Symposium: CM5: Mechanically Coupled Properties, Phenomena and Testing Methods in Small-Scale and Low-Dimensional Systems S, Materials Research Society Spring Meeting 2017, April 17-21, 2017.
2. Curtis Taylor, *ZZ1.04 Three Dimensional Visualization of Energetic Beam and Nanomechanical Defect Formation*, Symposium ZZ: Advanced Characterization Techniques for Ion-Beam-Induced Effects in Materials, Materials Research Society Spring Meeting 2014, April 21-23, 2014.
3. Curtis Taylor, *BBB4.01 Development of a Scanning Probe Microscopy Cantilever with Integrated Tip Exchange*, Symposium BBB: Advances in Scanning Probe

- Microscopy for Material Properties, Materials Research Society Spring Meeting 2014, April 21-23, 2014
4. Curtis Taylor, Dianne Pawluk, Marcia Hoffman, Maria McClintock, *Development of a Nanoscale Virtual Environment Haptic Interface for Teaching Nanotechnology to Individuals who are Visually Impaired*, Outstanding Contributions to Mechanical Engineering Education, 2009 ASEE Annual Conference & Exposition, Austin, Texas
  5. Curtis Taylor, Synthesis of ZnO Nanoparticles Using a Low Temperature Vapor Phase Transport Process, Symposium on Quantum Dots, Particles, and Nanoclusters, SPIE Photonics West, January 24-29, 2009
  6. Curtis Taylor and Kam Leang, *Design and Fabrication of a Multifunctional Scanning Probe with Integrated Tip Changer for Fully Automated Nanofabrication*, 23<sup>rd</sup> Annual American Society of Precision Engineering (ASPE) Annual Meeting and 12<sup>th</sup> ICPE, October 19-24, 2008, Portland, Oregon.
  4. Curtis Taylor, Eric Stach, Euclides Marega, Gregory Salamo, and Ajay Malshe, *Directed Self-Assembly of Quantum Dots by Nanostamping*, 4th International Symposium on Nanomanufacturing (ISNM), November 1-4, 2006, Massachusetts Institute of Technology (MIT), Boston, MA USA
  5. Taylor, C., Stach, E., Malshe, A., Salamo, G. *Nanoindentation-assisted Self-Assembly of Quantum Dots, A Symposium on Nano and Micro Mechanical and Related Hybrid Tools for Nanomanufacturing*, 2006 ASME International Conference on Manufacturing Science & Engineering (MSEC), October 8-11, 2006, Marriott Eagle Crest Conference Center, Ypsilanti, MI. Hosted by The University of Michigan
  6. Taylor, C., Stach, E., Marega, E., Malshe, A., Salamo, G. *Mechanically Biased Self-Assembly of Quantum Dots*, Symposium T, 2006 Materials Research Society (MRS) Spring Meeting, April 17-21, 2006, San Francisco, CA
  7. Lindsay Hussey, Curtis Taylor, Martin Munoz, *Raman Spectroscopy of InAs/GaAs Quantum Dots Patterned by Nano-indentation*, American Physical Society March Meeting, 2006, Baltimore, MD
  8. Taylor, C. Stach, E., Malshe, A., Salamo, G. *Analysis of Nanoscale Deformation in GaAs(100): Towards Patterned Growth of Quantum Dots*, E5: Novel Materials, Synthetic Structures and Nanomanipulation of Defects/Dopants Proceedings, Materials Research Society (MRS) Spring Meeting 2005, March 30, 2005, San Francisco, California.
  9. Taylor, C., Prince, R., Malshe, A., Riester, L., Salamo, G., Oh Cho, S. *Investigation of Ultra-Low-Load Nanoindentation for the Patterning of 3-D Quantum Structures*, SPIE International Symposium in Nano- and Microtechnology: Materials, Processes, Packaging, and Systems, December 16-18, 2002, Melbourne, Australia.
  10. Taylor C., Naseem H., Brown W., *Characterization of Adhesives for Low Temperature Microelectronics and Photonics Packaging*, 2002 Symposium on Polymers for Microelectronics at Winterthur, May 8-10 2002, Newark, Delaware.

**Posters**

1. G. Socol, D. Craciun, G. Dorcioman, N. Stefan, C. Martin, M. Hanna, C. R. Taylor, and V. Craciun, *Structure and Composition of Titanium Carbo-Nitrides Thin Films Grown by Pulsed Laser Deposition*, Symposium B: Stress, structure, and stoichiometry effects on the properties of nanomaterials II, E-MRS Fall Meeting 2013, Warsaw (Poland), September 16-19, 2013
2. V. Craciun, G. Socol, D. Craciun, N. Stefan, E. J. McCumiskey, M. Hanna, C. R. Taylor, A. Pitenis, N. G. Rudawski, G. Bourne. *Pulsed Laser Deposition of Hard and Adherent Transitional Metals Carbo-nitrides*, Symposium : V Laser materials interactions for micro and nano applications, E-MRS Spring Meeting, Strasbourg (Germany), May 27-31, 2013
3. V. Craciun, G. Socol, D. Craciun, G. Dorcioman, E. J. McCumiskey, M. Hanna, C. R. Taylor, J. Ewin, N. G. Rudawski, G. Bourne. *Hard and Adherent ZrC Thin Films Grown by Pulsed Laser Deposition*, Symposium : S Protective coatings and thin films, E-MRS Spring Meeting, Strasbourg (Germany), May 27-31, 2013
4. Jared Hann and Curtis Taylor, *The Effect of Nanoscale Contact Stress Field Interactions on Fracture and Deformation of Silicon in Purview of Mechanical Nanofabrication Processes*, Materials Research Society (MRS) Fall Meeting 2011, Symposium FF, Boston, MA, November 30, 2011
5. David Jackson, Dianne Pawluk, and Curtis R. Taylor, *Development of Haptic Virtual Reality Gaming Environments for Teaching Nanotechnology*, Mechanical Engineering Division, 2011 American Society for Engineering Education ASEE Annual Conference & Exposition, June 26-29, 2011, Vancouver, BC, Canada.
6. Bijoyraj Sahu, Robert Riddle, Kam Leang, and Curtis Taylor, *Development of an Automated Tool-Tip Exchanger for Tip-based Nanomanufacturing*, American Society of Mechanical Engineering (ASME) 2011 International Manufacturing Science and Engineering Conference, MSEC2011, June 13-17, 2011, Corvallis, Oregon, USA
7. Curtis Taylor, Edward McCumiskey, Natarajan Chandrasekhar, *Mechanical Characterization of Quantum Dot-Polymer Nanocomposite Films for Organic Electronic Devices via Nanoindentation*, 2010 Villa Conference on Interactions Among Nanostructures (VC-IAN), Santorini, Greece, June 21-25, 2010
8. Curtis Taylor, *Exploration of Nanomechanical Surface Engineering by Probe Tips for Low-Volume Fabrication of Quantum Electronics*, 2007 NanoMaterials for Defense Applications Symposium, April 23-26, 2007, San Diego, CA USA

b. National**Invited Presentations**

1. *Tip-Based Nanofabrication and Characterization*, Nanomanufacturing for Energy Symposium, 242<sup>nd</sup> American Chemical Society (ACS) Fall 2011 National Meeting and Exposition, August 28 – September 1, 2011, Denver, Colorado

2. *Nanomechanical Surface Engineering and Probes for Cell Mechanotransduction Studies*, National Science Foundation (NSF) Bio-Nano Manufacturing Grand Challenges for 2020 Workshop, April 14-16, 2008

### Posters

1. Curtis Taylor, James Oliverio, and Dianne Pawluk, *Use of Haptics in a Virtual Reality Environment for Learning of Nanotechnology—Exploration of the Nanoworld*, National Science Foundation EEC 2012 Awardees Conference, March 4-6, 2012, Arlington, VA
2. Curtis Taylor, James Oliverio, and Dianne Pawluk, *Use of Haptics in a Virtual Reality Environment for Learning of Nanotechnology*, National Science Foundation EEC 2011 Awardees Conference, March 13-15, 2011, Arlington, VA
3. Hitomi Greenslet and Curtis Taylor, *Magnetic Field Assisted Nanomachining of Ultraprecision Surfaces*, National Science Foundation (NSF) CMMI Grantees Conference, January 4-7, 2011, Atlanta, GA
4. Curtis Taylor, James Oliverio, and Dianne Pawluk, *Use of Haptics in a Virtual Reality Environment for Learning of Nanotechnology*, National Science Foundation EEC 2010 Awardees Conference, January 2010, Arlington, VA
5. Curtis Taylor and Kam Leang, *A Novel Multifunctional SPM Probe with Modular Quick-Change Tips for Fully Automated Probe-Based Nanomanufacturing*, NSF CMMI Awardees Conference, Honolulu, HI, June 2009
6. Curtis Taylor, *Exploration of Nanomechanical Surface Engineering by Probe Tips for Low-Volume Fabrication of Quantum Electronics*, 2007 NanoMaterials for Defense Applications Symposium, April 23-26, 2007, San Diego, CA USA

### c. Regional

#### Invited Presentations

1. *STEPUP—A Program of Engineering Excellence*, Engaging National Leaders in Undergraduate Student Success, Texas A&M University, February 20, 2018
2. *Tip-Based Nanoscale Fabrication and Characterization for Energy Efficient Products and Manufacturing*, NanoFlorida 2011 Conference, Florida International University, Miami, Florida
2. *Nanoscale Mechanics and Manufacturing via Scanning Probes*, The Florida Education Fund's Twenty-Fourth Annual McKnight Fellows Meeting and Twelfth Annual Graduate School Conference, October 24-26, 2008, Tampa, Florida

### Posters

1. *Three-Dimensional Electron Microscopy of Nanoscale Structure and Deformation*, NanoFlorida 2013 Conference, University of Florida, Gainesville, FL, September 29-30, 2013.



**Presentations by students and fellows advised – International**

\* indicates student, \*\* indicates post-doc fellow/scholar

1. \*Yifan Zhang and Curtis Taylor (2019). “Switchable Friction Coefficient on Shape Memory Photonic Crystals”. Materials Research Society 2019 Fall Meeting, December 1-6, 2019, Boston, Massachusetts
2. \*Yifan Zhang, Xingyi Lyu, Diyang Li, Peng Jiang, Curtis Taylor (2019). “Switchable Friction Coefficient on Shape Memory Photonic Crystals”. American Society of Mechanical Engineers (ASME) IMECE 2019, Salt Lake City, Utah
3. Jennifer Choi, Jovan Tatar, Curtis Taylor, Asad Hayatdavoudi (2017). “Application of Nanoindentation to Petroleum Engineering: Characterization of Mechanical Properties of Salt”. McNair’s Scholars’ Oral Research Presentations Symposium, April 25, 2017, University of Louisiana at Lafayette, Lafayette, LA.
4. \*Jovan Tatar, Christa Torrence, John J. Mecholsky, Curtis R. Taylor, H. R. Hamilton, *Improvement in Epoxy-Cement Paste Adhesive Bond Durability Through Silane Surface Functionalization*, 5th International Conference on Durability of Fibre Reinforced Polymer (FRP) Composites for Construction, 2017
5. \*Jovan Tatar, Christa E. Torrence, John J. Mecholsky, Jr., Curtis R. Taylor, H. R. Hamilton. *Effects of Silane Surface Functionalization on Interfacial Fracture Energy and Durability of Adhesive Bond Between Cement Paste and Epoxy*, American Concrete Institute (ACI), Fall 2016 Convention, Philadelphia, PA.
6. \*Yongliang Ni and Curtis Taylor, *Contact Mechanical Investigation of a Novel Reconfigurable Polymeric Shape Memory Photonic Crystal*, ASME Smart Materials, Adaptive Structures and Intelligent Systems (SMASIS) Conference, Vermont, September 2016.
7. \*Jovan Tatar, Curtis Taylor, Trey Hamilton, *Nanomechanical Characterization of Epoxy-Cement Paste Interface by Atomic Force Microscopy and Nanoindentation*, American Concrete Institute Fall Convention, November 8-12, 2015, Denver, CO. (accepted)
8. \*Jason Bice, *Nanomechanical Characterization of Calcium Alginate Hydrogels for 3D Printed Organ Tissues*, NanoFlorida 2014 - The 7th Annual Nanoscience Technology Symposium, September 25-26, 2014, Miami, FL.
9. \*Yonglian Ni, *Nanomechanical Analysis of an Ultralow Pressure Triggered Photonic Crystal Shape Memory Polymer*, NanoFlorida 2014 - The 7th Annual Nanoscience Technology Symposium, September 25-26, 2014, Miami, FL.
10. \*Katherine Siegel, Jovan Tatar, C.R. Taylor, and H. R. Hamilton, *Nanoindentation Measurement of Epoxy-Cement Paste Adhesion Strength*, 2014 NSF Research Experience for Undergraduates (REU).
11. Nicolas Argibay, Brandon A Krick, Kathryn L Harris, JJ Ewin, AA Pitenis, EJ McCumiskey, C. Toaylor, W.G. Sawyer, *Exploring the Practical Limits of Wear of*

- Polymer Composite Systems*, 5th World Tribology Congress held September 8-13, 2013 in Torino, Italy.
12. \*Jared N. Hann, Raul E. Riveros, Hitomi Yamaguchi, Curtis R. Taylor, *Extension of a Microscale Indentation Fracture Model to Nanoscale Contact in Purview of Mechanical Nanofabrication Processes*, 2012 ASME Manufacturing Science and Engineering Conference (MSEC) June 13-17, 2012, University of Notre Dame, IN
  13. \*M. Hanna, J.N. Stabley, D.J. McCullough, J.M. Dominguez III, J. Delp, B.J. Behnke, C.R. Taylor, M. Delp, *The Effects of Space Flight on the Vasoconstrictor and Mechanical Properties of Cerebral Arteries*, Experimental Biology 2012 – April 21<sup>st</sup>, 2012, San Diego, CA.
  14. A. Haynes, \*M. Hanna, B. Chen, P. Ghosh, C.R. Taylor, M. Delp, J. Delp, *Exercise Training Reverses Age-Related Remodeling of Coronary Resistance Arterioles*. Experimental Biology 2012 – April 21<sup>st</sup>, 2012, San Diego, CA.
  15. \*Edward McCumiskey, W. Gregory Sawyer, Kurt G. Eyink, and Curtis R. Taylor, *Patterned Nanofeatures Enable 3-D Transmission Electron Tomography of Interfacial Deformation Mechanisms in Nanolaminates*, Symposium GG: Mechanical Behavior of Metallic Nanostructured Materials, Materials Research Society (MRS) Fall Meeting 2012, Boston, MA USA
  16. A. A. Pitenis, \*E. McCumiskey, B. A. Krick, J. J. Ewin, C. R. Taylor, W. G. Sawyer, *In Situ Time-Lapsed Atomic Force Microscopy of Polymeric Nanocomposite Transfer Film Evolution*, Society of Tribologists and Lubrication Engineers Annual Exhibition and Meeting, St. Louis, Missouri, 2012
  17. \*Bijoyraj Sahu, Robert Riddle, Kam Leang, and Curtis Taylor, *Design and Fabrication of an Automatic Nanoscale Tool-Tip Exchanger for Scanning Probe Microscopy*, Proceedings of the American Society of Mechanical Engineering (ASME) 2011 International Manufacturing Science and Engineering Conference, MSEC2011, June 13-17, 2011, Corvallis, Oregon, USA
  18. \*Edward McCumiskey, Natarajan Chandrasekhar, and Curtis Taylor, *Mechanical Characterization of Quantum Dot-Polymer Nanocomposite Films for Organic Electronic Devices via Nanoindentation*, Processing and Engineering Applications, ASME International Mechanical Engineering Congress and Exposition, November 13-19, 2009, Lake Buena Vista, Florida
  19. \*\*Tarek M. Trad, Curtis R. Taylor, \*Dongshan Yu, *ZnO nanoparticles: Low-temperature synthesis, characterization, and utilization in composite polymer/metal oxide solar cells*, Nanotechnology and the Environment: Emphasis on Green Nanotechnology, Spring 2010 American Chemical Society National Meeting & Exposition, San Francisco, CA
  20. \*\*Tarek M. Trad, Kyle Donley, David C. Look, Kurt Eyink, and Curtis R. Taylor, *Synthesis of ZnO Nanoparticles Using a Modified Vapor Phase Transport Process*, Symposium I, Materials Research Society Spring Meeting, March 26-28, 2008

### Posters by students – Regional

1. \*Mina Hanna and Curtis R. Taylor, *Nanomechanical Properties of Ultrathin Epitaxial Scandium Oxide*, NanoFlorida 2011 Conference, Florida International University, Miami, Florida
2. \*Lisa Morin, James Oliverio, and Curtis Taylor, *Experiencing the Nano-World: Touch Based Virtual Exploration of Nanoscale Features*, 2<sup>nd</sup> Annual NanoFlorida Conference, University of Central Florida, September 25-27, 2009. (1<sup>st</sup> Place poster award)
3. \*Elizaveta Oleynik, Edward McCumiskey, and Curtis Taylor, *Nanomechanical Characterization of Ultrathin Films*, 2<sup>nd</sup> Annual NanoFlorida Conference, University of Central Florida, September 25-27, 2009.
4. \*Eroshenko, N., Rao, R., and Taylor, C. *Differential Behavior of Mouse Embryonic Fibroblasts on Substrates of Varying Mechanical Properties*, April 20-21, 2007, 5<sup>th</sup> Annual Colonial Academic Alliance Research Conference, Harrisonburg, VA

#### Posters by students – Local

1. \*Anjelica Warren, *Vapor-Liquid-Solid Crystal Growth of Zinc Oxide Nanowires for Novel Photovoltaic and Composite Applications*, Pi Tau Sigma Research Symposium, April 2, 2010 (Best Poster Award of Symposium)

#### Invited Talks and Colloquia

1. Curtis Taylor, *Soft Matter Additive Manufacturing*, **Osnabrück University of Applied Sciences, Osnabrück, Germany**, May 2019.
2. Curtis Taylor, *Engaging National Leaders in Undergraduate Student Success*, **Texas A&M University, College Station**, February 20, 2018.
3. Curtis Taylor, *Soft Matter Manufacturing: Writing in the Granular Gel Medium*, **Mini-Workshop on 3D Manufacturing, University of Nevada, Las Vegas (UNLV)**, April 14-15, 2016
4. Curtis Taylor, *Nanotechnology: Science and Benefits of Small Volumes*, **Institute for Learning in Retirement (ILR) at Oak Hammock**, Gainesville, FL, August 3, 2015
5. Curtis Taylor (Keynote Speaker), *Sowing Academic Excellence in Engineering, The Successful Transition and Enhanced Preparation for Undergraduates Program (STEPUP) 20<sup>th</sup> Year Anniversary*, **University of Florida**, July 27, 2014
6. Curtis Taylor, *An Engineering and Arts Collaboration with Digital Worlds Institute*, **University of Florida College of Engineering Colloquium**, November 1, 2013
7. Curtis Taylor, *Effects of Spaceflight on Vasoconstrictor and Mechanical Properties of Mouse Cerebral Arteries*, **Hysitron Inc. Open House Seminar**, July 17, 2012
8. Curtis Taylor, *Tip Based Nanomanufacturing and Nanomechanics*, **Université De Franche-Comté (Besançon, France)**, Departmental Seminar, October 22, 2011
9. Curtis Taylor, *Nanomanufacturing for Energy Efficient Products and Industrial Productivity*, **University of Michigan**, Fall Mechanical Engineering Seminar, October 4, 2011

10. Curtis Taylor, *Nanomanufacturing at the University of Florida: Building Things Small*, College of Science and Mathematics, **University of the Virgin Islands**, September 7, 2009
11. Curtis Taylor, *Nanoscale Surface Energy Modulation via Probes*, Department of Material Science and Engineering Seminar Series, **University of Florida**, November 21, 2008
12. Curtis Taylor, *Nanoscale Surface Energy Modulation via Probes*, **National University of Singapore**, October 2008.
13. Curtis Taylor, *Nanoscale Surface Energy Modulation via Probes as a Route Towards Controlled Nanomanufacturing*, Department of Materials Engineering Seminar Series, **Purdue University**, February 22, 2008
14. Curtis Taylor, *Nanomechanical Surface Engineering Modulation via Probes: Towards Nanomanufacturing of Quantum Electronics*, Department of Mechanical and Aerospace Engineering Seminar Series, **University of Florida**, January 31, 2008
15. Curtis Taylor, *Nanomechanical Surface Engineering by Probe Tips as a Route to Nanomanufacture Quantum Electronics*, **Massachusetts Institute of Technology (MIT)**, Boston, MA; Manufacturing Lecture Series, March 13, 2007
16. Curtis Taylor, *Exploration of Nanomechanical Surface Engineering by Probe Tips for the Fabrication of Quantum Electronics*, (Invitation only) **DARPA Workshop** on Tip-Based Nanofabrication, San Francisco, CA, November 15-17, 2006.
17. Curtis Taylor, *Nanomanufacturing: Building Things Extremely Small*, Department of Manufacturing Engineering Technology, **Virginia State University**, Petersburg, VA. October 27, 2006
18. Curtis Taylor, *Building the Foundation to Impact, Revitalize, and Empower*, National Society of Black Engineers Annual Banquet, **Virginia Commonwealth University**, April 2006
19. Curtis Taylor, *Directed Self-Assembly of Quantum Dots by Nanoindentation*, **Virginia Commonwealth University** Physics Department Colloquium, September 9, 2005
20. Curtis Taylor, *Directed Self-Assembly of Quantum Dots by Nanoindentation*, **General Electric (GE) Global Research Center**, April 2005
21. Curtis Taylor, *Nanoscale Surface Patterning of Quantum Dots*, Physics Department Colloquium, **Rochester Institute of Technology**, Rochester, New York, October 29, 2004
22. Curtis Taylor, *Nanoscale Surface Patterning of Quantum Dots*, National Center for Electron Microscopy, **Lawrence Berkeley National Lab**, Berkeley, California, July 2004

## References

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