Texas Higher Education Coordinating Board

Annual Progress Report for New Doctoral Program to Texas Higher Education Coordinating Board

Institution: **The University of Texas at Dallas**

Dean - **Dr. Mark Spong** **** Chief Academic Officer/Other Contact - **Dr. Hobson Wildenthal / Serenity King**

Program: **MECHANICAL ENGINEERING** (Program Director - **Dr. Mario Rotea**)

Date Approved by Texas Higher Education Coordinating Board: **October 25, 2012**

Progress Report Due Date: **October 25, 2013**

Report ID: **982** Status: **Reviewed**

	Year														
	>>2013<<			2014			2015			2016			2017		
Projected Enrollment	8			25			39			55			67		
Actual Enrollment by Ethnicity and Gender	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
White-Non-Hispanic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Black-Non-Hispanic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hispanic	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0
Asian or Pacific Islander	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
American Indian or Alaskan Native	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
International	11	2	13	0	0	0	0	0	0	0	0	0	0	0	0
Unknown or Not Reported	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Total	15	2	17	0	0	0	0	0	0	0	0	0	0	0	0
Student Financial Support															
- Number of Full-Time Students	16			0			0			0			0		
Pct. of Full-Time Students Financially Supported	94			0			0			0			0		
Avg. Financial Support for Full-Time Students	$14,850			$0			$0			$0			$0		
- Number of Part-Time Students	1			0			0			0			0		
Pct. of Part-Time Students Financially Supported	0			0			0			0			0		
Avg. Financial Support for Part-Time Students	$0			$0			$0			$0			$0		
Entry boxes for numbers of full and part-time students added 4/2012.															
Projected Cost	$409,844			$576,406			$704,868			$873,090			$1,012,330		
Actual Cost	$971,472			0			0			0			0		
Faculty Publications and Other Accomplishments -Number of discipline-related refereed papers/ publications, juried creative/performance accomplishments, book chapters, notices of discoveries filed/patents issued, and books per year per core faculty member. *Attach a list of publication citations or other academic/creative/performance accomplishments for each core faculty member (PDF format)* Uploaded file 10/23/13-12:38:18 225.1KB	8			0			0			0			0		
Faculty - Grants															
- Number of Grants	45			0			0			0			0		
- Number of PIs Receiving Grants	11			0			0			0			0		
Attach a list of grants (nclude the title, faculty member, source, and amount - PDF format) Uploaded file 10/25/13-02:05:53 100.4KB															
Student Performance (all students)															
- Number of Publications	0			0			0			0			0		
- Number of Presentations	0			0			0			0			0		
- Number Advancing to Candidacy	1			0			0			0			0		
- Number of Graduates	0			0			0			0			0		

First date/time *Sent to THECB*: October 25, 2013 - 2:28 PM

Resource Commitments

1. **Faculty and Other Personnel**

   Commitment for year 1 - *None for current report year*

   List names and provide vitae for faculty added in year 1

Name	Vitae
Dr. Robert Gregg	Uploaded File - 10/22/13-03:36:06
Dr. Stefano Leonardi	Uploaded File - 10/22/13-03:40:30
Dr. Majid Minary	Uploaded File - 10/22/13-03:42:04
Dr. Dong Qian	Uploaded File - 10/22/13-03:43:34
Dr. Seung You	Uploaded File - 10/23/13-09:18:29

   List names and provide vitae for other personnel added in year 1

Name	Vitae
Wanda Demetri	Uploaded File - 10/24/13-09:49:50
Ashley Ellard	Uploaded File - 10/24/13-09:50:15
Renata Freindorf	Uploaded File - 10/24/13-09:50:28
Mark Powell	Uploaded File - 10/24/13-09:50:40

   Commitments for other years (none made for years not showing) - None

2. **Equipment**

   Commitment for year 1 - *None for current report year*

   Attach a list of any equipment that was procured in year 1:
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   Commitments for other years (none made for years not showing) - None

3. **Facilities**

   Commitment for year 1 - *None for current report year*

   Attach a list of any facilities that were procured in year 1:
   No pdf file

   Commitments for other years (none made for years not showing) - None

4. **Library**

   Commitment for year 1 - *None for current report year*

   Attach a list of any library resources that were procured in year 1:
   No pdf file

   Commitments for other years (none made for years not showing) - None

5. **Other**

   Commitment for year 1 - *None for current report year*

   Attach a list of any other items and the cost of those items that were procured in year 1:
   No pdf file

   Commitments for other years (none made for years not showing) - None

6. **Other information related to program progress (please add any other pertinent information).**

   Actual cost breakdown: $201,440 (PhD student salaries and fringes) $150,032 (PhD student tuition) $620,000 (annualized start-up for new hires, from item #2: Equipment)

   See attached PDF file for student information.

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***In Progress* Comments:**

None Given.

Comments Made:

THECB (12/6/2013):

Your institution's submission of the first annual report for this new doctoral program is appreciated.

The University of Texas at Dallas's Ph.D. program in Mechanical Engineering is making good progress. The program's faculty is active and productive, publishing an average of eight publications each and receiving more than $8 million in 45 research grants, distributed broadly among eleven principal investigators. The program has added five new faculty to the core faculty, one more than projected in its original proposal, which should help with graduate student recruitment and retention as the program moves forward. Recognizing that the addition of these faculty members may have substantially increased the projected cost of the program as start-up funds were allocated to them, I encourage you to include a more detailed breakdown of the graduate program's equipment costs in future reports.

Enrollments in the program have exceeded projections, with more than seventeen students beginning their Ph.D. work in the first year, more than double the eight students originally projected. 94% of full-time students in the program enjoy some financial support, mostly through Teaching or Research Assistantships and tuition relief.

A challenge exists, though, to address issues of diversity within the student cohort. Thirteen of the seventeen students are international students and only two are women. This preponderance of international students seems to be a common characteristic among engineering programs at UT Dallas, even as compared to engineering programs at other Texas public universities, so I encourage the department make efforts to recruit a greater number of resident students in future years and broaden the program's gender and ethnic diversity.

First date/time *Sent to THECB*: October 25, 2013 - 2:28 PM

I commend you on the success of the first year of this joint effort between UT Dallas and UT Arlington, and wish you continued success as the program moves forward.

Note:
Comments are saved while the request is being edited. These comments are internal to your institution and should be used to make comments between the program director, dean, and chief academic officer. They are added to the Comments Made section when the report is sent to the next level. (i.e. when the request is forwarded to the next level and gets a status change to *Sent to Dean*, *Sent to CAO*, *Returned to PD*, etc.)

Faculty and Other Personnel

Curriculum Vitae

NAME
Robert De Moss Gregg IV

EDUCATION
B.S., Electrical Engineering and Computer Sciences, University of California – Berkeley, 2006
M.S., Electrical and Computer Engineering, University of Illinois at Urbana-Champaign, 2007
Ph.D., Electrical and Computer Engineering, University of Illinois at Urbana-Champaign, 2010

ACADEMIC EXPERIENCE
Assistant Professor, Mechanical Eng. and Bioengineering, University of Texas at Dallas, 2013 – present
Research Scientist, Center for Bionic Medicine, Rehabilitation Institute of Chicago, 2011 – 2013
Postdoctoral Fellow, Mechanical Engineering, Northwestern University, 2010 – 2011

NON-ACADEMIC EXPERIENCE
The Boeing Company, Phantom Works, Research Intern, 2008
SANYO Technology Center, Research Intern, 2006
Hewlett-Packard OuterBay Technologies, Intern, 2004

CERTIFICATIONS OR PROFESSIONAL REGISTRATIONS
N/A

CURRENT MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS
Institute of Electrical and Electronics Engineers

HONORS AND AWARDS
NIH Director's New Innovator Award, National Institutes of Health, 2013
Career Award at the Scientific Interface, Burroughs Wellcome Fund, 2012
CLAWAR Association Best Technical Paper Award, *Int. Conf. Climbing & Walking Robots*, 2011
Engineering into Medicine Postdoctoral Fellowship, Northwestern University Clinical and Translational Sciences Institute, 2010
O. Hugo Schuck Award (Best Theory Paper), IFAC American Automatic Control Council, 2009
Best Student Paper Award, *American Control Conference*, 2008
Warren Dere Design Award, Department of EECS, UC Berkeley, 2007
First Place, NATCAR Intercollegiate Design Contest, UC Davis, 2006
Arthur M. Hopkin Award, Department of EECS, UC Berkeley, 2006
Christie Senior Research Award, California Alumni Association, UC Berkeley, 2006

SERVICE ACTIVITIES
Professional Societies
Co-Chair, Technical Committee on Manufacturing Automation & Robotic Control, IEEE Control Systems Society, 2013 – 2014
Associate Editor: *American Control Conference* (2014), *IEEE Int. Conf. Robotics & Automation* (2014), *IEEE Int. Conf. Intelligent Robots & Systems* (2013)
Session Chair/Co-Chair: *American Control Conf.* (2013), *Dynamic Walking Conf.* (2012 & 2013), *IEEE Conf. on Decision & Control* (2009 & 2011)

Journal Reviewer: *ASME J. Biomech. Eng., ASME J. Dyn. Sys. Meas. & Control, Automatica, IEEE Trans. Aut. Control, IEEE Trans. Aut. Sci. & Eng., IEEE Trans. Biomed. Eng., IEEE Trans. Control Sys. Tech., IEEE Trans. Robotics, Int. J. Robotics Res., J. Biomech., Optim. Control App. & Meth., Robotica*

Institutional

Member, Bioengineering Faculty Search Committee, University of Texas at Dallas, 2013 – 2014
Graduate Representative, Academic Senate Executive Committee, University of Illinois, 2008 – 2010

PRINCIPAL PUBLICATIONS AND PRESENTATIONS (LAST 5 YEARS)

Peer-Reviewed Publications (selected from 25+ publications)

R. Gregg and J. Sensinger, "Towards Biomimetic Virtual Constraint Control of a Powered Prosthetic Leg," *IEEE Trans. Control Systems Technology*, 21(6), 2013.

R. Gregg and L. Righetti, "Controlled Reduction with Unactuated Cyclic Variables: Application to 3D Bipedal Walking with Passive Yaw Rotation," *IEEE Trans. Aut. Control*, 58(10): 2679-2685, 2013.

E. Rouse, R. Gregg, L. Hargrove, and J. Sensinger, "The Difference Between Mechanical Stiffness and Quasi-Stiffness in the Context of Biomechanical Modeling," *IEEE Trans. Biomedical Engineering*, 60(2): 562-568, 2013.

R. Gregg, T. Lenzi, N. Fey, L. Hargrove, and J. Sensinger, "Experimental Effective Shape Control of a Powered Transfemoral Prosthesis," in *IEEE Int. Conf. Rehabilitation Robotics*, Seattle, WA, 2013.

R. Gregg and J. Sensinger, "Biomimetic Virtual Constraint Control of a Transfemoral Powered Prosthetic Leg," in *American Control Conf.*, Washington, DC, pp. 5702-5708, 2013.

R. Gregg, Y. Dhaher, A. Degani, and K. Lynch, "On the Mechanics of Functional Asymmetry in Bipedal Walking," *IEEE Trans. Biomedical Engineering*, 59(5): 1310-1318, 2012.

R. Gregg, A. Tilton, S. Candido, T. Bretl, and M. Spong, "Control and Planning of 3D Dynamic Walking with Asymptotically Stable Gait Primitives," *IEEE Trans. Rob.*, 28(6): 1415-1423, 2012.

R. Gregg and M. Spong, "Reduction-Based Control of Three-Dimensional Bipedal Walking Robots," *Int. J. Robotics Research*, 29(6): 680-702, 2010.

R. Gregg, T. Bretl, and M. Spong, "A Control Theoretic Approach to Robot-Assisted Locomotor Therapy," in *IEEE Conf. Decision & Control*, Atlanta, GA, 2010, pp. 1679-1686.

R. Gregg and M. Spong, "Reduction-Based Control with Application to 3D Bipedal Walking Robots," in *American Control Conf.*, Seattle, WA, 2008, pp. 880–887.

Invited Conference Presentations

R. Gregg, E. Rouse, L. Hargrove, and J. Sensinger, "The Hypothesis of Feedback Pattern Generation in Human Locomotion," *Dynamic Walking Conference*, Pittsburgh, PA, June 2013.

R. Gregg and J. Sensinger, "From Machine to Biomimetic Control of Powered Prosthetic Legs," *Dynamic Walking Conference*, Pensacola, FL, May 2012.

R. Gregg and M. Spong, "Control and Planning with Asymptotically Stable Gait Primitives," *Dynamic Walking Conference*, Cambridge, MA, 2010.

R. Gregg and M. Spong, "Passivity, Symmetry, and Reduction of Bipedal Walking Robots," Workshop on 20 Years of Passivity-Based Control: Theory and Applications, *IEEE Conf. Decision & Control*, Shanghai, China, 2009.

PROFESSIONAL DEVELOPMENT ACTIVITIES

Participant, *NIH High-Risk High-Reward Research Symposium*, Bethesda, MD, 2013
Volunteer at the prosthetics clinic of the Rehabilitation Institute of Chicago, 2011-2013
Co-Chair, *Symposium on Control & Modeling of Biomedical Systems*, University of Illinois, 2010

NAME
Stefano Leonardi

EDUCATION
Laurea (joined bachelor and master) in Aerospace Engineering, 6/1999, University of Rome “La Sapienza”, major in aerodynamics. Grade: Magna cum laude.
PhD in Theoretical and Applied Mechanics 4/22/2003, University of Rome “La Sapienza”

ACADEMIC EXPERIENCE
University of Texas at Dallas, Department of Mechanical Engineering, Associate Professor (tenured), 2013 to date.
University of Puerto Rico at Mayaguez Department of Mechanical Engineering, Adjunct Professor, 2013 to date.
University of Puerto Rico at Mayaguez, Department of Mechanical Engineering, Associate (tenured) Professor, 7/2010-7/2013.
University of Puerto Rico at Mayaguez, Department of Mechanical Engineering Assistant Professor, 7/2006 to 7/2010.
Rensselaer Polytechnic Institute Troy New York, Adjunct Professor, 2007 to 2010.
University of Rome ``La Sapienza'' Department of Meccanica e Aeronautica, Research associate (assegno di ricerca, similar to post-Doc), 4/2003-7/2006

NON-ACADEMIC EXPERIENCE
NA.

CERTIFICATIONS OR PROFESSIONAL REGISTRATIONS
NA.

CURRENT MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS
American Physical Society

HONORS AND AWARDS
Distinguished investigator (based on h-factor) 2013, University of Puerto Rico at Mayaguez
Distinguished Professor Award2011-2012, 2007-2008, 2006-2007, Department of Mechanical Engineering University of Puerto Rico at Mayaguez
Best Professor Award October 2011, students’ associations University of Puerto Rico at Mayaguez.
Keynote speaker 7th July 2009 IUTAM Symposium on The Physics of Wall-bounded Turbulent Flows on Rough Walls. Cambridge UK
The research of the group has been published on the Teragrid Science Highlights 2008, NSF.
The research of the group has been published on the Multimedia Gallery of NSF.
Invited speaker June 23-26 2008 the Turbulent Boundary Layers session AIAA meeting in Seattle
Invited speaker 8th January 2008 at the International Centre for Theoretical Physics Trieste Italy.

SERVICE ACTIVITIES (within and outside of the institution, last five years)
Government & Professional Societies
Reviewer of Journal of Fluid Mechanics, Journal of Turbulence, International Journal of Heat and Fluid Flow, Applied Mechanics Review, Physics of Fluids
Member of the Aerospace Cluster of Puerto Rico, Government of Puerto Rico 1/2010-7/2011.

Reviewer of Master of Science Proposal for the Consejo Superior de Educacion Puerto Rico 2011-2012.
NSF: Panelist Reviewer program: TeraGrid Phase III December 1-5, 2008.
NSF: Panelist Reviewer program: PetApps January 12-13, 2009.

Institutional

University of Texas at Dallas. Reviewer 2013 ECS Scholarship
Coordinator of the Aerospace Science Committee, , University of Puerto Rico at Mayaguez 7/2009-7/2011
Local Organizer micro UAV international competition at UPRM 2008-2009 and 2009-2010

PRINCIPAL PUBLICATIONS AND PRESENTATIONS (LAST 5 YEARS)

Archival Journal Publications

Martinez-Tossas L., Leonardi S., M. J. Churchfield & P. J. Moriarty (2012) A Comparison of Actuator Disk and Actuator Line Wind Turbine Models and Best Practices for Their Use. 50th AIAA Aerospace Sciences Meeting. Nashville AIAA 2012-0900 DOI: 10.2514/6.2012-900.

M. J. Churchfield , S. Lee, and P. J. Moriarty, L. A. Martínez, S. Leonardi, Vijayakumar G. & Brasseur J. (2012) Large-Eddy Simulations of Wind-Plant Aerodynamics 50th AIAA Aerospace Sciences Meeting. Nashville AIAA 2012-0537 DOI: 10.2514/6.2012-537.

G. Araya, S. Leonardi and L. Castillo (2011) Steady and time-periodic blowing/suction perturbations in a turbulent channel flow" Physica D 240 59–77.

Leonardi S. & Castro I. P. (2010) Channel flow over large cube roughness: a direct numerical simulation study. J. Fluid Mech., 651, 2010, 519 - 539.

Bailon-Cuba J., Leonardi S. & Castillo L. (2009) Turbulent channel flow with 2D wedges of random height on one wall. Int. Jour. Heat Fluid Flow, Volume 30, Issue 5, Pages 1007-1015.

Brzek, B., Bailon-Cuba, J., Leonardi, S. & Castillo, L. (2009) Theoretical evaluation of the Reynolds shear stress and flow parameters in transitionally rough turbulent boundary Layers Journal of Turbulence, Volume 10, Art. No. N5

Araya G., Leonardi S., Castillo L. (2008) Numerical assessment of local forcing on the heat transfer in a turbulent channel flow Physics of Fluids 20, 085105

Orlandi & Leonardi (2008) DNS of 3D turbulent rough channels: parametrization and flow physics. J. Fluid Mech., vol. 606, 399-415.

Araya, G., Leonardi, S., Castillo L. (2008) Passive scalar statistics in a turbulent channel with local time-periodic blowing/suction at walls, Physica D: Nonlinear Phenomena, 237 (14), p.2190-2194

Burattini, P., Leonardi, S., Orlandi, P. & Antonia, R.A. (2008) Comparison between experiments and direct numerical simulations in a channel flow with roughness on one wall, J. Fluid Mech., 600, 403-426

Presentations

Arenas I., Orlandi P. & Leonardi S. (2013) Direct Numerical Simulation of two superposed viscous fluids in a rough channel. Proceedings of the "Small-scale turbulence: theory, phenomenology and applications", Rouen 7/3-5 France

Leonardi & Orlandi (2012) G21.00002 Direct Numerical Simulation of two superposed viscous fluids in a channel with cavities on the wall Bulletin of the American Physical Society. 65th Annual Meeting of the APS Division of Fluid Dynamics Volume 57, Number 17 November 18–20, 2012; San Diego, California

PROFESSIONAL DEVELOPMENT ACTIVITIES

Participant NSF early career meeting Las Vegas 2007.
Participant workshop writing competitive proposals UPRM-NSF 2008.

NAME
Majid Minary-Jolandan

EDUCATION
B.S., Mechanical Engineering, Sharif University of Technology, Tehran, Iran 2003
M.S., Mechanical Engineering, University of Virginia, Charlottesville, VA 2005
PhD., Mechanical Engineering, University of Illinois at Urbana-Champaign, IL, 2005

ACADEMIC EXPERIENCE
Assistant Professor, Mechanical Engineering, University of Texas at Dallas, 2012-present
Postdoctoral Fellow, Mechanical Engineering, Northwestern University, 2010-2012
Graduate Research Assistant, Mechanical Engineering, University of Illinois, 2006-2010
Graduate Research Assistant, Mechanical Engineering, University of Virginia, 2003-2005

NON-ACADEMIC EXPERIENCE
NA.
CERTIFICATIONS OR PROFESSIONAL REGISTRATIONS
NA.
CURRENT MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS
ASME, SES

HONORS AND AWARDS
Best student paper award, finalist, Society of Engineering Science 2010.
NSF travel award, Society of Engineering Science 2010.
Graduate Research Assistantship, Nano-CEMMS, University of Illinois, 2009-2010.
Mavis Memorial Fund Scholarship Award-College of Engineering, University of Illinois, 2008.
NSF Summer Short Course on Cellular Mechanics, GEM4, Summer 2007.
Listed as Teachers Ranked as Excellent by Students, University of Illinois, Fall 2006.
Ranked 41 in Nation among 300,000 Participants in University Entrance Examination, Iran 1999.

SERVICE ACTIVITIES (within and outside of the institution, last five years)
Government & Professional Societies
- Session Chair, Society of Engineering Science 2012, Atlanta 2012.
- Session chair, ASME 2012, Houston, TX
- NSF Review Panel, CBET Biomedical Engineering, Dec. 2012.
- Peer reviewer for Nanotechnology, Biomedical Materials, Applied Physics Letters, Journal of Applied Physics, Experimental Mechanics, Journal of Nanoscience and Nanotechnology, Journal of the Mechanical Behavior of Biomedical Materials, Acta Biomaterialia, Journal of Micromechanics and Microengineering, Journal of Micro and Nano-Manufacturing, and Surface Science.
- NSF Review Panel, Major Research Instrumentation Program, ECCS April 11-12, 2013
- Symposium Organizer, SES conference, Brown University July 2013.

Institutional
UTD-Mechanical Engineering committees: MDI, DSC, and MM committee member.

PRINCIPAL PUBLICATIONS AND PRESENTATIONS (LAST 5 YEARS)
Archival Journal Publications
1. Minary-Jolandan, M., and Yu, M.-F., “Nanomechanical Imaging of Soft Samples in Liquid Using Atomic Force Microscopy”, Journal of Applied Physics 114 pp. 134313, 2013.
2. Kang, W., Yavari, F., Minary-Jolandan, M., Giraldo-Vela, J. P., Safi, A., McNaughton, R. L., Parpoil, V., Espinosa, H.D., "Nanofountain Probe Electroporation (NFP-E) of Single Cells", Nano Letters 13, pp. 2448-2457, 2013.

3. Kang, W., McNaughton, R. L., Yavari, F., Minary-Jolandan, M., Safi, A., Espinosa, H. D., "Microfluidic Parallel Patterning and Cellular Delivery of Molecules with a Nanofountain Probe", Journal of Laboratory Automation, 29, 2211068213495395, 2013.
4. Majid Minary, "Trolling-Mode Atomic Force Microscopy: High-resolution Imaging of Single Cells", Imaging & Microscopy 14, 52-53, 2012.
5. Majid Minary, Arash Tajik, Ning Wang, and Min-Feng Yu, "Intrinsically High-Q Dynamic AFM Imaging in Liquid with a Significantly Extended Needle Tip", Nanotechnology, 23,235704 (2012).
6. Majid Minary, Rodrigo Bernal, Irma Kuljanishvili, Victor Parpoil, and Horacio Espinosa, "Individual GaN Nanowires Exhibit Strong Piezoelectricity in 3D", NANO Letters12, 970, 2012.
7. Horacio Espinosa, Rodrigo Bernal, and Majid Minary, "A Review of Mechanical and Electromechanical Properties of Piezoelectric Nanowires", Advanced Materials 24, 4656-4675, 2012.
8. Majid Minary, Rodrigo Bernal, and Horacio Espinosa, "Strong Piezoelectricity in Individual GaN Nanowires", MRS Communications, DOI: 10.1557/mrc.2011.14, 2011.
9. Jie Hu, Kyungsuk Yum, Arash Tajik, Majid Minary, Jaehooh Bang and Min-Feng Yu, "Diffusion Limited Current in Very High Aspect Ratio Pt Needle Electrodes", Applied Physics Letters 99, 053113, 2011.
10. Majid Minary and Min-Feng Yu, "Shear Piezoelectricity in Bone at the Nanoscale", Applied Physics Letters 97, 153127, 2010.
11. Majid Minary and Min-Feng Yu, "Nanomechanical Heterogeneity in the Gap and Overlap Regions of Type I Collagen Fibrils with Implications for Bone Heterogeneity", Biomacromolecules 10, 2565, 2009.
12. Majid Minary and Min-Feng Yu, "Uncovering Nanoscale Electromechanical Heterogeneity in the Subfibrillar Structure of Collagen Fibrils Responsible for the Piezoelectricity of Bone", ACS Nano 3, 1859, 2009.
13. Majid Minary and Min-Feng Yu, "Nanoscale Characterization of Isolated Individual Collagen Type I Fibrils: Polarization and Piezoelectricity", Nanotechnology 20, 085706, 2009.
14. Majid Minary, and Min-Feng Yu, "Reversible Radial Deformation up to the Complete Flattening of Carbon Nanotubes in Nanoindentation", Journal of Applied Physics 103, 073516, 2008.
15. Majid Minary, and Min-Feng Yu, "An Improved *in situ* Measurement of Offset Phase Shift towards Quantitative Damping-Measurement with AFM", Ultramicroscopy, 108, 821, 2008.
16. M. Fesanghary, M. Mahdavi, Majid Minary, Y. Alizadeh "Hybridizing Harmony Search Algorithm with Sequential Quadratic Programming for Engineering Optimization Problems", Computer Methods in Applied Mechanics and Engineering 197, 3080, 2008.

Presentations

1. "Experimental Characterization of Nanomechanics and Piezoelectricity of Type I Collagen Fibrils at Multiple Length Scales", ASME 2013 2nd Global Congress on NanoEngineering for Medicine and Biology - NEMB2013, Boston Feb. 2013.
2. "High-Resolution Imaging of Living Cells using Trolling Mode Atomic Force Microscopy", ASME 2012 International Mechanical Engineering Congress & Exposition. Houston, TX.
3. "Nano-Mechanical and -Electromechanical Heterogeneity in Single Collagen Fibrils" Biophysical Society-Biophysical Journal 98, 759a (2010).
4. "Collagen Fibrils: Multifunctional Nanoscale Components in Bone Structure", Society of Engineering Science, 47th Annual Technical Meeting, IA, p27-28 (2010).
5. "Shear Piezoelectricity in Individual 100-nm Diameter Collagen Type I Fibrils", Society of Engineering Science, 45th Annual Technical Meeting, IL, p250 (2008).
6. "Reversible Elasticity and Structural Damping of Individual Multi-walled Carbon Nanotubes in Radial Direction", Society of Engineering Science, 45th Annual Technical Meeting, IL, p380 (2008).
7. "Individual Collagen Fibrils with 100 nm-diameter Behave as Shear Piezoelectric Materials", Symposium: Mechanics of Biological and Biomedical Materials, MRS Fall 2008.

PROFESSIONAL DEVELOPMENT ACTIVITIES

NSF-CAREER workshop, April 2013, Tampa, FL

UT Dallas ABET CV

NAME
Dong Qian

EDUCATION

B.S	Bridge Engineering	1994
M.S	Civil Engineering, University of Missouri	1998
PhD	Mechanical Engineering, Northwestern University	2002

ACADEMIC EXPERIENCE
University of Texas at Dallas, Associate Professor, Department of Mechanical Engineering, 2012-present.
University of Cincinnati, Department Mechanical Engineering, 2002-2012, Assistant Professor 2002-2008, Associate Professor, 2008-2012, Director of Graduate Studies, 2010-2012.

NON-ACADEMIC EXPERIENCE
None

CERTIFICATIONS OR PROFESSIONAL REGISTRATIONS
NA.

CURRENT MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS
ASME, USACM

HONORS AND AWARDS
University of Cincinnati College of Engineering Distinguished Researcher Award (2012)
ICACM Young Investigator (awarded at 3rd International Symposium on Computational Mechanics) (2011)
ASEE Air Force Summer Faculty Fellowship (2012, 2011, 2008, 2006, competitively reviewed)
Summer Faculty Scholar, Peking University (2010)
College of Engineering Distinguished Researcher Award (2010)
Summer Faculty Fellowship, Air Force Research Lab (2009, 2010)
College of Engineering Research Award for Junior Faculty (2008)
National Science Foundation Summer Institute Travel Fellowship (2003,2004,2005)
Sixth World Congress on Computational Mechanics Travel Award (2004)
Invited member of the US delegation to attend US-China Workshop on multiscale model-based simulation in mechanics and materials engineering (2004)
Seventh US Congress on Computational Mechanics Travel Fellowship (2003)
Second MIT Computational Fluid and Solid Mechanics Conference Fellowship (2003)
Dissertation Year Fellowship (2001-2002)
Tull Fellowship (2000-2001)

SERVICE ACTIVITIES (within and outside of the institution, last five years)
Government & Professional Societies
Assistant Editor, Journal of Computational Mechanics
Organizer of the NU 2012 Summer Workshop on Computational Science and Engineering

Co-organizer of the symposium on Multiphysics Simulations and Experiments for Solids as part of ASME IMECE 2012 conference (over 50 talks)
Reviewer for NSF panel (CMMI Mechanics of Material program)
Review of proposal for Ohio Supercomputer Center

Institutional
Member of the Faculty Search Committee for Mechanical Engineering at UTD

PRINCIPAL PUBLICATIONS AND PRESENTATIONS (LAST 5 YEARS)

Enriched space-time finite element method: A new paradigm for multiscaling from elastodynamics to molecular dynamics. Yang, Y., S. Chirptukar, D. N. Alpert, T. Eason, M. Spottswood, and D. Qian *International Journal For Numerical Methods In Engineering,* **92**(2), 115-140, 2012.

High Spatial Resolution, High Energy Synchrotron X-Ray Diffraction Characterization of Residual Strains and Stresses in Laser Shock Peened IN718 SPF Alloy. Gill, A. S., U. lienert, J. Almer, D. Lahrman, S. R. Mannava, D. Qian, and V. K. Vasudevan *Journal Of Applied Physics,* **111**(8), 2012.

Effect of the Impact Energy of Various Peening Techniques on the Induced Plastic Deformation Region. Kanou, S., O. Takakuma, S. R. Mannava, D. Qian, V. K. Vasudevan, and H. Soyama *Journal of Materials Processing Technology*, **212**, 1996-2008, 2012.

A Study of Thermal Relaxation of Residual Stress in Laser Shock Peened Ti-6Al-4V Alloy. Zhou, Z., S. Bhamare, G. Ramakrishnan, S. R. Mannava, K. Langer, Y. H. Wen, D. Qian, and V. K. Vasudevan, *Surface & Coatings Technology,* **206**, 4619-4627, 2012.

Energy Loss in Carbon Nanotube Beam Oscillators due to Anelastic Relaxation. Zhou, Z., V. K. Vasudevan, and D. Qian, *Journal of Engineering Materials and Technology* **134,** 031005, 2012.

Presentations

Structural transformations and deformation mechanism in titanium nanowires, *NU 2012 Summer Workshop on Computational Engineering and Science*, Evanston, IL, July 22-23, 2012

A modeling study of thermal relaxation effects of surface process", Department of Mechanical Engineering, Shanghai Jiaotong University, Shanghai, China, August 16th, 2012

Coupled atomistic-continuum simulations of lattice dynamic fracture based on extended space-time FEM, *International Conference on Advances in Computational Mechanics (ACOME)*, Ho Chi Minh City, Vietnam, August 12-16, 2012.

Simulation of lattice dynamic fracture based on extended space-time fem and bridging scale method, *22nd International Workshop on Computational Mechanics of Materials (IWCMM XXII)*, Baltimore, MD, September 24-26, 2012Simulation of Dynamic Lattice Fracture Based on a Multiscale Space-Time Method", Department of Aerospace Engineering and Mechanics, Beijing University, Peking, China, September 1st, 2011

PROFESSIONAL DEVELOPMENT ACTIVITIES

Proposal Grant Writer's workshop, 2004, 2005.

NSF Summer Institute on nanomechanics and materials, NSF, Northwestern University, Evanston, Illinois. 2005, 2006, 2007, 2010.

Hughes-Belytschko short course on nonlinear finite element analysis, December 4-8, 2000, San Diego, California.

NAME
Seung M. You

EDUCATION
B.S., Mechanical Engineering, Seoul National University, 1982
M.S., Mechanical Engineering, University of Minnesota, 1986
Ph.D., Mechanical Engineering, University of Minnesota,1990

ACADEMIC EXPERIENCE
Professor, Mechanical Engineering, University of Texas at Dallas, 2013 – present
Associate Head, Mechanical Engineering, University of Texas at Dallas, 2013.1.1 – present
Professor, University of Texas at Arlington, 2002 – 2012
Associate Chair, University of Texas at Arlington, 2005.2.1 – 2012.12.31
Associate Professor, Seoul National University, Korea, 2000 – 2002
Associate Professor, University of Texas at Arlington, 1996 – 2000
Assistant Professor, University of Texas at Arlington, 1990 – 1996

NON-ACADEMIC EXPERIENCE
TTM Corp., Consultant, "Heat Transfer and Thermal Management," 2010 – 2011 (Part Time)
Vapro, Inc. (UT Arlington Technology Incubator), Chief Technology Officer, 2005 – 2010 (Part Time)
Vapro, Inc. (UT Arlington Technology Incubator), Co-Founder, 2005 (Part Time)
TherMax Corp., Consultant, Development of Phase-Change Interface Materials, 2000 – 2002 (Part Time)
Samsung Advanced Institute of Technology (SAIT), Consultant, "Microscale Phase-Change Heat Transfer," 2001 (Part Time)
Nortel Technology, Consultant, "Immersion Cooling of RF Power Transistors," 1997 (Part Time)
Motorola, Consultant, "Boiling/Condensing Heat Spreader Investigation," 1997 (Part Time)

CURRENT MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS
Fellow, American Society of Mechanical Engineers (ASME), 2002 – Present
Member, American Society of Mechanical Engineers (ASME), 1991 – Present
Member, American Society for Engineering Education (ASEE), 2012 – Present

HONORS AND AWARDS
Best Paper Award, ASME Micro/Nanoscale Heat & Mass transfer International Conference, Shanghai, China, 2009
Research Excellence Award, University of Texas at Arlington, 2005-2009
Chancellor's Entrepreneurship and Innovation Award, Office of Research and Technology, The University of Texas System, 2007
Best Paper Award, ASME Journal of Heat Transfer, 2004
The Halliburton Excellence in Research Award, University of Texas at Arlington, 2003
Best Teacher Award, College of Engineering, Seoul National University, 2000
The Halliburton Outstanding Young Faculty Award, University of Texas at Arlington, 1996
Best Technical Presentation Award; International Heat Transfer Conference, 1986
The Korean Presidential Fellowship, 1986

SERVICE ACTIVITIES

Professional Societies

Editor, International Journal of Air-Conditioning and Refrigeration (IJACR)

Member for the ASME Heat Transfer in Multiphase Systems Committee

The 8th International Conference on Multiphase Flow (ICMF 2013), Scientific Committee

Institutional

Associate Department Head for ME Undergraduate Program

ME Undergraduate Curriculum Committee Chair

RECENT JOURNAL PUBLICATIONS

Sang M. Kwark, Ratan Kumar, Gilberto Moreno, Jaisuk Yoo, and S. M. You, 2010, "Pool Boiling Characteristics of Low Concentration Nanofluids," International Journal of Heat and Mass Transfer, Vol. 53, pp. 972-981.

Sang M. Kwark, Gilberto Moreno, Ratan Kumar, Hyejin Moon, and S. M. You, 2010, "Nanocoating Characterization in Pool Boiling Heat Transfer of Pure Water," International Journal of Heat and Mass Transfer, Vol. 53, pp. 4579-4587.

Sang M. Kwark, Miguel Amaya, Ratan Kumar, Gilberto Moreno, and S. M. You, 2010, "Effects of Pressure, Orientation, and Heater Size on Pool Boiling of Water with Nanocoated Heaters," International Journal of Heat and Mass Transfer, Vol. 53, pp. 5199-5208.

S. M. You, Miguel Amaya and Sang M. Kwark, 2010, "A Review of Enhancement of Boiling Heat Transfer through Nanofluids and Nanoparticle Coatings," International Journal of Air-Conditioning and Refrigeration, Vol. 18, No. 4, pp. 247-263.

Sang M. Kwark, Miguel Amaya, Hyejin Moon, and S. M. You, 2011, Effect of Soluble Additives, Boric Acid (H_3BO_3) and Salt (NaCl), in Pool Boiling Heat Transfer," Nuclear Engineering and Technology, Vol. 43, No. 3, pp. 195-204.

Sang M. Kwark, Miguel Amaya, and S. M. You, 2012, "Experimental Pool Boiling Heat Transfer Study of Nanoporous Coating in Various Fluids," International Journal of Air-Conditioning and Refrigeration, Vol. 20, No. 1, pp. 1150001.

Sang M. Kwark, Ratan Kumar, Gilberto Moreno, and S. M. You, 2012, "Transient Characteristics of Pool Boiling Heat Transfer in Nanofluids," ASME Journal of Heat Transfer, Vol. 134.

Tadej Semenic and S. M You, 2012, "Two-Phase Heat Sinks with Microporous Coating," Heat Transfer Engineering, Vol. 34, pp. 246-257.

Miguel Amaya, Sang M. Kwark, Ajay Gurung, and S. M. You, 2013, "Pool Boiling Heat Transfer of Borated (H_3BO_3) Water on a Nanoporous Surface," ASME Journal of Heat Transfer, Vol. 135, 091302.

PROFESSIONAL DEVELOPMENT ACTIVITIES

Participant, ABET Workshop on Fundamentals of Program Assessment, Oct. 19, 2013

Participant, DARPA MTO Workshop on Thermal Ground Plane, Sep. 19, 2013

Presenter, DARPA MTO Workshop on Embedded Thermal Management (EmTM), "Enhanced Evaporative Cooling Using Electrowetting-on-Dielectric Digital Microfluidics," March, 2011

NAME
WANDA DEMETRI

EDUCATION
Bachelor of Science in Mathematics, Major in Computer Science, The University of Texas at Dallas, 1985

ACADEMIC EXPERIENCE

- The University of Texas at Dallas, **Administrative Assistant II**, May, 2013 – Present, Full time.

  Process faculty and student purchases; process faculty and student reimbursements and travel vouchers; make travel arrangements for faculty and students; and monitor and reconcile grant budgets of faculty.

NON-ACADEMIC EXPERIENCE

- Rockwell Collins (2005-2012)

  Sr. Program Planning & Control (PP&C) Coordinator (2008-2012), full time. On a monthly basis, generated Turnaround Documents (budget reports) for review and update by Control Account Managers. Generated Earned Value Reports and program metrics and ran appropriate transactions to finalize month-end numbers. Provided day-to-day support to Control Account Managers and Program Managers.

  Engineering Project Specialist (2006-2008), full time. Performed Control Account Manager tasks of printing and revising Turnaround Documents (budget reports), updating Integrated Master Schedule milestones, providing variance explanations, and creating Detailed Planning Packages (for budget input). Incorporated and responded to customer comments on classified documents. Performed other administrative duties, such as answering questions, setting up travel reservations, and assisting with expense reports.

  Administrative Assistant (2005-2006), full time. Provided administrative support to Manager of Technical Directors and his department to include making travel reservations, preparing expense reports, coordinating job interviews with candidates, and ordering supplies, nameplates, business cards, etc.

- MCI, Inc. (1992-2005)

  Staff Specialist (1993-2005), full time. Managed operating budgets for Director and Vice President of Network Procurement. Prepared and presented variance explanations and forecasts for upper management. Annually, prepared and input operating budget into system. Processed

Non-Disclosure Agreements from request through review, signature, and distribution.

Staff Administrator (1992-1993), full time. Managed department budget, reviewed Departmental Expense Transaction Reports (budget reports) each month.

MOST RECENT TRAINING ACTIVITIES

- Received training and access to PeopleSoft and Extinguisher programs at UTD

NAME
ASHLEY ELLARD-BRADBERRY

EDUCATION
Associate of Science, Richland College Dallas, TX, 2012

ACADEMIC EXPERIENCE

- University of Texas at Dallas, **Degree Plan Evaluator I,** 2013–Present, Full time
  Maintain student records, generate reports, and advise students on program requirements. Review degree plan requests and register students in appropriate courses as requested. Prepare materials and handouts for student recruiting sessions on campus. Review graduate files for accuracy and compliance with University policies.

- University of Texas at Dallas, **Degree Plan Evaluator I** (2012–2013), Full time
  Maintain student records, generate reports, and advise students on program requirements. Review degree plan requests and register students in appropriate courses. Review graduate files for accuracy and compliance with University policies.

- DCCCD-Richland College, **Program Services Specialist** (2011–2012), Part time
  Assisted the Veteran Affairs coordinator with organizing and maintaining student files in preparation for course certifications.

- DCCCD-Richland College, **Secretary II** (2009–2012), Full time
  Evaluated student degree plans as needed by students and Degree Audit staff. Advised students regarding eligibility for graduation and reviewed graduate files for accuracy and compliance with DCCCD policies.

- Richland Collegiate High School, **Department Assistant I** (2008–2009), Part time
  Provided program information to potential applicants and assisted the registrar with collecting, recording and reporting student grades. Assisted advisors with scheduling appointments and organizing course schedules.

NON-ACADEMIC EXPERIENCE

- TJ's Seafood Market and Catering, **Customer Service Rep** (2006–2012), Part time
  Answered customer questions concerning price and use of merchandise in store and online. Assisted the owner in the planning and execution of catering parties and events. Maintained sales records, product inventory, and merchandise replenishment.

MOST RECENT TRAINING ACTIVITIES

- Received training and access to PeopleSoft and Extinguisher programs.
- Completed the most recent FERPA regulations training.

NAME
Renata Freindorf

EDUCATION
Master of Science in Chemistry, Jagiellonian University (Cracow, Poland), 1981

ACADEMIC EXPERIENCE

- University of Texas at Dallas, **Administrative Assistant II**, June 2013 – present, Full time, Assistant to Department Head, Mechanical Engineering.

  Support Department Head activities, including reconciling Cost Centers, keeping records and calendars, arranging meetings and travel. Assist Department Head with faculty recruiting, promotion cases, space planning, and assignment. Assist in department-wide event planning and execution.

- University of Texas at Dallas, **Administrative Assistant II** (2010 – 2013), Full time, Department of Chemistry.

  Duties included general operation of academic departments: recruiting, hiring, training and supervising new undergraduate and graduate students, maintaining records, files and budgeting information, completing purchase orders, drafting letters and documents, managing of electronic databases including funding and procedures for travel, honoraria, purchases and reimbursements, based on different financial resources. Reconciliation of the accounts under the new financial system (PeopleSoft), participation in grants writing.

- State University of New York at Buffalo, **Senior Research Support Specialist** (2006 -2010), Full time, Department of Chemistry.

  Administrative support and research performance at the Crystallography Laboratory.

- State University of New York at Buffalo, **Research Technician** (2004), Volunteer, Full time, Department of Pathology and Anatomical Sciences.

  Administrative and non-administrative research support.

NON-ACADEMIC EXPERIENCE

- Ambra LLC (Poland), **Owner and Manager** of a 35 employee company exclusively distributing cosmetics to roughly one fourth of the country (1993-2001), Full time.

  Running the company and supervising the employees.

- Johnson and Johnson Consumer Products Company, (USA), Polish Division, Warsaw, Poland, **Regional Senior Sales Representative** (1990-1993), Full time.

  Recruiting, selecting, orienting, training, assigning, scheduling, coaching, counseling, and disciplining employees in assigned districts; communicating job expectations; planning, monitoring, appraising, and reviewing job contributions; planning and reviewing compensation actions; enforcing policies and procedures. Creating a sales plan and quota for districts in support of national objectives. Preparing an annual budget; scheduling expenditures; analyzing variances. Managing staff.

- Litpol Sp. z o.o., Krakow, Poland and Liberty Poland GmbH, Vienna, Austria, **Sales Representative** (1988-1990), Full time.

  Serviced existing customer accounts, obtained orders, and established new accounts by planning and organizing daily work schedule to call on existing or potential sales outlets and other trade factors. Was submitting activity and results reports, such as daily call reports, weekly work plans, and monthly and annual territory analyses.

- Research and Development Center of Ministry of Mining, Poland, **Analytical Chemist and Researcher** (1981-987), Full time.

CERTIFICATIONS OR PROFESSIONAL REGISTRATIONS

- Postgraduate study (1984 - 1985), Certificate from the Department of Environmental Conservation, the Agriculture Academy of Cracow, Poland

MOST RECENT TRAINING ACTIVITIES

- Received training and access to PeopleSoft and Extinguisher programs at UTD
- Completed the most recent FERPA regulations training.

NAME
Mark Powell

EDUCATION
Associate Applied Arts and Science, Machine Technology – Mountain View College 1984

ACADEMIC EXPERIENCE

- University of Texas at Dallas, **Technical Staff Associate, Machine Shop Manager,** 2012–Present, Full time
  Perform highly skilled and technical work involving the operation and maintenance of specialized equipment relating to teaching and research activities in Mechanical Engineering. Provide training in safe operations of machining equipment and supervise machine shop personnel and processes.

NON-ACADEMIC EXPERIENCE

- Aerotech, **Contractor** (2010-2012), Full time
  Incoming Quality Control Inspection at Raytheon-Elcan Optical (2010)
  Precision Grinder at DRS Incorporated (2011-2012)

- Texas Instruments Inc., **Mechanical Engineering Technician** (1980–2009), Full time
  Master Machinist, Mechanical Design with Pro Engineer and AutoCAD, assisted engineers with design ideas for prototype parts from design to fabrication. Set up and maintained two machine shops at two separate TI sites.

MOST RECENT TRAINING ACTIVITIES

- Current in process – Managers, Supervisors Certificate Series (8 classes)
- Completed Lessons from the HR Trenches
- Completed Communication and Listening Skills
- Completed Electrical Safety Course
- Completed Electrical Safety – Grounding Course
- Completed PPE Course
- Completed Shop Safety (Hand and Power Tool Safety)

Equipment

The five core faculty added in Year 1 received a total of $1,860,000 in start-up funds. The guideline for spending start-up funds states that start-up funds would need to be spent within the first three years of joining UTD. Thus equipment expenditures for Year 1 are estimated at $620,000.

Other information related to program progress

(other pertinent information)

The table contains the name, academic plan, and source of support for the 17 graduate students currently enrolled in the mechanical engineering doctoral program. One student is already classified as PhD student since he already passed the PhD qualifying exam at a comparable institution. There are 16 students currently classified as PHM students. These students have applied to the PhD degree program in mechanical engineering, following the review of applicants by the graduate committee, these students have been admitted to the doctoral program but classified as PHMs until they pass the qualifying exam (within 3 semesters since first enrolled in the doctoral program).

Fall 2013 PhD Students in Mechanical Engineering				
Last Name	**First Name**	**Academic Plan**	**Class**	**Support**
Jiang	Wenwei	MECHDR	PhD	TA/RA
Fall 2013 Masters Students in Mechanical Engineering who are PHMs				
Last Name	**First Name**	**Academic Plan**	**Class**	**Support**
Pillutla	Venkata	MECHDR	Masters	None
Mortazavi	Seyedeh Ne	MECHDR	Masters	TA/RA
Du	Yingjie	MECHDR	Masters	RA
Potnuru	Akshay	MECHDR	Masters	TA
Salam	Mahmud	MECHDR	Masters	TA
Xu	Tingge	MECHDR	Masters	RA
Ai	Li	MECHDR	Masters	RA
Girard	Adam	MECHDR	Masters	EEF
Koppu	Sudheer	MECHDR	Masters	RA
Quintero	David	MECHDR	Masters	RA
Li	Yongqiang	MECHDR	Masters	RA
Wu	Lianjun	MECHDR	Masters	RA
An	Xudong	MECHDR	Masters	RA
Santoni	Christian	MECHDR	Masters	RA
Garcia	Edgardo	MECHDR	Masters	RA
Garcia Sandoval	Aldo	MECHDR	Masters	None

Publications

Faculty Publications and Other Accomplishments

The table details the discipline-related refereed papers and publications, book chapters, and books per core faculty member for the 22-month period beginning 1-JAN-2012 and ending 25-OCT-2013. Included also are patents awarded. (Note that the proposal for the Ph.D. submitted to the THECB covered the period ending 31-DEC-2011.) There are 101 discipline-related items produced in year 1; this number is noted in the the body of the report.

Choi	**Archival Journal Publications** 1. D. Kim, D. W. Lee, W. Choi, and J. B. Lee, "A Super-Lyophobic 3-D PDMS Channel as A Novel Microfluidic Platform to Manipulate Oxidized Galinstan," *J. MEMS*, Published online, DOI: 10.1109/JMEMS.2013.2278625, **2013**. 2. S. Soh, X. Chen, S. J. Vella, W. Choi, J. Gong, and G. M. Whitesides, "Layer-by-layer Films for Tunable and Rewritable Control of Contact Electrification," *Soft Matter*, 9, 10233-10238, September **2013.** 3. A. K. Kota, W. Choi, and A. Tuteja, "Superomniphobic Surfaces: Design and Durability," *MRS Bulletin* 38(5), 383-390, May **2013.** 4. S. Srinivasan, W Choi, K. C. Park, S. S. Chhatre, R. E. Cohen, and G. H. McKinley, "Drag Reduction for Viscous Laminar Flow on Spray-Coated Non-Wetting Surfaces," *Soft Matter* 9, 5691-5702, April **2013.** 5. K. Kota, G. Kwon, W. Choi, J. M. Mabry, and A. Tuteja, "Hygro-responsive Membranes: A Novel Methodology for Oil-water Emulsion Separation," *Nat. Comm.,* 3, 1025, **2012**. 6. D. Kim, P. Thissen, G. Viner, D. Lee, W. Choi, Y. J. Chabal, and J. B. Lee, "Recovery of Nonwetting Characteristics by Surface Modification of Gallium-Based Liquid Metal Droplets Using Hydrochloric Acid Vapor," *Appl. Mater. Interfaces* 5(1), 179–185, December **2012.** 7. Y. Yoo, J. B. You, W. Choi, and S. G. Im, "A stacked polymer film for robust superhydrophobic fabrics," *Polym. Chem.* v4 1664-1671, December **2012.**
	Conference Publications 1. D. Kim, D.W. Lee, W. Choi, and J.B. Lee, "A Super-lyophobic PDMS Micro-tunnel as a Novel Microfluidic Platform for Oxidized Galinstan," *The 25th IEEE MEMS,* **2012.**
Gao	**Archival Journal Publications** 1. M. Q. Liu and X.-L. Gao, "Solution of the Eshelby-Type Anti-Plane Strain Polygonal Inclusion Problem Based on a Simplified Strain Gradient Elasticity Theory," *Acta Mech.* (Published online on 01 Oct. 2013) DOI: 10.1007/s00707-013-0991-2, **2013.** 2. H. M. Ma and X.-L. Gao, "Strain Gradient Solution for a Finite-Domain Eshelby-Type Anti-Plane Strain Inclusion Problem," *Int. J. Solids Struct.*, 50, 37933804, **2013**. 3. X.-L. Gao and C. L. Mao, "Solution of the Contact Problem of a Rigid Conical Frustum Indenting a Transversely Isotropic Elastic Half-Space," *ASME J. Appl. Mech.* (in press) DOI: 10.1115/1.4025140, **2013.** 4. Y.-Y. Su and X.-L. Gao, "Analytical Model for Adhesively Bonded Composite Panel-Flange Joints Based on the Timoshenko Beam Theory," *Compos. Struct*., 107, Published online on 17 July **2013**. 5. J.-F. Wen, S.-T. Tu, X.-L. Gao and J. N. Reddy, "New Model for Creep Damage Analysis and Its Application to Creep Crack Growth Simulations," *Mater. Sci. Tech.* (in press) DOI 10.1179/1743284713Y.0000000302, **2013.** 6. X.-L. Gao and F. F. Mahmoud, "A New Bernoulli-Euler Beam Model Incorporating Microstructure and Surface Energy Effects," *Z. angew. Math. Phys.* (Published online on 20 June 2013) DOI: 10.1007/s00033-013-0343-z, **2013.**

7. X.-L. Gao, J. X. Huang and J. N. Reddy, "A Non-Classical Third-Order Shear Deformation Plate Model Based on a Modified Couple Stress Theory," *Acta Mech.* (published online on 30 May 2013) DOI: 10.1007/s00707-013-0880-8, **2013.**
8. S. Kulkarni, X.-L. Gao, S. E. Horner, J. Q. Zheng and N. V. David, "Review: Ballistic Helmets - Their Design, Materials, And Performance Against Traumatic Brain Injury," *Compos. Struct.*, 101, 313-331, **2013**.
9. J.-F. Wen, S.-T. Tu, X.-L. Gao and J. N. Reddy, "Simulations of creep crack growth in 316 stainless steel using a new creep-damage model," *Eng. Fract. Mech.*, 98, 169-184, **2013**.
10. X.-L. Gao and S. S. Zhou, "Strain Gradient Solutions of Half-Space and Half-Plane Contact Problems," *Z. Angew. Math. Phys,* 64, 1363-1386, **2013**.
11. M. Q. Liu and X.-L. Gao, "Strain Gradient Solution for the Eshelby-Type Polygonal Inclusion Problem," *Int. J. Solids Struct*, 50, 328-338, **2013.**
12. S. S. Zhou and X.-L. Gao, "Solutions of Half-Space and Half-Plane Contact Problems Based on Surface Elasticity," *Z. Angew. Math. Phys,* 64, 145-166, **2013**.
13. N. V. David, X.-L. Gao and J. Q. Zheng, "Creep of a Twaron®/Natural Rubber Composite," *Mech. Adv. Mater. Struct.*, 20, 464-477, **2013**.
14. Y.-Y. Su and X.-L. Gao, "An Analytical Study on Peeling of an Adhesively Bonded Joint Based on the Timoshenko Beam Theory," *Mech. Adv. Mater. Struct.* **20**, 454-463, **2013**.
15. X.-L. Gao and H. M. Ma, "Strain Gradient Solution for the Eshelby-type Anti-plane Strain Inclusion Problem," *Acta Mech,* 223, 1067-1080, **2012**.
16. S.S. Zhou, X-L. Gao, and G.W. Griffith, "Stress Analysis and Structural Optimization of a Three-layer Composite Cladding Tube Under Thermo-mechanical Loads," *ASME J. Eng. Mater. Tech,* 134, 031001 (12 pages), **2012**.
17. S. Gogineni, X.-L. Gao, N.V. David, and J. Q. Zheng, "Ballistic Impact of Twaron CT709® Plain Weave Fabrics," *Mech. Adv. Mater. Struct,* 19, 441-452, **2012**.
18. X.-L. Gao and M. Q. Liu, "Strain Gradient Solution for the Eshelby-type Polyhedral Inclusion Problem," *J. Mech. Phys. Solids,* 60, 261-276, **2012**.

Conference Publications

1. S. Kulkarni and X.-L. Gao, "A Transversely Isotropic Visco-Hyperelastic Constitutive Model for Soft Tissues," Presented at *the Joint Conference of the 50th Annual Technical Meeting of Society of Engineering Science and the 2013 ASME-AMD Annual Summer Meeting,* Providence, RI, July 28-31, **2013**.
2. H. M. Ma and X.-L. Gao, "Strain Gradient Elasticity-Based Method for Homogenization of Multiphase Composites," Presented at *the Joint Conference of the 50th Annual Technical Meeting of Society of Engineering Science and the 2013 ASME-AMD Annual Summer Meeting,* Providence, RI, July 28-31, **2013**.
3. M. Q. Liu and X.-L. Gao, "Micromechanics Models For Interpenetrating Phase Composites," Presented at *the 4th Canadian Conference on Nonlinear Solid Mechanics*, McGill University, Montreal, Canada, July 23-26, **2013**.
4. S. Kulkarni and X.-L. Gao, "Modeling of Mechanical Responses and Progressive Failure of Tri-Axially Woven Sic_f-Sic Composites," *Proceedings of the 13th International Conference on Fracture* (ICF13), Beijing, China, June 16-21, **2013**. (Also, orally given as a keynote presentation).
5. S. Kulkarni, X.-L. Gao, N. V. David, S. E. Horner and J. Q. Zheng, "Ballistic Helmets: Their Design, Materials, and Performance Against Traumatic Brain Injury," *Proceedings of the 2012 ASME International Mechanical Engineering Congress and Exposition*, Houston, TX, November 9-15, **2012**.
6. Z. Z. Xu and X.-L. Gao, "An Inverse Finite Element Analysis of Small Punch Tests," Presented at

	the 2012 ASME International Mechanical Engineering Congress and Exposition, Houston, TX, November 9-15, **2012**. 7. H. M. Ma and X.-L. Gao, "Eshelby's Tensor for a Three-Layer Cylindrical Inclusion Problem Based on a Simplified Strain Gradient Elasticity Theory," Presented at *the 2012 ASME International Mechanical Engineering Congress and Exposition*, Houston, TX, November 9-15, **2012**. 8. J. X. Huang and X.-L. Gao, "A Non-Classical Third-Order Shear Deformation Plate Model Based on a Modified Couple Stress Theory," Presented at *the 2012 ASME International Mechanical Engineering Congress and Exposition*, Houston, TX, November 9-15, **2012**. 9. S. S. Zhou and X.-L. Gao, "Solutions to the Generalized Cerruti's Problems with Surface Effects," Presented at *the 2012 ASME International Mechanical Engineering Congress and Exposition*, Houston, TX, November 9-15, **2012**. 10. M.Q. Liu and X.-L. Gao, "Strain Gradient Solution for the Eshelby-Type Polygonal Inclusion Problem," Presented at *the 2012 ASME International Mechanical Engineering Congress and Exposition*, Houston, TX, November 9-15, **2012**. 11. J.-F. Wen, S.-T. Tu, X.-L. Gao and J. N. Reddy, "A New Model for Creep Damage Analysis and its Application to Creep Crack Growth Simulations," *Proceedings of the 9th International Conference on Creep and Fracture at Elevated Temperatures*, London, U. K., September 25-27, **2012**. 12. X.-L. Gao and S. S. Zhou, "Strain Gradient Solutions for Half-Space Contact Problems," *Proceedings of the 23rd International Congress of Theoretical and Applied Mechanics* (ICTAM2012), Beijing, China, August 19-24, **2012**. 13. J. X. Huang and X.-L. Gao, "Vibration Analysis of Single-Layered Graphene Sheets Embedded in a Viscoelastic Medium Based on a Modified Couple Stress Theory," Presented at *the 12th Pan American Congress of Applied Mechanics* (PACAM XII), Port of Spain, Trinidad, January 2 - 6, **2012**.
	Book Chapters 1. X.-L. Gao, "Strain Gradient Solutions of Eshelby-Type Inclusion Problems," *Handbook of Micro- and Nanomechanics*, eds. S. Li and X.-L. Gao, Pan Stanford Publishing Co., Chapter 11, 395-434, April **2013**.
	Books and Special Issues 1. S. Li and X.-L. Gao, *Handbook of Micro- and Nanomechanics*, Pan Stanford Publishing Co., 1206 pages, April **2013**. 2. X.-L. Gao and S. Li, Special Issue on *Mechanics of Heterogeneous Solids and Composite Materials*, ASME Journal of Engineering Materials and Technology, 134(3), July **2012**.
Gregg	**Archival Journal Publications** 1. R. Gregg and J. Sensinger, "Towards Biomimetic Virtual Constraint Control of a Powered Prosthetic Leg," *IEEE Trans. Control Systems Technology*, 21(6), DOI: 10.1109/TCST.2012.2236840, January **2013**. 2. R. Gregg and L. Righetti, "Controlled Reduction with Unactuated Cyclic Variables: Application to 3D Bipedal Walking with Passive Yaw Rotation," *IEEE Trans. Automatic Control*, 58(10), 2679-2685, October **2013**. 3. E. Rouse, R. Gregg, L. Hargrove, and J. Sensinger, "The Difference Between Mechanical Stiffness and Quasi-Stiffness in the Context of Biomechanical Modeling," *IEEE Trans. Biomedical Engineering*, 60(2), 562-568, January **2013**. 4. R. Gregg, Y. Dhaher, A. Degani, and K. Lynch, "On the Mechanics of Functional Asymmetry in Bipedal Walking," *IEEE Trans. Biomed. Eng.*, 59(5), 1310-1318, May **2012**. 5. R. Gregg, A. Tilton, S. Candido, T. Bretl, and M. Spong, "Control and Planning of 3D Dynamic

	Walking with Asymptotically Stable Gait Primitives," *IEEE Trans. Robotics*, 28(6), 1415-1423, December **2012**.
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4. M. Amaya, J. Kim, A. Gurung, S. Kwark, and S. M. You, "Microporous Coatings to Maximize Pool Boiling Heat Transfer of Saturated R-123, FC-72, and Water," *ASME 2012 International Mechanical Engineering Congress & Exposition*, Houston, Texas, November **2012**.
5. R. King, M. Amaya, and S. M. You, "Evaporative Cooling Performance of a Brazed Microporous Coating on an Aluminum Surface," *ASME 2012 International Mechanical Engineering Congress & Exposition*, Houston, Texas, November **2012**.
6. G. S. Bindiganavale, H. Moon, S. M. You, and M. Amaya, "Digital Microfluidic Device for Hotspot Cooling in ICs using Electrowetting on Dielectric," *ASME 2012 3rd Micro/Nanoscale Heat & Mass Transfer International Conference*, Atlanta, Georgia, March **2012**.
7. M. Amaya, S. M. Kwark, A. Gurung, and S. M. You, , "Pool Boiling Heat Transfer of Borated (H_3BO_3) Water on a Nanoporous Surface," *ASME 2012 3rd Micro/Nanoscale Heat & Mass Transfer International Conference*, Atlanta, Georgia, March **2012**.

Grants

Faculty Grants

The table details the grants active or received by the core faculty (13 FTE) since 1-SEP-2012.

Name	Grant Source	Grant Subject	Dates	Total	Own Share	Comments
Choi	Office of Naval Research	Passive and Active Friction Drag Reduction of Turbulent Flows Over Super-Hydrophobic Surfaces (SHS)	2012/6-2015/5	$2,200,000.00	$250,000.00	Co-PI
Gao	U.S. Army	Ballistic Impact Induced Behind Helmet Blunt Trauma: Modeling and Simulations	08/13 – 08/16	$1,800,000.00	$1,800,000.00	PI
Gao	NSF	Collaborative Research: Damage Tolerant 3-D Periodic Interpenetrating Phase Composites with Enhanced Mechanical Performance - Design, Fabrication, Analysis and Testing	09/12 – 08/15	$400,000.00	$198,776.00	PI at UTD
Gao	UT System	STARs	09/11 – 08/14	$500,000.00	$500,000.00	PI
Gregg	National Institutes of Health	NIH Director's New Innovator Award: Phase-Based Control of Locomotion for High-Performance Prostheses and Orthoses	09/2013-08/2018	$2,295,000.00	$2,295,000.00	PI
Gregg	Burroughs Wellcome Fund	Career Award at the Scientific Interface: From Machine to Biomimetic Control in Robot-Assisted Walking	07/2012-06/2017	$500,000.00	$500,000.00	PI
Hassanipour	ACS Petroleum-NI	Enhanced Oil Recovery by Analysis and Control of Vortex Flow in Porous Media	Sept2010-Sept-2013	$50,000.00	$50,000.00	PI
Hassanipour	NSF-BRIGE	Experimental Analysis of Vortex Flow in Porous Media	Sept 2012-Sept 2014	$175,000.00	$175,000.00	PI
Hassanipour	DOE-STTR (Phase-I)	Carbon Nanotube-based Solar Water Heater	Feb 2013-Nov 2013	$150,000.00	$25,000.00	Co-PI
Leonardi	Princeton University (Office of Naval Research Subcontract)	Slippery Liquid Infused Porous Surface (SLIPS) for Turbulent Drag Reduction at High Reynolds Number	6/2012-6/2017	$3,750,000.00	$435,000.00	PI on subcontract
Leonardi	Princeton University (Office of Naval Research Subcontract)	Slippery Liquid Infused Porous Surface (SLIPS) for Turbulent Drag Reduction at High Reynolds Number: EXPANDED TASK	6/2012-6/2017	$750,000.00	$101,000.00	PI on subcontract
Leonardi	Princeton University (Office of Naval Research Subcontract)	Friction drag reduction using Superhydrophobic surface in high Reynolds number turbulent flow	2/2013-2/2018	$500,000.00	$200,000.00	PI on subcontract
Leonardi	Johns Hopkins	PIRE: USA/Europe	11/2012-	$4,302,110.00	$271,511.00	PI on

	University (National Science Foundation subcontract)	Partnership for Integrated Research and Education in Wind Energy Intermittency: From Wind Farm Turbulence to Economic Management	11/2017			subcontract
Leonardi	University of Puerto Rico (National Oceanic and Atmospheric Administration)	Advancing the Caribbean Coastal Ocean Observing System	7/2013-6/2014	$1,618,649.00	$44,500.00	Co-PI
Leonardi	National Renewable Energy Laboratory	Wind turbine modeling for wind farm computational fluid dynamics	12/2010-12/2012	$44,376.00	$44,376.00	PI
Li	Johnson Controls, Inc.	HVAC Controls Research	10/1/2012-9/30/2013	$45,000.00	$45,000.00	PI
Li	Marlow Industries, Inc.	Dynamic Simulation Modeling for Thermoelectric Devices	5/20/2013-8/23/2013	$10,000.00	$10,000.00	PI
Li	Johnson Controls, Inc.	HVAC Controls Research	10/1/2013-9/30/2014	$45,000.00	$45,000.00	PI
Li	NSF	Planning Grant: I/UCRC for Wind Energy, Science, Technology, and Research (WindSTAR)	August 2012 – July 2013	$49,000	$11,500	Co-PI at UTD
Lu	Oklahoma State University (National Institute of Health subcontract)	Development of a Biomimetic Composite Scaffold to Promote Vascular Network Growth	2011-2015	$800,000.00	$110,580.00	PI
Lu	University of Oklahoma (National Institute of Health subcontract)	Biomechanical Measurement and Modeling of Normal and Diseased Middle Ears	2011-2016	$1,000,000.00	$150,000.00	PI
Lu	University of Colorado at Boulder (Office of Naval Research Subcontract)	MURI: Soil Blast Modeling and Simulation	2011-2016	$7,200,000.00	$588,535.00	PI
Lu	National Science Foundation	Characterization and Modeling of Natural Fiber Polymer Matrix Composites for Correlating Natural Fiber/Matrix Morphology with Viscoelastic Properties	2010-2013	$350,000.00	$141,123.00	PI
Lu	National Science Foundation	Measurements of Yield Strength and local Viscoelastic Properties Using Nonparticle Embedment Methods	2009-2012	$150,000.00	$150,000.00	PI
Lu	AFOSR	Durability of High-temperature Polymer Matrix Composites	2009-2012	$512,500.00	$176,589.00	co-PI
Lu	DOE Nuclear Energy University Program	Simulations of Failure via Three Dimensional Cracking in Fuel Cladding for Advanced Nuclear Fuels	2009-2012	$878,449.00	$878,449.00	PI
Lu	OSU (NSF subcontract)	Surfactant-Templated Polyurea-Nanoencapsulated	2009-2012	$420,000.00	$74,551.00	co-PI

		Macroporous Silica Aerogel				
Lu	NSF	High-Sensitivity Ultra-Wide Sensing Range 2D Photonic Crystal Strain Sensor	2013-2016	$379,000	$121,000	Co-PI
Lu	Halliburton	Measurements of Fracture Toughness and Stress-Strain Relationship at High Strain Rates	2013-2014	$57,677	$57,677	PI
Qian	NSF	An integrated multiscale modeling and experimental approach to high cycle fatigue life prediction	2013-2016	$234,119.00	$234,119.00	PI
Qian	Ohio Department of Development	Ohio Center for Laser Shock Processing of Advanced Materials and Devices	2009-2014	$3M	$100,000.00	Co-Investigator
Qian	University of Cincinnati (NSF subcontract)	SNM: Carbon nanotube superfiber to revolutionize engineering designs	2011-2015	$1.1 M	$92,729.00	Co-PI
Qian	University of Cincinnati (NSF subcontract)	REU supplement to SNM: Carbon nanotube superfiber to revolutionize engineering designs	2012-2013	$ 15,000.00	$4,662.00	Co-PI
Qian	Department of Energy	Investigation of laser shock peening for enhancing fatigue and stress corrosion cracking resistance of nuclear energy materials	2010-2014	$1,067,019.00	$278,459.00	Co-PI
Rotea	UT Systems	STARS	2010-present	$ 500,000.00	$….500,000.00	PI
Rotea	NSF	Planning Grant: I/UCRC for Wind Energy, Science, Technology, and Research (WindSTAR)	August 2012 – July 2013	$49,000	$11,500	PI at UTD
Voit	UTD FUSION Translational Research Award	High Channel Count, Shape Memory Polymer, Carbon Nanotube Electrodes in Degradable Drug-Eluting Hydrogels as Reliable Central Nervous System Interfaces	1/1/2012 - 12/31/2012	$100,000.00	$60,000.00	PI
Voit	Plexon Inc.	Wireless Energy harvesting for Implanta	10/2/2012 - 10/1/2013	$40,000.00	$40,000.00	PI
Voit	Syzygy Memory Plastics	Shape Memory Polymer Metamaterial RFID	10/2/2012 – 10/1/2013	$40,000.00	$40,000.00	PI
You	DARPA MTO	Feasibility Study of Thin-Film Evaporation with Digital Microfluidic Coolant Delivery System for Embedded Thermal Management (EmTM)	Sep. 2011 – May 2013	$378,163.00	$378,163.00	PI
You	NSF SBIR Phase II	Two-Phase Microchannel Heat Sink with Porous Layers Lining Channel Inner Walls	Dec. 2011 – May 2013	$89,984.00	$89,984.00	PI
You	Linde AG	Optimization of Pool Boiling Heat Transfer on Linde's Oxidized/Reduced Steel Surfaces	June 2012 – May 2013	$57,296.00	$57,296.00	PI
You	Bill & Melinda Gates Foundation	High Performance Portable Evaporative Refrigeration for	Nov. 2012 – Apr. 2014	$100,000.00	$100,000.00	PI

		Vaccine Delivery				
You	ONR	Thin-Film Evaporation Cooling with Digital Microfluidic (DMF) Delivery System for Embedded Thermal Management (EmTM)	Aug. 2013 – April 2014	$67,501.00	$67,501.00	PI