

ANTONIOS KONTOSOS, Ph.D.

Associate Professor

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(April 2016)

1. Education

Ph.D.	Mechanical Engineering & Materials Science	RICE University	2007
M.S.	Mechanical Engineering & Materials Science	RICE University	2005
B.S.	Diploma in Mechanical Engineering & Aeronautics	University of Patras (Greece)	2002

2. Research and Teaching Interests

My primary research interest is in the theoretical and computational modeling of mechanical behavior of materials. To achieve this goal, I rely on defining microstructure-properties-behavior relations using multiscale mechanics methods. A primary goal of this type of research is damage identification and in particular the quantification of material state, which can then be used for prognosis and remaining useful life estimations. In this context, nondestructive testing and evaluation methods are used in fatigue and fracture investigations across length and time scales in conjunction with signal processing, probabilistic and pattern recognition approaches that could assist in reliable structural health monitoring. Such information is further used in appropriate computational modeling methods to investigate static and dynamic effects with emphasis on localization and nonlinearities. In relation to these research efforts, I am interested in teaching topics related to any aspect of solid mechanics in addition to computational methods in engineering.

3. Professional Experience

2015 –	Associate Professor, Mechanical Engineering & Mechanics Dept., Drexel Univ.
2014 – 2015	P.C. Chou Assistant Professor, Mechanical Engineering & Mechanics Dept.
2009 – 2015	Assistant Professor, Mechanical Engineering & Mechanics Dept., Drexel University
2007 – 2009	Postdoctoral Fellow, Aerospace Engineering & Engineering Mechanics, UT Austin
2002 – 2007	Research Associate, Mechanical Engineering & Materials Science, RICE University
1998 – 2002	Research Assistant, Mechanical Engineering & Aeronautics, University of Patras
2001	Summer Intern, Institute for Chem. Eng. and High Temperature Procedures, Patras
2000	Summer Intern, EC/JRC, Institute of Advanced Materials, Petten, The Netherlands

4. Awards and Honors

2015	Drexel Xi/Pi Tau Sigma section Teaching Excellence Award for Graduate Courses
2014	ASME National Student Section Advisor Award
2014	ASME Philadelphia Section Faculty Advisor Award
2014	P.C. Chou Endowed Assistant Professor in Mechanical Engineering, Drexel
2014 – 2017	Office of Naval Research, Young Investigator Award
2012	Advisor of the Year, Drexel University
2011	American Society of Nondestructive Testing, 2011 Faculty Grant Award
2007	Sigma Xi Scientific Honor Society Member
2003 – 2007	Onassis Foundation International Scholarship Award for Doctoral Studies
2003	Hellenic Professional Society of Texas Scholarship for Graduate Studies
2003 – 2007	Technical Chamber of Greece Scholarships for Academic Performance

5. Publications and Presentations

5.1 Refereed Journal Articles

{With Research at Drexel}

[Under Review]

- J36. 2016 N. Castaneda, B.J. Wisner and **A. Kontsos***, "Investigation of the Z-binder in Progressive Damage of 3D Woven Composites", Submitted to Composites Science & Technology
- J35. 2016 S. Rajaram, P.A. Vanniamparambil, F. Khan, M. Bolhassani, A. Koutras, I. Bartoli, F. Moon, A. Hamid, P. Benson Shing, J. Tyson and **A. Kontsos***, "Full Field Deformation Measurements During Seismic Loading of Masonry Buildings, Submitted to Structural Health Monitoring
- J34. 2016 M. Bolhassani, P.A. Vanniamparambil, S. Rajaram, A.A. Hamid*, A. Kontsos and I. Bartoli, "*Failure Analysis and Damage Detection of Partially Grouted Reinforced Concrete Masonry Walls by Enhancing Deformation Measurement Using DIC*", Submitted to Materials and Structures
- J33. 2016 S.Ye, S.H.H.Nourzad, A.Pradhan, **A.Kontsos** and I. Bartoli*, "Automated detection of damaged buildings after hurricane Sandy using Image Classification Techniques", Submitted to Journal of Computing in Civil Engineering
- J32. 2016 A. Ellenberg, **A. Kontsos**, F. Moon and I. Bartoli*, "*Bridge Deck Delamination Identification from Unmanned Aerial Vehicle Infrared Imagery*", Submitted to Automation in Construction

[Published]

- J31. 2016 J. A. Cuadra, K. P. Baxevanakis, M. Mazzotti I. Bartoli and **A. Kontsos***, "*Energy Dissipation via Acoustic Emission in Ductile Crack Initiation*", International Journal of Fracture (In press)
- J30. 2016 J. A. Cuadra, K. P. Baxevanakis, A. Loghin and **A. Kontsos***, "*Validation of a Cyclic Plasticity Computational Method Using Fatigue Full Field Deformation Measurements*", Fatigue and Fracture of Engineering Materials & Structures (In press)
- J29. 2016 A. Ellenberg, I. Bartoli, F. Moon and **A. Kontsos***, "*Bridge Related Damage Quantification using Aerial Vehicle Imagery*", Structural Control and Health Monitoring, DOI: 10.1002/stc.1831
- J28. 2016 S. Rajaram, J. Cuadra, R. Saralaya, I. Bartoli and **A. Kontsos***, "*In situ CTE Measurements and Damage Detection Using Optical Metrology*", Measurement Science & Technology, Vol. 27, 025202
- J27. 2015 B. J. Wisner, M. Cabal, P.A. Vanniamparambil, J. Hochhalter, W. P. Leser and **A. Kontsos***, "*In situ Microscopic Investigation to Validate Acoustic Emission Monitoring*", Experimental Mechanics, Vol. 55, pp. 1705-1715
- J26. 2015 A. Ellenberg, L. Branco, A. Krick, I. Bartoli and **A. Kontsos***, "*Use of unmanned aerial vehicle for quantitative infrastructure evaluation*", Journal of Infrastructure Systems, Vol. 21 (3), 04014054

- J25. 2015 P.A. Vanniamparambil, R. Carmi, F. Khan, J. Cuadra, I. Bartoli and **A. Kontsos***, “An active-passive acoustics approach for bond-line condition monitoring in aerospace skin stiffener panels”, *Journal of Aerospace Science and Technology*, Vol. 43, pp. 289-300
- J24. 2015 P.A. Vanniamparambil, U. Guclu, and **A. Kontsos***, “Identification of crack initiation using advanced acoustic emission analysis”, *Experimental Mechanics*, Vol. 55, pp. 837-850
- J23. 2015 A. Watters, J. Cuadra, **A. Kontsos** and G. Palmese, “Processing-Structure-Property relationships of SWNT-Epoxy composites prepared using ionic liquids”, *Composites: Part A*, Vol. 73, pp. 269-276
- J22. 2015 K. Hazeli, H. Askari, J. Cuadra, F. Streller, R.W. Carpick, H.M. Zbib and **A. Kontsos***, “Microstructure-sensitive investigation of Magnesium alloy fatigue”, *International Journal of Plasticity*, Vol. 68, pp. 55-76
- J21. 2015 K. Hazeli, J. Cuadra, F. Streller, C. Bahr, M. L. Taheri, R. W. Carpick and **A. Kontsos***, “3D Surface effects of twinning in Magnesium Alloys”, *Scripta Materialia*, Vol. 100, pp. 9-12
- J20. 2015 J. Cuadra, P.A. Vanniamparambil, D. Servansky, I. Bartoli and **A. Kontsos***, “Acoustic Emission source modeling using a data-driven approach”, *Journal of Sound and Vibration*, Vol. 341, pp. 222-236
- J19. 2015 F. Khan, M. Bolhassani, A. Hamid, **A. Kontsos** and I. Bartoli, “Modeling and experimental implementation of infrared thermography on concrete masonry structures”, *Journal of Infrared Physics & Technology*, Vol. 69, pp. 228-237
- J18. 2015 F. Khan, S. Rajaram, P.A. Vanniamparambil, M. Bolhassani, A. Hamid, **A. Kontsos** and I. Bartoli, “Multisensing NDT for damage assessment of concrete masonry walls”, *Structural Control and Health Monitoring*, Vol. 22, pp. 449-462
- J17. 2014 P.A. Vanniamparambil, M. Bolhassani, R. Carmi, F. Khan, I. Bartoli, F. L Moon, A. Hamid and **A. Kontsos***, “A data fusion approach for progressive damage quantification in reinforced concrete masonry walls”, *Smart Materials and Structures*, Vol. 23(1), 015007
- J16. 2014 K. Hazeli, A. Sadeghi, M.O. Pegguleryuz and **A. Kontsos***, “Damping and Dynamic Recovery in Magnesium Alloys Containing Strontium”, *Materials Science and Engineering A*, Vol. 589, pp. 275-279
- J15. 2013 K. Hazeli, A. Sadeghi, M.O. Pegguleryuz and **A. Kontsos***, “The effect of Strontium in Plasticity of Novel Magnesium Alloys”, *Materials Science and Engineering A*, Vol. 578, pp. 383-393
- J14. 2013 J. Cuadra, P.A. Vanniamparambil, K. Hazeli, I. Bartoli and **A. Kontsos***, “Damage Quantification in Polymer Composites using a Hybrid NDT Approach”, *Composites Science and Technology*, Vol. 83, pp. 11-21
- J13. 2013 P.A. Vanniamparambil, F. Khan, K. Hazeli, J. Cuadra, E. Schwartz, **A. Kontsos** and I. Bartoli, “Novel Optico-Acoustic NDT for Wire Breaks Detection in Cables”, *Structural Control and Health Monitoring*, Vol. 20 (11), pp. 1339-1350
- J12. 2013 K. Hazeli, J. Cuadra, P.A. Vanniamparambil and **A. Kontsos***, “In situ Identification of Twin-related Bands near Yielding in a Magnesium Alloy”, *Scripta Materialia*, Vol. 68, pp.83-86
- J11. 2012 I. Neitzel, V. Mochalin, J. Niu, J. Cuadra, **A. Kontsos**, G. Palmese, Y. Gogotsi, “Maximizing Young's modulus of aminated nanodiamond-epoxy composites measured in compression”, *Polymer*, Vol. 53, pp.5965-5971

- J10. 2012 P.A. Vanniamparambil, I. Bartoli, K. Hazeli, J. Cuadra, E. Schwartz, R. Saralaya and **A. Kontsos***, “*An integrated SHM approach for crack growth monitoring*”, Journal of Intelligent Material Systems & Structures, Vol. 23(14), pp.1563-1573
- J9. 2012 Q. Zhang, V. Mochalin, I. Neitzel, K. Hazeli, J. Niu, **A. Kontsos**, J. Zhou, P.I. Lelkes, and Y. Gogotsi, “*Mechanical properties and biomineralization of multifunctional nanodiamond-PLLA for bone tissue engineering*”, Biomaterials, Vol. 33, pp.5067-5075
- J8. 2011 **A. Kontsos***, T. Loutas, V. Kostopoulos, K. Hazeli, B. Anasori and M. Barsoum, “*Nano-crystalline Mg-MAX composites: Mechanical Behavior Characterization via Acoustic Emission Monitoring*”, Acta Materialia, Vol. 59, pp.5716-5727

{Published with research prior to joining Drexel}

- J7. 2010 **A. Kontsos**, C. M. Landis, “*Phase-field modeling of domain structure energetics and evolution in ferroelectric thin films*”, Journal of Applied Mechanics, Vol. 77, n.1, pp. 1-12
- J6. 2009 **A. Kontsos** and P.D. Spanos, “*Modeling of Nanoindentation Data and Characterization of Polymer Nanocomposites by a Multiscale Stochastic Finite Element Method*”, Journal of Computational and Theoretical Nanoscience, Vol. 6, pp.2273-2282
- J5. 2009 **A. Kontsos**, C. M. Landis, “*Computational Modeling of Domain Wall Interactions with Dislocations in Ferroelectric Crystals*”, International Journal of Solids and Structures, Vol. 46(6), pp.1491-1498
- J4. 2008 P.D. Spanos and **A. Kontsos**, “*A Multiscale Monte Carlo Finite Element Method for Determining Mechanical Properties of Polymer Nanocomposites*”, Journal of Probabilistic Engineering Mechanics, Vol. 23, pp.456-470
- J3. 2006 P.D. Spanos, **A. Kontsos**, P. Cacciola, “*Steady-State Dynamic Response of Preisach Hysteretic Systems, Journal of Vibrations and Acoustics*”, Vol. 128, pp.244-250
- J2. 2004 Y. Z. Pappas, **A. Kontsos**, T. Loutas and V. Kostopoulos, “*On the Characterization of Continuous Fibres Fractures by Quantifying Acoustic Emission and Acousto-Ultrasonic Methods*”, Journal of NDT&E International, Vol. 37(5), pp.389-401
- J1. 2003 Kostopoulos V., T.H. Loutas, **A. Kontsos**, G. Sotiriadis, Y. Z. Pappas. 2003, “*On the Identification of the Failure Mechanisms in Oxide/Oxide Composites Using Acoustic Emission*”, Journal of NDT&E International, Vol., 36(8), pp.571-580

5.2 Book Chapters and Special Issues

- S1. 2016 “*Fatigue in Materials: TMS Symposium*” Special issue in Journal of Fatigue & Fracture of Engineering Materials & Structures, Editors: A. Kontsos, A. Spear, T. Zhai and C. Muhlstein (In press)
- S2. 2013 “*Multiscale Stochastic FEM modeling of Polymer Nanocomposites*”, V. Mittal (Ed.): Modeling and Prediction of Polymer Nanocomposite Properties, Vol. 4, Wiley VCH Germany (Polymer Nano-, Micro- and Macro-composites Series)

5.3 Dissertation and Theses

- D1. 2013 “*Polymer Nanocomposites Characterization by a Stochastic Finite Elements Representation*”, Ph.D. dissertation, Rice University, Houston, Texas, Publication No. AAT 3256709, 243 pages, UMI, Ann Arbor, MI, USA

- D2. 2005 “*Deterministic and Random Analysis of Systems with Hysteresis using the Preisach Formalism*”, Masters of Science Thesis, Rice University, Houston, Texas, Publication No.: AAT 1425843, ISBN: 9780542041501, 107 pages, UMI, Ann Arbor, MI, USA

5.4 Refereed Conference Articles

{Published with research at Drexel}

- C40. 2015 S.Esola, I.Bartoli, S.E.Horner, J.Q.Zheng and **A.Kontsos***, “*Quantitative Acoustics Approach for Damage Detection in Hard Armor Protective Inserts*”, American Composites Society (ACS), Michigan State University, Michigan, September 2015
- C39. 2015 S.Rajaram, U.Guclu, P.A.Vanniamparambil, S.Esola, **A.Kontsos***, “*Remaining Useful Life Estimations using Acoustic Emissions*”, 10th International Workshop on Structural Health Monitoring, Stanford University, California, 2015
- C38. 2015 D.Christe, A. Shah, J.Bhatt, M. Rodriguez Mergenthal, L.Powell and **A.Kontsos***, “*Raising Interest in STEM Education: A research-based learning framework for improving minority participation*”, 122nd ASEE Annual Conference & Exposition, Seattle, WA, June 2015
- C37. 2015 B.Wisner, M.Cabal, P.A.Vanniamparambil, J.Hochhalter and **A.Kontsos***, “*Microstructure-Sensitive Investigation of Fracture using Acoustic Emission Coupled with Electron Microscopy*”, SAMPE 2015, Baltimore, Maryland, May 2015
- C36. 2015 D.Christe, J.Bhatt, A.Shah, L.Powell and **A.Kontsos***, “*Raising Interest in STEM Education: A research-based learning framework*”, 4th Annual IEEE Symposium on Emerging Trends in Library & Information Science, Delhi, India, January 2015
- C35. 2014 J.Cuadra, K.Hazeli, M.Cabal, and **A.Kontsos***, “*The role of multiple strain localizations in Fatigue of Magnesium alloys*”, ASME IMECE 2014, Montreal, Canada, November 2014
- C34. 2014 F.Khan, A.Ellenberg, S.Ye, A.E.Aktan, F.Moon, **A.Kontsos**, A.Pradhan and I. Bartoli, “*Multispectral Aerial Imaging for Infrastructure Evaluation*”, ASNT 2014, Charleston, South Carolina, October 2014
- C33. 2014 S. Esola, I. Bartoli, S. Horner, J.Q.Zheng and **A.Kontsos***, “*Non-destructive approach for damage detection in hard armor protective inserts*”, ACS 2014 Conference, San Diego, California, September 2014
- C32. 2014 R.Carmi, A.Bussiba, I.Alon, P.A.Vanniamparambil, J.Cuadra, U.Guclu and **A.Kontsos***, “*Acoustic Emission as a tool for monitoring fatigue damage accumulation in fiber reinforced metal laminates*”, ACS 2014 Conference, San Diego, California, September 2014
- C31. 2014 S.Rajaram, P.A.Vanniamparambil, J.Cuadra, A.Ramadurgakar, I.Bartoli and **A.Kontsos***, “*A multispectral nondestructive approach for image-based damage monitoring*”, ACS 2014 Conference, San Diego, California, September 2014
- C30. 2014 P.A.Vanniamparambil, R.Carmi, F.Khan, I.Bartoli and **A.Kontsos***, “*Identification of debonding in CFRP stiffened panels using pattern recognition*”, ACS 2014 Conference, San Diego, California, September 2014

- C29. 2014 S.Esola, I.Bartoli, S.E.Horner, J.Q.Zheng and **A.Kontsos***, “*Parametric Study Using Modal Analysis of a Bi-Material Plate With Defects*”, QNDE 2014 Conference, Boise, Idaho, July 2014
- C27. 2014 B.Cohen, S.Ye, G.Karaman, F.Khan, I.Bartoli, A.Pradhan, A.Ellenberg, F.Moon, P.Gurian, **A.Kontsos**, E.Minaie, C.Young, D.Lowdermilk and E. Aktan, “*Design and implementation of an integrated operations and performance preservation monitoring system for asset management of major bridges*”, 7th European Workshop on Structural Health Monitoring, Nantes, France, July 2014
- C26. 2014 S.Ye, S.H.H.Nourzad, A.Pradhan, I.Bartoli and **A.Kontsos**, “Automated detection of damaged areas after hurricane Sandy using Aerial color images”, in Proceedings of Computing in Civil and Building Engineering, Orlando, Florida, June 2014
- C25. 2014 A.Ellenberg, **A.Kontsos**, I.Bartoli and A.Pradhan, “Masonry crack detection application of an Unmanned Aerial Vehicle”, in Proceedings of Computing in Civil and Building Engineering, Orlando, Florida, June 2014
- C24. 2014 E.Aktan, A.Pradhan, K.Sjoblom, F.Moon, I.Bartoli, Y.Bayleyegn, B.Cohen and **A.Kontsos**, “Challenges in educating the Millennial Civil Engineers”, in Proceedings of ASCE Structures Congress, Boston, Massachusetts, April 2014
- C23. 2014 P.A. Vanniamparambil, J.Cuadra, U.Guclu, I.Bartoli and **A.Kontsos***, “*Cross-validated detection of crack initiation in aerospace materials*”, SPIE Smart Structures and Materials & Nondestructive Evaluation and Health Monitoring Conference, San Diego, California, March 2014
- C22. 2014 F.Khan, I.Bartoli, P.A. Vanniamparambil, **A.Kontsos**, M. Bolhassani, A. Hamid, “*Acoustics and temperature based NDT for damage assessment of concrete masonry system subjected to cyclic loading*”, SPIE Smart Structures and Materials & Nondestructive Evaluation and Health Monitoring Conference, San Diego, California, March 2014
- C21. 2014 J.Cuadra, P.A. Vanniamparambil, K.Hazeli, I.Bartoli and **A.Kontsos***, “*Data-fusion NDE for Progressive Damage Quantification in Composites*”, Proceedings of the Advanced Composites for Aerospace, Marine and Land Applications in TMS 2014, San Diego (CA), February 2014
- C20. 2014 K.Hazeli, J.Cuadra, P.A. Vanniamparambil, R.Carmi and **A.Kontsos***, “*Quantification of Microstructure-Properties-Behavior Relations in Magnesium Alloys Using a Hybrid Approach*”, Proceedings of the Mg 2014 symposium in TMS 2014, San Diego (CA), February 2014
- C19. 2013 R. Carmi, P.A. Vanniamparambil, J. Cuadra, K. Hazeli, U. Guclu, A. Bussiba, I. Bartoli and **A. Kontsos***, “*Acoustic Emission and Digital Image Correlation as Complementary Techniques for Laboratory and Field Research*”, World Conference in Acoustic Emission 2013, Shanghai, China, November 2013
- C18. 2013 P.A. Vanniamparambil, F. Khan, S. Rajaram, E. Schwartz, M. Bolhassani, A. Hamid, **A. Kontsos** and I. Bartoli, “*Multiple Cross Validated Sensing System for Damage monitoring in Civil Structural Components*”, 9th International Workshop on Structural Health Monitoring, Stanford Univ., September 2013
- C17. 2013 R. Carmi, P.A. Vanniamparambil, U. Guclu, J. Cuadra, I. Bartoli and **A.Kontsos***, “*Multimodal Non-destructive Evaluation Approach for Damage Quantification*”, 9th International Workshop on Structural Health Monitoring, Stanford Univ., September 2013

- C16. 2013 F. Khan, P.A. Vanniamparambil, R. Carmi, A. Kontsos and I. Bartoli, "*Integrated Health Monitoring System for Damage Detection in Civil Structural Components*", ICOSAR 2013, New York, NY, June 2013
- C15. 2013 P.A. Vanniamparambil, R. Carmi, F. Khan, I. Bartoli and A. Kontsos*, "*Novel Optico-Acoustic Sensing System for Cross-Validated Structural Health Monitoring*", ICOSAR 2013, New York, NY, June 2013
- C14. 2013 P.A. Vanniamparambil, F. Khan, E. Schwartz, A. Kontsos, I. Bartoli, M. Bolhassani and A. Hamid "*Using DIC to Measure Deformation Fields of Concrete Masonry Test Specimens*", 12th Canadian Masonry Symposium, Vancouver, Canada, June 2013
- C13. 2013 E. Schwartz, R. Saralaya, J. Cuadra, K. Hazeli, P.A. Vanniamparambil, R. Carmi, I. Bartoli and A. Kontsos*, "*The Use of Digital Image Correlation for Non-destructive and Multi-scale Damage Quantification*", SPIE Smart Structures and Materials & Nondestructive Evaluation and Health Monitoring Conference, San Diego, California, March 2013
- C12. 2013 P.A. Vanniamparambil, F. Khan, R. Carmi, S. Rajaram, E. Schwartz, A. Kontsos and I. Bartoli, "*Integrated Non-destructive Testing Approach for Damage Detection and Quantification in Structural Components*", SPIE Smart Structures and Materials & Nondestructive Evaluation and Health Monitoring Conference, San Diego, California, March 2013
- C11. 2012 K. Hazeli, A. Sadeghi, M.O.Pekguleryuz and A. Kontsos*, "*Microstructure and Mechanical Behavior of Novel Extruded Magnesium Alloys*". 9th International Conference on Magnesium Alloys and their Applications, Vancouver, Canada, July 2012
- C10. 2012 I. Bartoli, A. Emin Aktan, **A. Kontsos**, P.A. Vanniamparambil, K. Hazeli, "*An Integrated Health Monitoring Approach for Damage Quantification in Critical Structural Components*". EACS 5th European Conference on Structural Control, Genoa, Italy, June 2012
- C9. 2012 H. Gong, Y. Kim, Q. Zhang, K. Hazeli, A. Kontsos, P. I. Leikes, D. Yao and J.G. Zhou, "*Micro Characterization of Mg and Mg Alloy for Biodegradable Orthopedic Implants Application*". ASME International Manufacturing Science and Engineering Conference, Notre Dame, Indiana, June 2012
- C8. 2012 P.A. Vanniamparambil, I. Bartoli, K. Hazeli, R. Saralaya, J. Cuadra, E. Schwartz and **A. Kontsos***, "*In-situ Acousto-ultrasonic Monitoring of crack propagation in Aluminum Alloy*". SPIE Smart Structures and Materials & Nondestructive Evaluation and Health Monitoring Conference, San Diego, California, March 2012
- C7. 2010 **A. Kontsos***, K. Hazeli, B. Anasori, T. Loutas, G. Sotiriadis, V. Kostopoulos and M. W. Barsoum, "*Grain Size Effect on the Fatigue Response of Nanocrystalline Magnesium Composites Reinforced with MAX Phases*". In: 9th HSTAM International Congress on Mechanics Limassol, Cyprus, 12 – 14 July, 2010

{Published with research prior to joining Drexel}

- C6. 2009 **A. Kontsos**, Wenyan Li and C. M. Landis, "*Computational Phase-field Modeling of Defect Interactions in Ferroelectrics*", SPIE Smart Structures and Materials & Nondestructive Evaluation and Health Monitoring Conference, San Diego, California, March 2009
- C5. 2007 **A. Kontsos** and P.D. Spanos, "*A Monte Carlo Finite Element Method for Determining the Young's Modulus of Polymer Nanocomposites Using Nanoindentation Data*", ASME International Design Engineering Technical Conferences & Computers and Information

in Engineering Conference, 1st International Conference on Micro- and Nanosystems (MNS), Las Vegas, Nevada, September 2007, DETC2007-34801

- C4. 2006 **A. Kontsos**, M. Esteva, A. Tamer and P.D. Spanos, “*Polymer Nanocomposites Characterization by a Stochastic Multiscale Approach*”, Proceedings of the 5th International Conference on Computational Stochastic Mechanics, Rhodes, Greece, June 2006 - Computational Stochastic Mechanics (CSM-5), G. Deodatis & P.D. Spanos eds., Millpress, Rotterdam Netherlands (2007), ISBN: 978-90-5966-052-6, pp. 393-400
- C3. 2005 P.D. Spanos, **A. Kontsos** and P. Cacciola, “*Steady-State Dynamic Response of Preisach Hysteretic Systems*”, ASME International Design Engineering Technical Conferences and Computers and Information in Engineering Conference - DETC2005, v 1 B: 20th Biennial Conf. on Mechanical Vibration and Noise, Long Beach, CA, USA, September 2005, DETC2005-85552, pp. 1457-1466
- C2. 2003 Y. Z. Pappas, **A. Kontsos**, T. Loutas and V. Kostopoulos, “*On the characterization of acoustic emission activity generated by continuous fibres breakage*”, Proceedings of the 3rd International Conference on Emerging Technologies in NDT, Thessaloniki, Greece, May 2003 - Emerging Technologies in Non Destructive Testing, Van Hemelrijck, Anastasopoulos and Melanitis (eds), 2004, Swets & Zeitlinger B.V., Lisse, The Netherlands, ISBN: 978-9058096456, pp. 143-150
- C1. 2002 T. Loutas, **A. Kontsos**, Y. Z. Pappas and V. Kostopoulos. 2002, “*On the Identification of the Damage Mechanisms in Oxide/Oxide Composites Using Acoustic Emission*”, Proceedings of the 25th European Conference on Acoustic Emission Testing, EWGAE 2002, Prague, Czech Republic, September 2002, Editor: P. Mazal, ISBN 80-214-2174-6

6. Patents

1. *Integration of Digital Image Correlation with Acoustic Emissions (PCT US13/37252)*, Antonios Kontsos, Ivan Bartoli and Prashanth Abraham Vanniamparambil, October 2014

7. Invited Talk/Seminars

35. 2016 *Computational Modeling of Microstructure-dependent Strain Localizations in Magnesium Alloys*, Small Scale Plasticity and Microstructural Evolution Symposium, Plasticity'16 conference, Kona (HI), January 2016
34. 2016 *Microstructure-Sensitive Fatigue via Multiscale Experimental Mechanics & Multimodal Characterization*, Symposium in honor of Huseyin Sehitoglu, Plasticity'16 conference, Kona (HI), January 2016
33. 2015 *Understanding the Multiscale Mechanical Behavior of Knitted Textile Architectures*, Department of Fiber Science and Apparel Design Seminar, Cornell University, Ithaca (NY), November 2016
32. 2015 *RVE Size Definition for Knitted Textile Architectures*, Presentation in Society of Engineering Science (SES) Meeting 2015, College Station (TX), October 2015
31. 2015 *Multiscale Mechanics Coupled with Multimodal NDE for Damage Diagnostics & Prognostics*, Structural Engineering Departmental Seminar, San Diego (CA), May 2015
30. 2015 *The Challenges of Acoustic Emission in Diagnostics & Prognostics*, AEWG-57 Meeting, University of Illinois Chicago, May 2015
29. 2015 *Microstructure-Sensitive Fatigue using Multimodal Nondestructive Evaluation*, Johns Hopkins University, Civil Engineering Graduate Seminar, Baltimore (MD), April 2015
28. 2015 *Monitoring and Quantification of Twinning in Magnesium Alloys using Multiscale Strain Measurements*, International Journal of Plasticity Conference, Montego Bay, Jamaica, January 2015

27. 2014 *Microstructure-sensitive Mechanical Behavior Characterization of Magnesium Alloys*, AmeriMech Symposium on Material Property Identification, The University of Texas at Austin, Austin (TX), December 2014
26. 2014 *Identification of Fatigue Precursors via Quantitative Nondestructive Evaluation*, 51st Society of Engineering Science (SES) Technical Meeting, Purdue University, West Lafayette (IN), October 2014
25. 2014 *Identification of Fatigue Precursors in Magnesium Alloys*, Department of Mechanical, Engineering, Departmental Seminar, Texas A&M, College Station (TX), June 2014
24. 2014 *Microstructure-sensitive Plasticity and Fatigue of Magnesium Alloys*, NASA Langley Research Center, Hampton (VA), May 2014.
23. 2014 *Microstructure-sensitive Fatigue via Multimodal Nondestructive Evaluation*, Georgia Tech, The George W. Woodruff School of Mechanical Engineering, Departmental Seminar, Atlanta (GA), May 2014.
22. 2014 *Microstructure-sensitive Fatigue Using a Quantitative NDE Approach*, TMS 2014, San Diego (CA), February 2014.
21. 2013 *Multimodal Non-destructive Evaluation Approach for Damage Quantification*, 9th International Workshop on Structural Health Monitoring, Stanford Univ., September 2013
20. 2013 *In situ Fatigue Monitoring in Mg Alloys: A quantitative NDE approach*, TMS 2013, San Antonio (TX), March 2013.
19. 2013 *Quantitative Nondestructive Evaluation: An Applied Mechanics Perspective*, Rensselaer Polytechnic Institute, Department of Mechanical, Aerospace and Nuclear Engineering, Departmental Seminar, Troy (NY), February 2013.
18. 2012 *In situ and scale-bridging damage quantification using novel non-destructive testing approaches*, ASME IMECE 2012, Houston (TX), November 2012
17. 2012 *Use of Digital Image Correlation in Nondestructive Testing, Mechanical Behavior Characterization and Data-driven Modeling*, Trillion Optical Metrology Conference, September 2012
16. 2012 *Identification of microstructure-properties-behavior relations in advanced materials using novel nondestructive testing approaches*, Purdue University, School of Aeronautics and Astronautics, Departmental Seminar, West Lafayette (IN), September 2012
15. 2012 *A novel framework for scale-bridging characterization of materials mechanical behavior using Acoustic Emission*, AEWG 54, Princeton (NJ), May 2012
14. 2012 *Scale-bridging fatigue monitoring in Magnesium Alloys*, TMS 2012, Orlando (FL), March 2012
13. 2012 *Deformation and damage monitoring in advanced materials using novel nondestructive testing approaches*, Mechanical Engineering Dept. seminar, Villanova University, Philadelphia (PA), February 2012
12. 2011 *On the identification of deformation and damage mechanisms in advanced composites using integrated nondestructive testing & evaluation approaches*, McMAT 2011, Chicago (IL), May 2011
11. 2011 *Microstructure-properties relations in advanced materials using modern NDT&E approaches*, ASNT AEWG Meeting, Denver (CO), May 2011
10. 2011 *Monitoring and characterization of the fatigue response of nanocrystalline Mg composites reinforced with Ti₂AlC*, TMS 2011, San Diego (CA), March 2011
9. 2010 *Multiscale characterization of mechanical properties and quantification of property-structure relations in nanocrystalline Mg-matrix composites*, 2010 ASME IMECE, Vancouver, Canada, November 2010
8. 2010 *Grain Size Effect on the Fatigue Response of Nanocrystalline Magnesium Composites Reinforced with MAX Phases*, 9th HSTAM International Congress on Mechanics, Limassol Cyprus, July 2010

7. 2008 *Theoretical and Computational Modeling of Domain Evolution in Ferroelectric Crystals with Dislocations*, University of Texas at Austin, Austin (TX), May 2009
6. 2009 *Modeling of Advanced Materials: A Broad Perspective*, Department of Mechanical Engineering & Mechanics, Drexel University, Philadelphia (PA), May 2009
5. 2009 *Theoretical and Computational Modeling of Advanced Materials*, Department of Mechanical Engineering, Texas Tech University, Lubbock (TX), May 2009
4. 2009 *Modeling of Advanced Materials: A Broad Perspective*, Department of Aerospace Engineering, Texas A&M University, College Station (TX), April 2009
3. 2009 *Theoretical and Computational Modeling of Ferroelectric Materials*, Engineering Science & Mechanics Department, Virginia Tech, Blacksburg (VA), April 2009
2. 2007 *Polymer Nanocomposites Characterization by a Stochastic Finite Elements Representation*, Mechanical Engineering & Aeronautics Department, University of Patras, Greece, September 2007
1. 2007 *Modeling of Mechanical Properties of Polymer Nanocomposites Using a Multiscale Stochastic Finite Element Method*, Institute of Structural Analysis, TU Dresden, Dresden, Germany, March 2007

8. Teaching Activities

8.1 Courses developed and taught at Drexel University

ENG 101 - 103: Freshman Design I, II and III (3 courses)	2015 –
MEM 202: Engineering Mechanics: Statics	2013 – 2015
MEM 331: Experimental Mechanics	2016 –
MEM 423: Mechanics of Vibrations	2016 –
MEM 591 - 593: Applied Engineering Analysis I, II and III (3 courses)	2009 – 2015
MEM 678: Nondestructive Evaluation Methods	2014 – present
MEM 800: Infrastructure Condition Evaluation via NDT	2011 – 2013

8.2 Independent study courses

MEM 699: NDT&E of Materials and Structures	2010
MEM 699: Advanced Computational Mechanics	2011, 2016
MEM 699: Damage Detection & Prognosis	2011, 2014, 2016
MEM 699: Numerical Methods in Biomechanics	2014

8.3 Education & Outreach Activities

Founder and Director, RISE @ Drexel	2013 –
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9. Service Activities

9.1 Service to the Department

Member of Structures & Mechanics Committee	2009 –
Member of MATH & Simulation Content Committee	2010 – 2011
Member of Computational Infrastructure Committee	2010 – 2011
Member of Software Committee	2010 – 2011
Member of Academic Support Committee	2011 – 2013
Member of Faculty Search Committee	2012 – 2013
Member of Undergraduate Curriculum Committee	2016 –
Chair of Student Affairs Committee	2013 –
Member of Laboratory Committee	2013 – 2015

ASME Drexel Section Faculty Advisor	2010 –
Pi Tau Sigma Drexel Section Faculty Advisor	2010 – 2014
9.2 Service to the College of Engineering	
Dean’s Junior Faculty Advisory Committee	2011 – 2012
Faculty Committees for PhD Candidacy, Proposals and Defenses	2009 –
Committee on CoE Research Operating Plan	2014 –
Core Curriculum Implementation Group	2015 –
9.3 Service to the University	
Research Day Judge	2011 –
Provost’s NSF Bridge to Doctorate Advisory Committee	2013 –
Steibright Faculty Advisory Committee	2013 –
President Fry’s Steering Committee on Learning Space Project	2014 – 2015
9.4 Service to the Community	
Community College of Philadelphia, Engineering Sc.&Tech Adv. Com.	2010 –
ASME Philadelphia Section Executive Committee member	2010 –
Pi Tau Sigma National Office Vice-President at Large	2013 –
ASME Applied Mechanics Division Symposium Organizer	2011
TMS Mechanical Behavior of Materials Committee	2012 –
Pi Tau Sigma/ASME Joint Awards Committee Chair	2014 –

10. Professional Activities

- **Conference:** (i) **Organizer:** *Precursor to Damage State Quantification in Materials* in SES 2014 (Purdue University, October 2014), *Nondestructive Evaluation & Structural Health Monitoring for Composites* in ACS 2014 (UCSD, San Diego, September 2014), *Innovations in Structural Health Monitoring*, ICOSSAR 2013 (New York, NY, June 2013), *Fatigue in Materials: Microstructure-Driven Modeling and In-Situ Fatigue Characterization*, TMS 2015 (Orlando, FL, March 2015), TMS 2014 (San Diego CA, February 2014), TMS 2013 (San Antonio TX, March 2013), *Behavior of Composite Materials and Structures: Experimental Testing, Sensing and Computational Modeling*, McMAT 2011 (Chicago IL, June 2011), (ii) **Chairman:** *Materials Characterization using Acoustic Emission* (AEWG 54, Princeton NJ, May 2012), *Fatigue and Corrosion Damage in Metallic Materials: Fundamentals, Modeling and Prevention: Fatigue Property-Microstructure Relationships and Crack Growth*, TMS 2012 (Orlando FL, March 2012) and TMS 2011 (San Diego CA, March 2011), *Nanomechanics*, HSTAM 2010, (Limassol Cyprus, July 2010), *Phase Field Modeling of Ferroelectrics Session*, SPIE Smart Structures/NDE 2010 (San Diego CA, March 2010).
- **Editor** for the Journal of Multifunctional Composites.
- **Reviewer** for the following International Journals: Archives of Applied Mechanics, Composites Part B, Computer, Materials & Continua, Computational Materials Science, Fatigue and Fracture of Engineering Materials & Structures, International Journal of Non-Linear Mechanics, Journal of Applied Mechanics, Journal of Composite Materials, Journal of Intelligent Material Systems and Structures, Journal of Nanomaterials, Journal of Nanoparticle Research, Journal of Zhejiang University-Science A, Journal of Pressure Vessel Technology, Mechanical Systems and Signal Processing, Metallurgical and Materials Transaction A, Probabilistic Engineering Mechanics Journal.
- **Member** of the: American Society of Mechanical Engineers (ASME), American Society for Nondestructive Testing (ASNT), The Minerals, Metals & Materials Society (TMS), Sigma Xi Society, Rice University Engineering Alumni, Onassis Foundation Scholarship Recipient Association, Greek Society

of Computational Mechanics. Vice-Chair for the ASME Philadelphia Section and Vice-President at Large of the National Office of Pi Tau Sigma (Mechanical Engineering Honors Society).

- **Advisor:** Engineering & Science Advisory Committee at Community College of Philadelphia, ASME, Pi Tau Sigma and Drexel Soccer Student Chapters at Drexel University.

11. PostDoc & Student Supervision

11.1 Post-doctoral Fellow Supervision

Dr. Konstantinos Baxevanakis

10/2014 - Present

11.2 Students and Dissertations Supervised to Completion by A. Kotsos (Primary or co-Advisor)

Nestor Castaneda, MS, MEM, Drexel University	2016
<i>Investigation of the Z-binder Role in Progressive Damage of 3D Woven Composites</i>	
Md. Fuad Khan, PhD, Civil Architectural and Environmental Engineering, Drexel	2015
<i>Multi-Sensing NDT Approaches for Inspection of Structural Components</i>	
Jefferson Cuadra, PhD, Mechanical Engineering & Mechanics, Drexel University	2015
<i>A Computational Modeling Approach of Fracture-Induced Acoustic Emission</i>	
Mike Cabal, MS, MEM, Drexel University	2015
<i>Microstructurally-driven Investigation of Strain Localization in Wrought Magnesium Alloys</i>	
Mohamed Shamma, PhD, Materials Science & Engineering (MSE), Drexel University	2015
<i>On Buckling, King Boundaries and Kinking Nonlinear Elastic Solids</i>	
Prashanth Abraham Vanniamparambil, PhD, MEM, Drexel University	2014
<i>Cross-validated Nondestructive Evaluation using Acoustic Emission</i>	
Kavan Hazeli, PhD, Mechanical Engineering & Mechanics (MEM), Drexel University	2014
<i>Microstructure-Sensitive Plasticity and Fatigue of Magnesium Alloys</i>	
Satish Rajaram, MS, MEM, Drexel University	2013
<i>Use of Infrared Thermography in a Data Fusion Framework for Thermal and Damage Property Quantification</i>	
Jefferson Cuadra, MS, MEM, Drexel University (NSF Bridge to Doctorate & GRFP Fellow)	2012
<i>Damage Quantification in Fiber Reinforced Polymer Composites Using a Hybrid Non-destructive Testing Approach</i>	
Raghavendra Saralaya, MS, MEM, Drexel University	2012
<i>In-Situ Grain Scale Strain Measurements Using Digital Image Correlation</i>	
Daniel Servansky, MS, MEM, Drexel University	2012
<i>A Novel Approach to Data-drive Modeling of Damage-Induced Elastic Wave Propagation</i>	

11.3 Ongoing PhD Students supervised

Shane Esola	exp. 2016
Andrew Ellenberg	exp. 2017
Satish Rajaram	exp. 2017
Brian Wisner	exp. 2017
Rami Carmi (in Israel)	exp. 2018
Ian Baskt	exp. 2018
Dani Liu	exp. 2018
Sara Schlenker	exp. 2018
Ryan Whitmore	exp. 2018

11.4 Ongoing Masters Students

Daniel Christe	exp. 2017
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Andy Mo	exp. 2017
11.5 Ongoing Undergraduate Students	
Krzysztof Mazur	exp. 2019
11.6 PhD Dissertation Defenses Committees	
Darin Tallman, PhD, Materials Science & Engineering (MSE), Drexel University <i>On the Potential of MAX Phases for Nuclear Applications</i>	2015
Babak Anasori, PhD, Materials Science & Engineering (MSE), Drexel University <i>Fabrication and Mechanical Properties of Magnesium Alloy Composites Reinforced with TiC and Ti₂AlC Particles</i>	2014
Ying Teng, PhD, Electrical & Computer Engineering (ECE), Drexel University <i>Low Power Resonant Rotary Global Clock Distribution Network Design</i>	2014
Haibo Gong, PhD, Mechanical Engineering & Mechanics (MEM), Drexel University <i>Innovative Design, Manufacturing and Characterization of Biodegradable Metals for Surgical Implants</i>	2014
Jephthe Augustin, PhD, MEM, Drexel University <i>Engineering a Bioactive Interference Screw for Accelerated Rehabilitation in ACL Reconstruction</i>	2013
T. William Mather, PhD, MEM, Drexel University <i>An Ensemble Approach Towards Dynamics Task Assignment for Many Robot Systems</i>	2013
Jeff S. Weidner, PhD, Civil, Architectural and Environmental Engineering (CAEE), Drexel University <i>Structural Identification of a Complex Structure using both Conventional and Multiple Model Approaches</i>	2012
John B. Prader, PhD, CAEE, Drexel University <i>Rapid Impact Modal Testing for Bridge Flexibility: Towards Objective Evaluation Of Infrastructures</i>	2012
Chris Geisler, PhD, MEM, Drexel University <i>A Thermosensitive and Photocrosslinkable Composite Polymer Study for 3-D Soft Tissue Scaffold Printing</i>	2011
Tony Fast, PhD, MSE, Drexel University <i>Developing Higher-Order Materials Knowledge Systems</i>	2011
Stephen Niezgoda, PhD, MSE, Drexel University <i>Stochastic Representation of Microstructure via Higher-Order Statistics</i>	2011
11.7 Undergraduate student advising	
Senior design team: Venkat Iyer, John O'Driscoll, Mary Potvin, Hashir Ahman (Mechanical and Electrical engineering) <i>Novel Class-room Mechanical Testing Device Using Digital Image Correlation</i>	2011 – 2012
Senior design team: Lara Branco, Andrew Ellenberg, Alison Krick (Mechanical Engineering) <i>Unmanned Aerial Vehicle for Infrastructure Evaluation</i>	2012 – 2013
Senior design team: Utku Guclu (Materials Engineering) <i>Monitoring and Identification of Progressive Damage in Fiber Metal Laminates using NDT (Non Destructive Testing)</i>	2012 – 2013
Senior design team: Sadaf Bahaza, Jeremy Monteiro, Harold Montilla, Aditi Ramadurgakar (Mechanical & Materials Engineering) <i>Multispectral & Multiscale Optical Methods for Structural Health Monitoring</i>	2013 – 2014
Freshman design team: Jacob Zeitzew, Eric Hegnes	2013 – 2014

(Mechanical Engineering)
*Remote Structural Analysis Utilizing Optical Heads Up Displays and
Unmanned Aerial Systems*

Senior design team: J. Allen, L. Castro, H. Donovan, J. Swearer, M. Tabbut 2014 – 2015
(Mechanical Engineering)

Novel Unmanned Aerial System for Structural Engineering Applications

Freshman design team: R. Baran, K. Mazur, N. Deleon, J. Boatwright, J. Boyal 2014 – 2015
(Mechanical Engineering)

Manufacturing & Characterization of Damage in Hard Armor Protective Insert Simulants

12. Collaborators in last 48 months

Advisors: Chad Landis (*The University of Texas at Austin*), Pol D. Spanos (*Rice University*)

Collaborators: Barsoum, Michel (*Drexel Univ.*), Bartoli, Ivan (*Drexel Univ.*), Breen, David (*Drexel Univ.*), Carpick, Robert (*University of Pennsylvania*), Dion, Genevieve (*Drexel Univ.*) Gogotsi, Yuri (*Drexel Univ.*), Hochhalter, Jacob (*NASA Langley*), Palmese, Giuseppe (*Drexel Univ.*), Pekguleryuz, Mihriban (*McGill University*), Taheri, Mitra (*Drexel Univ.*), Zbib, Hussein (*Washington State Univ.*)