University of Colorado Boulder

MAHMOUD I. HUSSEIN

Alvah and Harriet Hovlid Professor

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EDUCATION

1997 – 03	UNIVERSITY OF MICHIGAN-ANN ARBOR, USA **PhD** Mechanical Engineering, 2004 **MS** Mathematics, 2002 **MSE** Applied Mechanics, 1999
1994 – 95	IMPERIAL COLLEGE, UNIVERSITY OF LONDON, UK **MSc** Mechanical Engineering, 1995 **DIC**[1] Mechanical Engineering, 1995
1989 – 94	THE AMERICAN UNIVERSITY IN CAIRO, EGYPT **BS** Major: Mechanical Engineering, Minor: Computer Science, 1994

ACADEMIC POSITIONS

June '19 – present	UNIVERSITY OF COLORADO BOULDER, USA **Full Professor (with Tenure), Smead Department of Aerospace Engineering Sciences**
May '19 – present	UNIVERSITY OF COLORADO BOULDER, USA **Courtesy Faculty, Department of Physics**
Nov. '15 – present	UNIVERSITY OF COLORADO BOULDER, USA **Affiliate Faculty, Department of Applied Mathematics**
Aug. '14 – May '19	UNIVERSITY OF COLORADO BOULDER, USA **Associate Professor (with Tenure), Smead Department of Aerospace Engineering Sciences**
Aug. '07 – July '14	UNIVERSITY OF COLORADO BOULDER, USA **Assistant Professor, Department of Aerospace Engineering Sciences**
Aug. '05 – July '07	UNIVERSITY OF CAMBRIDGE, UK **Post-Doctoral Research Associate, Department of Engineering**
Jan. '04 – July '05	UNIVERSITY OF MICHIGAN-ANN ARBOR, USA **Post-Doctoral Researcher, Department of Mechanical Engineering**

ADMINSTRATIVE POSITIONS

Aug. '17 – present	**Director, Pre-Engineering Program, College of Engineering and Applied Science, University of Colorado Boulder**
Mar. '17 – present	**Vice President, International Phononics Society (IPS)**

NAMES OF MS, PHD AND POSTDOCTORAL ADVISORS

Postdoctoral Advisors:	Vikram S. Deshpande (Univ. of Cambridge, 2005-2007); Gregory M. Hulbert (Univ. of Michigan, 2004-2005)
PhD Co-Advisors:	Gregory M. Hulbert and Richard A. Scott (Univ. of Michigan, 1999-2003)
MS Advisor:	Mehmet Imregun (Imperial Collage, 1994-1995)

PROFESSIONAL SOCIETY MEMBERSHIP

ASME (Member since 1994; Fellow since 2018), APS (member since 2009)

[1] DIC: Diploma of the Imperial College

RESEARCH INTERESTS

Theoretical, computational and experimental dynamics of materials and structures; vibrations and wave propagation, thermal transport in crystals, fluid-structure interaction; phononics including phononic crystals and acoustic/elastic metamaterials; dispersive, resonant, dissipative and nonlinear dynamics; periodic systems, disordered systems; fast band structure calculations, multiscale methods, design and optimization.

HONORS

AWARDS

- Alvah and Harriet Hovlid Professorship, Dept. of Aerospace Eng. Sciences, Univ. of Colorado Boulder (2018-present)
- Fellow of the American Society of Mechanical Engineers (2018)
- Provost's Faculty Achievement Award for Tenured Faculty, University of Colorado Boulder (2017)
- Invited Participant, National Academy of Engineering 2016 U.S. Frontiers of Engineering Symposium (2016)
- Lloyd Hamilton Donnell Applied Mechanics Reviews Paper Award (2016) [with M.J. Leamy and M. Ruzzene]
- H. Joseph Smead Faculty Fellow, Dept. of Aerospace Eng. Sciences, Univ. of Colorado Boulder (2014-2018)
- Outstanding Junior Faculty Award, Dept. of Aerospace Engineering Sciences, Univ. of Colorado Boulder (2014)
- NSF CAREER Award (2013)
- DARPA Young Faculty Award (2011)
- Dean's Faculty Fellowship, University of Colorado Boulder (2010)
- Robert J. Melosh Medal for Best Student Paper on Finite Element Analysis (2005)
- 1st Prize, Student Paper Competition, Society of Engineering Science (2003)
- Distinguished Achievement Award, College of Engineering, University of Michigan-Ann Arbor (2002)
  - *Awarded annually to one graduate student from the Department of Mechanical Engineering (among an enrollment of approximately 400).*
- Michigan Teaching Fellow, University of Michigan-Ann Arbor (2002)
  - *Awarded upon completion of a month-long Rackham-CRLT Seminar on College Teaching: Preparing Future Faculty.*
- Distinguished Leadership Award, College of Engineering, University of Michigan-Ann Arbor (2001)
  - *Awarded annually to approximately 20 student leaders from across the college's eleven academic departments.*
- Outstanding Graduate Student Instructor Award, Rackham Graduate School, University of Michigan-Ann Arbor (2001)
  - *Awarded annually to up to 20 graduate student instructors from across the university.*
- Outstanding Student Instructor Award, College of Engineering, University of Michigan-Ann Arbor (2000, 2001)
  - *Awarded annually to a total of 5 student instructors from across the college's eleven academic departments.*
- Graduation *with Distinction* in MSc Program in Mechanical Engineering, Imperial College, London (1995)
- Dean's Honor List, The American University in Cairo (1991-1994)
- Academic Merit Scholarship (in form of 75% tuition waiver), The American University in Cairo (1989-1994)

STUDENTS AWARDS (Fellowships Listed Below)

- Dimitri Krattiger – 5th Year PhD – Finalist, Robert J. Melosh Medal for Best Student Paper in Finite Element Analysis, Duke University – Spring 2017
- Dimitri Krattiger – 5th Year PhD – Graduate Research Award, Department of Aerospace Engineering Sciences, CU-Boulder ($1500) – Spring 2017
- Romik Khajehtourian – 5th Year PhD – John. A. Vise Award, Department of Aerospace Engineering Sciences, CU-Boulder (Plaque, $5000) – Spring 2017
- Romik Khajehtourian – 4th Year PhD – Outstanding Teaching Assistant Award, Department of Aerospace Engineering Sciences, CU-Boulder ($1000) – Spring 2016

- Michael Frazier – 5th Year PhD – 2nd Place, Phononics 2015 EPS Best Student Poster Presentation Award, Phononics 2015: Third International Conference on Phononic Crystals/Metamaterials, Phonon Transport and Phonon Coupling, Paris, France, May 31 – June 5, 2015. Paper title: "Dynamic effective properties of damped periodic materials" by M.J. Frazier and M.I. Hussein.
- Osama R. Bilal – 5th Year PhD – Graduate Student Service Award, Department of Aerospace Engineering Sciences, CU-Boulder (Plaque, $1000) – Spring 2015
- Michael Frazier – 3rd Year PhD – John. A. Vise Award, Department of Aerospace Engineering Sciences, CU-Boulder (Plaque, $6000) – Spring 2013
- Bruce Davis – 3rd Year PhD – AIAA Foundation Numerical Analysis of Nanoscale Materials Graduate Award (Plaque, $5000) – Fall 2011
- Bruce Davis – 3rd Year PhD – 1st Place, Phononics 2011 NSF Best Student Oral Presentation Award, Phononics 2011: First International Conference on Phononic Crystals, Metamaterials and Optomechanics, Santa Fe, New Mexico, May 29 – June 2, 2011. Paper title: "Reduction of thermal conductivity in silicon slabs by unit cell nanostructuring" by B.L. Davis and M.I. Hussein.
- Andrew S. Tomchek – 2nd Year MS – 2nd Place, Phononics 2011 NSF Best Student Poster Presentation Award, Phononics 2011: First International Conference on Phononic Crystals, Metamaterials and Optomechanics, Santa Fe, New Mexico, May 29 – June 2, 2011. Paper title: "Characterization of band gap resonances in finite periodic structures" by A. S. Tomchek, E.A. Flores, L. Liu, B.L. Davis and M.I. Hussein.
- Bruce Davis – 2nd Year PhD – 2nd Prize, Student Paper Competition, 22nd Biennial Conference on Mechanical Vibration and Noise, ASME 2009 International Design Engineering Technical Conferences (IDETC), San Diego, August 30 – September 2, 2009. Paper title: **"**A three-dimensional lumped parameter model of nanoscale phononic crystals" by B.L. Davis and M.I. Hussein.
- Bruce Davis – 1st Year PhD – John. A. Vise Award, Department of Aerospace Engineering Sciences, CU-Boulder (Plaque, $6000) – Spring 2009
- Edgar Flores – Sophomore – Undergraduate Research Award, Sigma Xi, CU-Boulder (Certificate of Award, a paid 1st year Sigma Xi student membership and a graduation ceremony cord) – Spring 2009

PUBLICATIONS

(Student Names in Red)

Citation Information:
Google Scholar: https://scholar.google.com/citations?user=e2MljRQAAAAJ&hl=en

BOOKS

1. Phani, A.S. and **Hussein, M.I.**, (Eds.), *Dynamics of Lattice Materials*, Wiley, New Jersey, 2017.

BOOK CHAPTERS

1. **Hussein, M.I.** and Honarvar, H., "Chapter 17-1: Resonant thermal transport in nanophononic metamaterials," Editors: Andreoni, W. and Yip, S.; Section Editor: Donadio, D., *Handbook of Materials Modeling, Volume 2 Applications: Current and Emerging Materials*, Springer, New York, 2019.
2. Phani, A.S. and **Hussein, M.I.**, "Chapter 1: Introduction to lattice materials," Editors: Phani, A.S. and Hussein, M.I., *Dynamics of Lattice Materials*, pp. 1-17, Wiley, New Jersey, 2017.
3. Krattiger, D., Phani, A.S. and **Hussein, M.I.**, "Chapter 4: Wave propagation in damped lattice materials," Editors: Phani, A.S. and Hussein, M.I., *Dynamics of Lattice Materials*, pp. 93-106, Wiley, New Jersey, 2017.
4. Krattiger, D. and **Hussein, M.I.**, "Chapter 9: Model reduction of lattice material models," Editors: Phani, A.S. and Hussein, M.I., *Dynamics Lattice Materials*, pp. 199-215, Wiley, New Jersey, 2017.
5. Bilal, O.R. and **Hussein, M.I.**, "Chapter 10: Topology optimization of lattice materials," Editors: Phani, A.S. and Hussein, M.I., *Dynamics Lattice Materials*, pp. 217-231, Wiley, New Jersey, 2017.

6. **Hussein, M.I.**, Frazier, M. J. and Abedinnasab, M.H., "Chapter 1: Microdynamics of phononic materials," Editor: Li, Shaofan and Gao, Xinlin, *Handbook of Micromechanics and Nanomechanics*, pp. 1-28, Pan Stanford Publishing Co., Singapore, 2013.
7. **Hussein, M.I.** and Frazier, M.J., "Chapter 6: Damped phononic crystals and metamaterials," Editor: Deymier, Pierre A., *Acoustic Metamaterials and Phononic Crystals*, pp. 201-215, Springer Physics, New York, 2013.
8. Vasseur, J.O., Deymier, P.A., Sainidou, R. and **Hussein, M.I.**, "Chapter 10: Band structure calculation methods and approaches," Editor: Deymier, Pierre A., *Acoustic Metamaterials and Phononic Crystals*, pp. 329-372, Springer Physics, New York, 2013.

EDITED SPECIAL JOURNAL ISSUES

1. Bordas, S.P.A., Balint, D.S. and **Hussein, M.I.**, "Editorial: Advances in Crystals and Elastic Metamaterials, Part II," *Advances in Applied Mechanics*, 52, in press.
2. Bordas, S.P.A., Balint, D.S. and **Hussein, M.I.**, "Editorial: Advances in Crystals and Elastic Metamaterials, Part I," *Advances in Applied Mechanics*, 51, ix-xi, 2018.
3. **Hussein, M.I.**, Torrent, D. and Bilal, O.R., "Editorial: Special Issue on Frontiers of Mechanical Metamaterials," *Extreme Mechanics Letters*, **12**, 1, 2017.
4. **Hussein, M.I.**, Bonello, B., Khelif, A. and Djafari-Rouhani, B., "Preface to Special Topic: Selected Articles from Phononics 2015: The Third International Conference on Phononic Crystals/Metamaterials, Phonon Transport, and Phonon Couplings, 31 May-5 June, 2015, Paris, France," *AIP Advances*, **6**, 121501, 2016.
5. **Hussein, M.I.**, El-Kady, I., Li, B. and Sánchez-Dehesa, J., "Preface to Special Topic: Selected Articles from Phononics 2013: The Second International Conference on Phononic Crystals/Metamaterials, Phonon Transport and Optomechanics, 2-7 June, 2013, Sharm El-Sheikh, Egypt," *AIP Advances*, **4**, 124101, 2014.
6. **Hussein, M.I.**, Leamy, M.J. and Ruzzene, M., "Editorial: Special Issue on Dynamics of Phononic Materials and Structures," *Journal of Vibration and Acoustics –Transactions of the ASME*, **135**, 040201, 2013.
7. **Hussein, M.I.** and El-Kady, I., "Preface to Special Topic: Selected Articles from Phononics 2011: The First International Conference on Phononic Crystals, Metamaterials and Optomechanics, 29 May-2 June, 201, Santa Fe, New Mexico, USA," *AIP Advances*, **1**, 041301, 2011.

JOURNAL ARTICLES (Research or Review Articles)

Published/Accepted:

1. **Hussein, M.I.,** Tsai, C.N. and Honarvar, H., "Thermal conductivity reduction in a nanophononic metamaterial versus a nanophononic crystal: Review and Comparative Analysis," *Advanced Functional Materials*, accepted.
2. Cebrecos, A., Krattiger, D., Sanchez-Morcillo, V.J., Romero-Garcia, V. and **Hussein, M.I.**, "The finite-element time-domain method for elastic band-structure calculations," *Computer Physics Communications*, **238**, 77-87, 2019.
3. Bacquet, C.L., Al Ba'ba'aa, H., Frazier, M.J., Nouh, M., **Hussein, M.I.^,** "Metadamping: Dissipation emergence in elastic metamaterials," *Advances in Applied Mechanics*, **51**, 115-164, 2018.
4. **Hussein, M.I.** and Khajehtourian. R., "Nonlinear Bloch wave and balance between hardening and softening dispersion," *Proceedings of the Royal Society A*, **474**: 20180173, 2018.
   Featured on the cover of the September 2018 issue of the journal.
5. Honarvar, H. and **Hussein, M.I.**, "Two orders of magnitude thermal conductivity reduction in silicon membranes by resonance hybridizations," *Physical Review B*, **97**, 195413, 2018.
6. Krattiger, D. and **Hussein, M.I.**. "Generalized Bloch mode synthesis for accelerated calculation of elastic band structures," *Journal of Computational Physics*, **357**, 183-205, 2018.
7. Krattiger, D., Khajehtourian, R., Bacquet C. L. and **Hussein, M.I.^**, "Anisotropic dissipation in lattice metamaterials," *AIP Advances*, **6**, 121802, 2016.
8. Honarvar, H., Yang, L. and **Hussein, M.I.**, "Thermal transport size effects in silicon membranes featuring nanopillars as local resonators," *Applied Physics Letters*, **108**, 263101, 2016.
9. Frazier, M.J. and **Hussein, M.I.^**, "Generalized Bloch's theorem for viscous metamaterials: Dispersion and effective properties based on frequencies and wavenumbers that are simultaneously complex," *Comptes Rendus Physique*, **17**, 565-577, 2016.
10. Frandsen, N.M.M., Bilal, O.R., Jensen, J.S. and **Hussein, M.I.** "Inertial amplification of continuous structures: Large band gaps from small masses," *Journal of Applied Physics*, **119**, 124902, 2016.

11. Honarvar, H. and **Hussein, M.I.**, "Spectral energy analysis of locally resonant nanophononic metamaterials by molecular simulations," *Physical Review B* (Rapid Communication), **93**, 081412(R), 2016.
12. Frazier, M.J. and **Hussein, M.I.**, "Viscous-to-viscoelastic transition in phononic crystal and metamaterial band structures," *Journal of the Acoustical Society of America*, **138**, 3169-3180, 2015
13. **Hussein, M.I.**, Biringen, S., Bilal, O.R., and Kucala, A. "Flow stabilization by subsurface phonons," *Proceedings of the Royal Society A*, 471, 20140928, 2015.
14. Krattiger, D. and **Hussein, M.I.**. "Bloch mode synthesis: Ultrafast methodology for elastic band structure calculations," *Physical Review E*, **90**, 063306, 2014.
15. Khajehtourian, R. and **Hussein, M.I.**^, "Dispersion characteristics of a nonlinear elastic metamaterial," *AIP Advances*, **4**, 124308, 2014.
16. **Hussein, M.I.**^, Leamy, M.J. and Ruzzene, M.. "Dynamics of phononic materials and structures: Historical origins, recent progress and future outlook," *Applied Mechanics Reviews*, **66**, 040802, 2014.
17. Davis, B.L. and **Hussein, M.I.,** "Nanophononic metamaterial: Thermal conductivity reduction by local resonance," *Physical Review Letters*, **112**, 055505, 2014.
    Featured in a Focus article in APS' *Physics* website (http://physics.aps.org/) which spotlights "exceptional research in physics," and reported on in a CU-Boulder press release as well as numerous articles in the technical media.
18. Bilal, O.R. and **Hussein, M.I.** "Trampoline metamaterial: Local resonance enhancement by springboards," *Applied Physics Letters*, **103**, 111901, 2013.
19. **Hussein, M.I.** and Frazier, M.J. "Metadamping: An emergent phenomenon in dissipative metamaterials," *Journal of Sound and Vibration*, **332**, 4767-4774, 2013.
20. Phani, A.S. and **Hussein, M.I.** "Analysis of damped Bloch waves by the Rayleigh perturbation method," *Journal of Vibration and Acoustics–Transactions of the ASME*, **135**, 041014, 2013.
21. Abedinnasab, M. H. and **Hussein, M.I.**, "Wave dispersion under finite deformation," *Wave Motion*, **50**, 374-388, 2013.
22. Liu, L. and **Hussein, M.I.**, "Wave motion in periodic flexural beams and characterization of the transition between Bragg scattering and local resonance," *Journal of Applied Mechanics–Transactions of the ASME*, **79**, 011003, 2012.
23. Reinke, C.M., Su, M.F., Davis, B.L., Kim, B.S., **Hussein, M.I.**, Leseman, Z.C., Olsson-III, R.H. and El-Kady, I.^ "Thermal conductivity prediction of nanoscale phononic crystal slabs using a hybrid lattice dynamics-continuum mechanics technique," *AIP Advances*, **1**, 041403, 2011.
24. Davis, B.L. and **Hussein, M.I.**^**,** "Thermal characterization of nanoscale phononic crystals using supercell lattice dynamics," *AIP Advances*, **1**, 041701, 2011.
25. Bilal, O.R. and **Hussein, M.I.**, "Ultrawide phononic band gap for combined in-plane and out-of-plane waves," *Physical Review E* (Rapid Communication), **84**, 065701(R), 2011.
26. **Hussein, M.I**. and Frazier, M.J., "Band structure of phononic crystals with general damping," *Journal of Applied Physics*; **108**, 093506, 2010.
27. **Hussein, M.I**., "Theory of damped Bloch waves in elastic media" *Physical Review B*, **80**, 212301, 2009.
28. **Hussein, M.I.** "Reduced Bloch mode expansion for periodic media band structure calculations," *Proceedings of the Royal Society A*, **465**, 2825-2848, 2009.
29. Landry, E.S., **Hussein, M.I.** and McGaughey, A.J.H., "Complex superlattice unit cell designs for reduced thermal conductivity" *Physical Review B*, **77**, 184302, 2008.
30. **Hussein, M.I.**, Borg, U., Niordson, C.F. and Deshpande, V.S.^, "Plasticity size effects in voided crystals," *Journal of the Mechanics and Physics of Solids*, **56**(1), 114-131, 2008.
31. **Hussein, M.I.**^, Hamza, K., Hulbert, G. M. and Saitou, K., "Optimal synthesis of 2D phononic crystals for broadband frequency isolation," *Waves in Random and Complex Media*, **17**(4), 491-510, 2007.
32. **Hussein, M.I.**, Hulbert, G.M. and Scott, R.A., "Dispersive elastodynamics of 1D banded materials and structures: Design," *Journal of Sound and Vibration*, **307**(3-5), 865-893, 2007.
33. McGaughey, A.J.H., **Hussein, M.I.**, Landry, E.S., Kaviany, M., and Hulbert, G.M., "Phonon band structure and thermal transport correlation in a layered diatomic crystal," *Physical Review B*, **74**, 104304, 2006.
34. **Hussein, M.I.**^ and Hulbert, G.M., "Mode-enriched dispersion models of periodic materials within a multiscale mixed finite element framework," *Finite Elements in Analysis and Design*, **42**(7), 602-612, 2006.

35. **Hussein, M.I.**, Hamza, K., Hulbert, G.M., Scott, R.A. and Saitou, K., "Multi-objective evolutionary optimization of periodic layered materials for desired wave dispersion characteristics," *Structural and Multidisciplinary Optimization*, **31**(1), 60-75, 2006.
36. **Hussein, M.I.**, Hulbert, G.M. and Scott, R.A., "Dispersive elastodynamics of 1D banded materials and structures: Analysis," *Journal of Sound and Vibration*, **289**(4-5), 779-806, 2006.

Submitted:

37. Abedinnasab.M.H. and **Hussein, M.I.**^, "Finite-strain dispersion relation for a flexural beam using the homotopy analysis method," *Nonlinear Dynamics*, under review.
38. Khajehtourian, R. and **Hussein, M.I.**, "Nonlinear dispersion relation predicts harmonic generation in wave motion," *Physical Review X*, submitted.
39. Bacquet, C.L. and **Hussein, M.I.**, "Dissipation engineering in metamaterials by localized structural dynamics," *Nature Communications*," submitted.

Note: Invited submissions are denoted by the symbol ^.

JOURNAL ARTICLES (Short Notes)

1. **Hussein, M.I.**, Leamy, M.J. and Ruzzene, M.. "Closure to "Discussion of 'Dynamics of phononic materials and structures: Historical origins, recent progress and future outlook,' *(Hussein, M. I., Leamy, M. J., and Ruzzene, M., 2014, ASME Appl. Mech. Rev.*, **66**(4), p. 040802)"" *Applied Mechanics Reviews–Transactions of the ASME*, **66**, 046002, 2014.

REFEREED CONFERENCE PROCEEDINGS

1. **Hussein, M.I.** and Frazier, M.J., "Metadamping in dissipative metamaterials," *Proceedings of 2013 ASME International Mechanical Engineering Congress and R&D Expo*, San Diego, California, 15-21 November 2013, Paper no. IMECE2013-66210, [CD ROM: pp. 1- 5], 2013.
2. Davis, B.L., Su, M.F, El-Kady, I. and **Hussein, M.I.**, "Silicon thin-film lattice dynamics and thermal transport properties," *Proceedings of 2012 ASME International Mechanical Engineering Congress and R&D Expo*, IMECE2012-89902, [CD ROM: pp. 1-6], Houston, Texas, 9-15 November 2012.
3. Bilal, O.R., El-Beltagy, M.A. and **Hussein, M.I.**, "Topologically evolved photonic crystals: Breaking the world record in band gap size," Invited Lecture in Photonic, Phononic, PhoXonic Session, *Proceedings of SPIE Smart Structures/NDE Conference on Smart Sensor Phenomena, Technology, Networks, and Systems Integration V (Conference SSN08)*, vol. 8346 834609, pp. 1-5, San Diego, California, 11-15 March 2012.
4. Frazier, M.J. and **Hussein, M.I.**, "Dissipation-triggered phenomena in periodic acoustic metamaterials," Invited Lecture in Acoustic Metamaterial Session, *Proceedings of SPIE Smart Structures/NDE Conference on Health Monitoring of Structural and Biological Systems VI (Conference SSN10)*, vol. 8348 83481W-1, pp. 1-9, San Diego, California, 11-15 March 2012.
5. Bilal, O.R. and **Hussein, M.I.**, "Topologically evolved phononic material: Breaking the world record in band gap size," Invited Talk in Photonic and Phononic Properties of Engineering Nanostructures II (Conference 8269), Nanotechnologies Track, *Proceedings of SPIE Photonics West*, vol. 8269, 826911, pp. 1-7, San Francisco, California, 21-26 January 2012.
6. Frazier, M.J.* and **Hussein, M.I.**, "Bloch-theory-based analysis of damped phononic crystals" *Proceedings of 2011 ASME International Mechanical Engineering Congress and R&D Expo*, IMECE2011-65662, [CD ROM: pp. 1- 5], Denver, Colorado, 11-17 November 2011.
7. Bilal, O.R.* and **Hussein, M.I.**, "Optimization of phononic crystals for the simultaneous attenuation of out-of-plane and in-plane waves" *Proceedings of 2011 ASME International Mechanical Engineering Congress and R&D Expo*, IMECE2011-65665, [CD ROM: pp. 1- 4], Denver, Colorado, 11-17 November 2011.
8. Guo, Q.*, Bilal, O.R. and **Hussein, M.I.**, "A fast method for electronic structure calculations" *Proceedings of 2011 ASME International Mechanical Engineering Congress and R&D Expo*, IMECE2011-65681, [CD ROM: pp. 1- 5], Denver, Colorado, 11-17 November 2011.
9. Davis, B.L.*, Tomchek, A.S., Flores, E.A., Liu, L. and **Hussein, M.I.**, "Analysis of periodicity termination in phononic crystals" *Proceedings of 2011 ASME International Mechanical Engineering Congress and R&D Expo*, IMECE2011-65666, [CD ROM: pp. 1- 5], Denver, Colorado, 11-17 November 2011.

10. Abedinnasab, M.H. and **Hussein, M.I.**, "Analysis of elastic wave propagation in nonlinear beams," *Proceedings of 23nd ASME Biennial Conference on Mechanical Vibration and Noise*, [CD ROM: pp. 1-6], Washington, D.C., 28-31 August 2011.
11. Bilal, O.R.*, El-Beltagy, M.A. and **Hussein, M.I.**, "Optimal Design of Periodic Timoshenko Beams using Genetic Algorithms," *Proceedings of the 52nd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference (AIAA SDM 52nd)*, [CD ROM: pp. 1- 9], Denver, Colorado, 4-7 April 2011.
12. Frazier, M.J.* and **Hussein, M.I.**, "Dispersion relation for generally damped periodic materials," *Proceedings of 2010 ASME International Mechanical Engineering Congress and R&D Expo*, [CD ROM: pp. 1- 9], Vancouver, British Columbia, Canada, 12-19 November 2010.
13. **Hussein, M.I.**, "Bloch analysis of lossy periodic materials," Invited Lecture in *Acoustic Metamaterials* Structured Session, *Proceedings of the Seventeenth International Conference on Sound and Vibration (ICSV 17)*, [CD ROM: pp. 1- 7], Cairo, Egypt, 18-22 July 2010.
14. **Hussein, M.I.**, "Modal analysis of generally periodic structures," *Proceedings of the Seventeenth International Conference on Sound and Vibration (ICSV 17)*, [CD ROM: pp. 1- 6], Cairo, Egypt, 18-22 July 2010.
15. Liu, L. and **Hussein, M.I.**, "Generalized transfer matrix method for wave propagation in periodic beams," *Proceedings of the Seventeenth International Conference on Sound and Vibration (ICSV 17)*, [CD ROM: pp. 1-7], Cairo, Egypt, 18-22 July 2010.
16. Bilal, O.R.*, El-Beltagy, M.A., Rasmy, M.H. and **Hussein, M.I.**, "The effect of symmetry on the optimal design of two-dimensional periodic materials," INFOS'10, *Proceedings of the Seventh International Conference on Informatics and Systems (INFOS'10),* [CD ROM: pp. 1- 7], Cairo, Egypt, 28-30 March 2010.
17. **Hussein, M.I.**, El-Abbasi, N. and Liu, L.*, "Finite element analysis of wave propagation in periodic Euler-Bernoulli beams" *Proceedings of 2009 ASME International Mechanical Engineering Congress and R&D Expo*, [CD ROM: pp. 1- 7], Lake Buena Vista, Florida, 13-19 November 2009.
18. Davis, B.L.* and **Hussein, M.I.**, "A three-dimensional lumped parameter model of nanoscale phononic crystals," *Proceedings of 22nd ASME Biennial Conference on Mechanical Vibration and Noise*, [CD ROM: pp. 1-6], San Diego, California, 30 August - 2 September 2009.
19. **Hussein, M.I.**, "Band structure calculations by modal analysis," *Proceedings of IUTAM Symposium on Recent Advances of Acoustic Waves in Solids*, pp. 1-8, Taipei, Taiwan, 25-27 May 2009.
20. **Hussein, M.I.**, "Fast phonon band structure calculations for thermal transport modeling," *Proceedings of Thermal Issues in Emerging Technologies: Theory and Application*, [CD ROM: pp. 1-8], Cairo, Egypt, 17-2 December 2008.
21. **Hussein, M.I.**, Ruzzene, M., Leamy, M.J., Durrie, J.J. and Davis, B.L., "NEMS components design using intentionally defected dispersive building blocks," *Proceedings of 2008 ASME International Mechanical Engineering Congress and R&D Expo*, [CD ROM: pp. 1-7], Boston, Massachusetts, 31 October-6 November 2008.
22. **Hussein, M.I.**, Leamy, M.J. and Ruzzene, M., "Wave beaming in nanostructured materials with engineered defects," *Proceedings of 2008 ASME International Mechanical Engineering Congress and R&D Expo*, [CD ROM: pp. 1-8], Boston, Massachusetts, 31 October-6 November 2008.
23. Landry, E.S., McGaughey, A.J.H. and **Hussein, M.I.**, "Dielectric Nanocomposite Layering Configurations for Thermal Conductivity Reduction," *Proceedings of 2nd ASME Multifunctional Nanocomposites & Nanomaterials: International Conference & Exhibition*, [CD ROM: pp. 1-11], Sharm El-Sheikh, Egypt, 11-13 January 2008.
24. **Hussein, M.I.** and Deshpande, V.S., "A Discrete Dislocation Plasticity Study of Size Effects in Porous and Composite Materials," *Proceedings of the 9th International Conference on Mechanical Design and Production*, Cairo University, pp. 1251-1264, Cairo, Egypt, 8-10 January 2008.
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75. **Hussein, M.I.** and Frazier, M.J., "Metadamping: An emergent phenomenon in dissipative metamaterials," Invited Talk, *International Symposium on the Theory and Application of Artificial Periodic Structures*, Changsha, China, 18-20 October, 2013.
76. **Hussein, M.I.** and Frazier, M.J., "Phononic crystals and acoustic/elastic metamaterials: A new platform for dissipation engineering," *Invited talk in Workshop on Metamaterials and Controlling Dynamic Response, The 2013 Annual Grantees'/Contractors' Meeting*, Mechanics of Multifunctional Materials & Microsystems, Air Force Office of Scientific Research (AFOSR), Arlington, Virginia, September 18th, 2013.
77. Davis, B.L. and **Hussein, M.I.**, "Thermal conductivity reduction by nanophononic metamaterials," Invited Talk, *The 1st International Conference on Phononics and Thermal Energy Science (PTES2013)*, Shanghai, China, 2-4 September, 2013.
78. Abedinnasab. M.H., Khajehtourian, R. and **Hussein, M.I.**, "Nonlinear wave dispersion: Exact analysis and physical insights," *Proceedings of 25th ASME Conference on Mechanical Vibration and Noise (VIB)*, Portland, Oregon, 4-7 August 2013.

79. **Hussein, M.I.** and Frazier, M.J., "Emergent dynamics of dissipative acoustic metamaterials," *50th Annual Meeting of the Society of Engineering Science/ASME-AMD Summer Meeting*, Providence, Rhode Island, 28-31 July, 2013.
80. Davis, B.L. and **Hussein, M.I.**, "Nanophononic metamaterials: Thermal conductivity reduction by local resonance," *Workshop on Thermal Transport at the Nanoscale*, Telluride, Colorado, 25-29 June 2013.
81. Davis, B.L. and **Hussein, M.I.** "Thermal conductivity reduction by nanoscale metamaterials," Organizers' Colloquium *Proceedings of Phononics 2013*, Paper PHONONICS-2013-0177, pp. 224-225, Sharm El-Sheikh, Egypt, June 2-7, 2013.
82. Frazier, M.J.* and **Hussein, M.I.** "Metadamping: An emergent phenomenon in dissipative metamaterials," *Proceedings of Phononics 2013*, Paper PHONONICS-2013-0174, pp. 178-179, Sharm El-Sheikh, Egypt, June 2-7, 2013.
83. Bilal, O.R.* and **Hussein, M.I.** "Trampouline metamaterials: Local resonance enhancement by springboards," *Proceedings of Phononics 2013*, Paper PHONONICS-2013-0173, pp. 176-177, Sharm El-Sheikh, Egypt, June 2-7, 2013.
84. Khajehtourian, R.* and **Hussein, M.I.** "Nonlinear locally resonant metamaterials: Modeling and dispersion characteristics," *Proceedings of Phononics 2013*, Paper PHONONICS-2013-0175, pp. 180-181, Sharm El-Sheikh, Egypt, June 2-7, 2013.
85. Frazier, M.J. and **Hussein, M.I.**, "Dissipative phononic materials: Mathematical models and physical phenomena," Invited Talk, *Fourth International Conference on Metamaterials, Photonic Crystals and Plasmonics (META'13)*, Sharjah, United Arab Emirates, 18-22 March 2013.
86. Frazier, M.J., Abedinnasab.M.H. and **Hussein, M.I.** "Phonons manipulation by damping and nonlinearity," Invited Talk, *The Egyptian Materials Research Society Workshop on Functional Materials*, Marsa Alam, Egypt, 25-28 November, 2012.
87. Davis, B.L. and **Hussein, M.I.**, "Phonons manipulation by boundaries and symmetry," Invited Talk, *The Egyptian Materials Research Society XXX International Conference on Materials Science and Applications*, Marsa Alam, Egypt, 25-28 November, 2012.
88. Abedinnasab.M.H. and **Hussein, M.I.**, "Models and properties of nonlinear phononic materials," *2012 ASME International Mechanical Engineering Congress and R&D Expo*, Houston, Texas, 9-15 November 2012.
89. Reinke, C.M.*, Su, M.F., Bongsang, K., Davis, B.L., **Hussein, M.I.**, Leseman, Z.C., Olsson III, R.H. and El-Kady, I., "Calculation of the thermal conductivity of micro-scale phononic crystals using continuum mechanics and lattice dynamics," *2011 ASME International Mechanical Engineering Congress and R&D Expo*, Houston, Texas, 9-15 November 2012.
90. **Hussein, M.I.**, Biringen, S., Bilal, O.R.* and Kucala, A., "Phononic surfaces for flow control," *Proceedings of the 2012 National Science Foundation CMMI Research and Innovation Conference*, [Poster Presentation], Boston, Massachusetts, 9–12 July, 2011.
91. Davis, B.L. and **Hussein, M.I.**, "Control of phonon transport via nanophononic crystals," *Proceedings of PHONONS 2012: XIV International Conference on Phonon Scattering in Condensed Matter*, Ann Arbor, Michigan, 8-12 July, 2012.
92. Bilal, O.R.*, Guo, Q., Rumpf, R.C. and **Hussein, M.I.**, "Ultrafast band structure calculation for photonic crystals and metamaterials," *Proceedings of PECS-X: 10th International Symposium on Photonic and Electromagnetic Crystal Structures*, Santa Fe, New Mexico, 3-8 June, 2012.
93. Bilal, O.R.* and **Hussein, M.I.**, "On the properties of optimal low symmetry photonic crystals," *Proceedings of PECS-X: 10th International Symposium on Photonic and Electromagnetic Crystal Structures*, Santa Fe, New Mexico, 3-8 June, 2012.
94. Davis, B.L. and **Hussein, M.I.**, "Thermal transport analysis of silicon-based nanoscale phononic crystals," *Proceedings of 2012 ASME 3rd Micro/Nanoscale Heat & Mass Transfer International Conference*, Atlanta, Georgia, 3–6 March 2012.
95. Abedinnasab.M.H. and **Hussein, M.I.**, "Nonlinear elastic waves in periodic media," *2011 ASME International Mechanical Engineering Congress and R&D Expo*, Denver, Colorado, 11-17 November 2011.
96. Davis, B.L.* and **Hussein, M.I.**, "Thermal transport studies of silicon-based phononic-crystal thin films," *2011 ASME International Mechanical Engineering Congress and R&D Expo*, Denver, Colorado, 11-17 November 2011.
97. Reinke, C.M.*, Su, M.F., Olsson III, R.H., Leseman, Z.C., **Hussein, M.I.** and El-Kady, I., "Computationally efficient plane-wave expansion band structure calculations for phononic crystal devices," *2011 ASME International Mechanical Engineering Congress and R&D Expo*, Denver, Colorado, 11-17 November 2011.
98. Bilal, O.R., El-Beltagy, M.A. and **Hussein, M.I.**, "Genetically evolved photonic crystals: Breaking the world record in band gap size," Invited Talk, *The Egyptian Materials Research Society Workshop on Photonic Crystals and Graphene*, Sharm El-Sheikh, Egypt, 3-6 October, 2011.
99. **Hussein, M.I.**, "Phononics: Controlling material motion across size scales and across disciplines," Invited Talk, *The Egyptian Materials Research Society XXVIV International Conference on Solid State Science and Materials Physics*, Sharm El-Sheikh, Egypt, 3-6 October, 2011.
100. Bilal, O.R.* and **Hussein, M.I.** "Phononic band gap optimization for combined in-plane and out-of-plane waves," *Proceedings of Phononics 2011*, Paper PHONONICS-2011-0173, pp. 102-103, Santa Fe, New Mexico, USA, May 29-June 2, 2011.
101. **Hussein, M.I.** "Multiscale dispersive design: A building blocks approach to phononics," Organizers' Colloquium *Proceedings of Phononics 2011*, Paper PHONONICS-2011-0182, pp. 104-105, Santa Fe, New Mexico, USA, May 29-June 2, 2011.
102. Frazier, M.J.* and **Hussein, M.I.** "Dissipative effects in acoustic metamaterials," *Proceedings of Phononics 2011*, Paper PHONONICS-2011-0172, pp. 136-137, Santa Fe, New Mexico, USA, May 29-June 2, 2011.

103. Tomchek, A.S.*, Flores, E.A, Liu, L., Davis, B.L. and **Hussein, M.I.** "Characterization of band gap resonances in finite periodic structures," *Proceedings of Phononics 2011*, Paper PHONONICS-2011-0177, pp. 192-13, Santa Fe, New Mexico, USA, May 29-June 2, 2011.
104. Davis, B.L.* and **Hussein, M.I.** "Reduction of thermal conductivity in silicon slabs by unit cell nanostructuring," *Proceedings of Phononics 2011*, Paper PHONONICS-2011-0174, pp. 236-237, Santa Fe, New Mexico, USA, May 29-June 2, 2011.
105. Guo, Q.*, Bilal, O.R. and **Hussein, M.I.** "Convergence of the reduced Bloch mode expansion method for electronic band structure calculations," *Proceedings of Phononics 2011*, Paper PHONONICS-2011-0176, pp. 238-239, Santa Fe, New Mexico, USA, May 29-June 2, 2011.
106. Davis, B.L. and **Hussein, M.I.**, "A building block approach to controlling phonon dynamics in nanostructures: Lattice dynamics in a Lagrangian framework," *Proceedings of the 2011 National Science Foundation CMMI Research and Innovation Conference*, [Poster Presentation], Atlanta, Georgia, 4–7 January 2011.
107. Abedinnasab.M.H.* and **Hussein, M.I.**, "Finite amplitude wave dispersion in flexural beams," *Proceedings of 2010 ASME International Mechanical Engineering Congress and R&D Expo*, Vancouver, British Columbia, Canada, 12-19 November 2010.
108. Liu, L., Davis, B.L., Tomchek, A.S., Flores, E.A. and **Hussein, M.I.**, "Band gap maps for flexural beams: Effects of periodicity type, properties and termination," *2010 ASME International Mechanical Engineering Congress and R&D Expo*, Vancouver, British Columbia, Canada, 12-19 November 2010.
109. **Hussein, M.I.** and Davis, B.L., "Bloch modal analysis in lattice dynamics: Orders of magnitude reduction in model size," *Workshop on Thermal Transport at the Nanoscale*, Telluride, Colorado, 21-25 June 2010.
110. Bilal, O.R.*, El-Beltagy, M.A. and **Hussein, M.I.**, "Effect of symmetry on optimal photonic crystals design," *Second International Conference on Metamaterials, Photonic Crystals and Plasmonics (META'10)*, [Poster Presentation], Cairo, Egypt, 22-25 February 2010.
111. **Hussein, M.I.**, "Photonic crystal band structure calculation by Bloch modal analysis," *Second International Conference on Metamaterials, Photonic Crystals and Plasmonics (META'10)*, Cairo, Egypt, 22-25 February 2010.
112. **Hussein, M.I.**, "Damped Bloch waves in phononic crystals," Invited Talk in Phononic Crystals and Metamaterials Special Session, *Second International Conference on Metamaterials, Photonic Crystals and Plasmonics (META'10)*, Cairo, Egypt, February 22-25, 2010.
113. **Hussein, M.I.** "Analysis of wave propagation in phononic crystals by Bloch mode decomposition," *2009 ASME International Mechanical Engineering Congress and R&D Expo*, Lake Buena Vista, Florida, 13-19 November 2009.
114. **Hussein, M.I.**, "Lattice dynamics by modal analysis: Orders of magnitude decrease in computational expense," *10th U.S. National Congress on Computational Mechanics*, Columbus, Ohio, 16-19 July 2009.
115. **Hussein, M.I.**, "Band structure calculations by modal analysis," *American Physical Society April Meeting 2009*, Denver, Colorado, 2-5 April 2009.
116. **Hussein, M.I.**, "Reduced Bloch mode expansion for fast band structure calculations," *American Physical Society March Meeting 2009*, Pittsburgh, Pennsylvania, 16-20 March 2009.
117. **Hussein, M.I.** "Reduced Bloch mode expansion for fast computation of dispersion curves," *2008 ASME International Mechanical Engineering Congress and R&D Expo*, Boston, Massachusetts, 31 October-6 November 2008.
118. **Hussein, M.I.**, "Reduced Bloch mode expansion for periodic media band structure calculations," Keynote Lecture in Innovative and Advanced Methods for Computational Dynamics Symposium, *World Congress in Computational Mechanics VIII, 5th European Congress in Computational Methods in Applied Sciences and Engineering*, Venice, Italy, 30 June - 4 July 2008.
119. Landry, E.S. *, **Hussein, M.I.** and McGaughey, A.J.H., "Designing $Si/Si_{1-x}Ge_x$ Superlattices with Tailored Thermal Transport Properties," *2008 Materials Research Society Spring Meeting*, San Francisco California, 24-28 March 2008.
120. Deshpande, V.S.* and **Hussein, M.I.**, "Discrete Dislocation Modeling of Size Effects in Voided Single Crystals," *Needleman-Tvergaard Symposium: Bridging Scales in Mechanics*, Providence, Rhode Island, 16-18 August 2006.
121. **Hussein, M.I.** and Deshpande, V.S., "A Discrete Dislocation Plasticity Study of the Micro Void Size Effect," *15th U.S. National Congress of Theoretical and Applied Mechanics*, Boulder, Colorado, 25-30 June 2006.
122. **Hussein, M.I.,** Hulbert, G.M., Scott, R.A., Hamza, K. and Saitou, K., "Design of Banded Materials and Structures for Vibration and Shock Isolation," *8th U.S. National Congress on Computational Mechanics*, Austin, Texas, 24-28 July 2005.
123. **Hussein, M.I.**, Hulbert, G.M. and Scott, R.A., "Analysis and Design of Dispersive Materials and Structures," *21st International Congress of Theoretical and Applied Mechanics (Lecture Presentation: Impact and Wave Propagation Session)*, Warsaw, Poland, 15-21 August 2004.
124. **Hussein, M.I.** and Hulbert, G.M., "A Multiscale Reduced Order Model for Computing Frequency Spectra of Periodic Materials," *SES 2003: 40th Annual Meeting of the Society of Engineering Science*, Ann Arbor, Michigan, 12-15 October 2003 (received 1st prize in Student Paper Competition).
125. Hulbert, G.M.*, **Hussein, M.I.** and Scott, R.A., "Analysis and Design of Elastodynamic Waveguides and Filters," Plenary Lecture by Professor Gregory Hulbert, *7th U.S. National Congress on Computational Mechanics*, Albuquerque, New Mexico, 27-31 July 2003.

126. **Hussein, M.I.** and Hulbert, G.M., "A Fast Multiscale Method for Computing Dispersion Curves of Periodic Materials," *7th U.S. National Congress on Computational Mechanics*, Albuquerque, New Mexico, 27-31 July 2003.
127. **Hussein, M.I.** and Hulbert, G.M., "High Frequency Dispersive Modeling of Periodic Media," *Symposium in Honor of Professor J. Tinsley Oden, 14th U.S. National Congress of Theoretical and Applied Mechanics*, Blacksburg, Virginia, 23-28 June 2002.

Note: Unless marked with an asterisk, all presentations were given by MIH.

INVITED TALKS/LECTURES (Not Including Conferences and Symposia)

1. "Flow stabilization by subsurface phonons: A new triumph for phononics," *Invited talk*, Fluids-Structures-Materials (FSM) Seminar Series, Smead Department of Aerospace Engineering Sciences, University of Colorado Boulder, Boulder, Colorado, December 4th, 2019 (scheduled).
2. "Resonant thermal transport: A new route to efficient thermoelectric energy conversion," *Invited talk*, Analysis and Applications (AaA) Seminar, Department of Mathematics, Colorado School of Mines, Golden, Colorado, October 22th, 2019.
3. "Exact dispersion relation for strongly nonlinear elastic wave propagation," *Invited talk*, Analysis and Applications (AaA) Seminar, Department of Mathematics, University of Colorado Colorado Springs, Boulder, Colorado, February 26th, 2019.
4. "Phononics: Structural dynamics of materials and applications in heat transfer and fluid dynamics," *Invited talk*, Acoustic Group Social Seminar, Department of Mechanical Engineering, Boston University, Boston, Massachusetts, March 7th, 2019.
5. "Resonant phonon transport and potential impact on thermoelectric energy conversion," *Invited talk*, Condensed Matter Seminar, Department of Physics, University of Colorado Boulder, Boulder, Colorado, February 7th, 2019.
6. "Phononics: Structural dynamics of materials and pushing the boundaries of physical response," *Invited talk*, Department of Aerospace Engineering, University of Michigan-Ann Arbor, Ann Arbor, Michigan, November 29th, 2018.
7. "Phononics: An emerging field targeting structural dynamics of materials and beyond," *Invited talk*, Department of Mechanical and Civil Engineering, New York University-Abu Dhabi, Abu Dhabi, United Arab Emirates, November 22nd, 2018.
8. "Strongly nonlinear elastic wave propagation and the essence of spatial invariance," *Invited talk*, Department of Computational Mathematics and Simulation Science, École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland, November 20th, 2018.
9. "Phononics: An emerging interdisciplinary field with roots in Smead Aerospace," *Invited talk*, Smead Department of Aerospace Engineering Sciences, University of Colorado Boulder, Boulder, Colorado, October 29th, 2018.
10. "Nanophononic metamaterial: Thermal conductivity reduction by resonant thermal transport," *Invited talk*, Department of Physics, Azhar University, Cairo, Egypt, April 1st, 2018.
11. "Nanophononic metamaterial: Extreme thermal conductivity reduction in semiconductors by localized atomic vibrations," *Invited talk*, Department of Physics, Beni Suef University, Beni Suef, Egypt, January 9th, 2018.
12. "Nanophononic metamaterial: Extreme thermal conductivity reduction in semiconductors by localized atomic vibrations," *Invited talk*, Department of Physics, National Research Center, Cairo, Egypt, January 8th, 2018.
13. "Nanophononic metamaterial: Extreme thermal conductivity reduction by full-spectrum resonance hybridizations," *Invited talk*, Department of Mechanics, Beijing Jiaotong University, Beijing, China, October 19th, 2017.
14. "Nanophononic metamaterial: Extreme thermal conductivity reduction by full-spectrum resonance hybridizations," *Invited talk*, School of Aerospace Engineering, Beijing Institute of Technology, Beijing, China, October 18th, 2017.
15. "Flow control by passive interfacing with phononic materials," *Invited talk*, Department of Mechanics, Beijing Jiaotong University, Beijing, China, October 16th, 2017.
16. "Nanophononic metamaterial: Severe thermal conductivity reduction in semiconductors by localized atomic vibrations," *Invited talk*, Applied Math and Computational Science Colloquium, University of Pennsylvania, Philadelphia, Pennsylvania, September 22nd, 2017.

17. "Nanophononic metamaterial: Severe thermal conductivity reduction by full-spectrum resonance hybridizations," *Invited talk*, Department of Physics, Hong Kong University of Science and Technology, Hong Kong, June 12th, 2017.
18. "Nanophononic metamaterial: Severe thermal conductivity reduction by non-scattering resonance hybridizations," *Invited talk*, Department of Mechanical & Materials Science, Duke University, Durham, North Carolina, February 15th, 2017.
19. "Nanophononic metamaterial: Severe thermal conductivity reduction by nanostructure resonance hybridizations," *Invited talk*, National Renewable Energy Laboratory (NREL), Golden, Colorado, September 28th, 2016.
20. "Flow control by subsurface crystals," *Invited talk*, Department of Mechanical Engineering, Imperial College, London, England, July 15th, 2016.
21. "Nonlinear elastic wave dispersion in 1D homogeneous media and metamaterials," *Invited talk*, Department of Mathematics, University of Manchester, Manchester, England, July 1st, 2016.
22. "Nanophononic metamaterial: Thermal conductivity reduction by nanostructure resonance hybridizations," *Invited talk*, Department of Physics, University of York, York, England, June 27th, 2016.
23. "Flow Control by Subsurface Crystals," *Invited talk*, Department of Mechanical and Aerospace Engineering, University of Buffalo, SUNY, Buffalo, New York, May 5th, 2016.
24. "Nanophononic metamaterial: Thermal conductivity reduction by nanostructure resonance hybridizations," *Invited talk*, Department of Chemistry and Biology, University of Siegen, Germany, April 22nd, 2016.
25. "Nanophononic metamaterial: Thermal conductivity reduction by nanostructure resonance hybridizations," *Invited talk*, Max Plank Institute for Polymer Research, Mainz, Germany, April 21st, 2016.
26. "Two Tales of Complex Wave Motion: Wave Synchronization across a Fluid-Structure Interface and Wave Dispersion under Finite Deformation," *Invited talk*, Faculty of Engineering and Material Science, German University in Cairo, Egypt, April 19th, 2016.
27. "Nanophononic metamaterial: Thermal conductivity reduction by nanostructure resonance hybridizations," *Invited talk*, Department of Basic Science Engineering, British University in Egypt, Cairo, Egypt, April 18th, 2016.
28. "Phononic Subsurface: Reducing Flow Drag by Crystals (Lecture 2)," *Invited talk*, Division of Computer, Electrical and Mathematical Sciences & Engineering, King Abdullah University of Science & Technology, Thuwal, Saudi Arabia, April 12th, 2016.
29. "Nanophononic Metamaterial: A New Paradigm for Thermoelectric Energy Conversion (Lecture 1)," *Invited talk*, Division of Computer, Electrical and Mathematical Sciences & Engineering, King Abdullah University of Science & Technology, Thuwal, Saudi Arabia, April 12th, 2016.
30. "Nonlinear Wave Propagation in Phononic Crystals and Metamaterials," *Invited lecture in Graduate Course MCEN 5228: Phononics and Thermal Metamaterials*, Department of Mechanical Engineering, University of Colorado Boulder, Boulder, Colorado, April 4th, 2016.
31. "Flow Stabilization by Crystals: A New Paradigm for Drag Reduction," *Invited talk*, Department of Mechanical Engineering, University of Maryland, College Park, March 18th, 2016.
32. "Two Tales of Complex Wave Motion: Wave Synchronization across a Fluid-Structure Interface and Wave Dispersion under Finite Deformation," *Invited talk*, Department of Mechanical Engineering and Materials Science, Washington University at Saint Louis, Saint Louis, Missouri, December 10th, 2015.
33. "Two Tales of Nonlinear Wave Motion: Wave Synchronization across a Fluid-Structure Interface and Wave Dispersion under Finite Deformation," *Invited talk*, Nonlinear Waves Seminar, Department of Applied Mathematics, University of Colorado Boulder, Boulder, Colorado October 13th, 2015.
34. "Flow Stabilization by Crystals," *Invited talk*, Department of Aerospace (GALCIT), California Institute of Technology, Pasadena, California, October 2nd, 2015.
35. "Nanophononic Metamaterial: Slowing Down Heat Transfer by Mechanical Vibration (Lecture 3)," *Invited talk*, Institut d'électronique de microélectronique et de nanotechnologie, Université Lille 1–Sciences et Technologies, Lille, France, July 9th, 2015.
36. "Phononic Subsurface: Reducing Flow Drag by Crystals," *Invited talk*, Institut FEMTO-ST, Besançon, France, July 6th, 2015.

37. "Large-motion Elastic Waves in Solids: Unweaving the Nonlinearity (Lecture 2)," *Invited talk*, Institut d'électronique de microélectronique et de nanotechnologie, Université Lille 1–Sciences et Technologies, Lille, France, July 2nd, 2015.
38. "Phononic Subsurface: Reducing Flow Drag by Crystals (Lecture 1)," *Invited talk*, Institut d'électronique de microélectronique et de nanotechnologie, Université Lille 1–Sciences et Technologies, Lille, France, June 30th, 2015.
39. "Phononics: Structural Dynamics at the Material Level," *Invited talk*, International Center for Numerical Methods in Engineering, Universitat Politècnica de Catalunya, Barcelona, Spain, June 10th, 2015.
40. "Exact Dispersion Relations for Finite-strain Elastic Waves in Solids," *Invited talk*, Applied Mathematics Colloquium, Department of Applied Mathematics, University of Colorado Boulder, Boulder, Colorado, April 3rd, 2015.
41. "Exact Dispersion Relations for Finite-strain Elastic Waves in Solids," *Invited talk*, Applied Mathematics and Statistics Colloquium, Department of Applied Mathematics and Statistics, Colorado School of Mines, Golden, Colorado, February 27th, 2015.
42. "Phononic Metamaterials: The Big, the Small and the Nonlinear," *Invited talk*, Departamento De Física Aplicada/IGIC, Universidad Politécnica de Valencia-Campus de Gandia, Gandia, Spain, September 8th, 2014.
43. "Phononic Metamaterials: The Big, the Small and the Nonlinear," *Invited talk*, Laboratoire d'Acoustique de l'Université du Main (LAUM), Université du Maine, Le Mans, France, September 5th, 2014.
44. "Phononic Metamaterials: Control of Material Motion by Mechanical Vibrations," *Invited talk*, School of Mechanical, Aerospace and Systems Engineering, Korea Advanced Institute of Science and Technology (KAIST), Daejeon City, South Korea, August 20th, 2014.
45. "Fluidic Metamaterials: 'On-The-Fly' Tunability of Dynamical Properties," *Invited talk*, Agency for Defense Development (ADD), Jinhae City, South Korea, August 19th, 2014 (with K. Maute and K.C. Park).
46. "Large-Motion Elastic Waves in Solids: Unweaving the Nonlinearity (Part 1); Nanophononic Metamaterial: Slowing down Heat Transfer by Mechanical Vibration (Part 2)," *Invited talk*, Institute of Mechanics and Materials, ETH-Swiss Federal Institute of Technology Zurich, Zurich, Switzerland, June 10th, 2014.
47. "Phononic Subsurface: A New Paradigm for Flow Control," *Invited talk*, Air Force Office of Scientific Research (AFOSR), Arlington, Virginia, February 18th, 2014 (with S. Biringen).
48. "Nanophononic Metamaterial: Thermal Conductivity Reduction by Local Resonance," *Invited talk*, National Institute of Standards and Technology (NIST), Boulder, Colorado, February 7th, 2014.
49. "Damped and Nonlinear Wave Dispersion in Phononic Crystals and Metamaterials," *Invited talk*, School of Engineering and Applied Science, Harvard University, Cambridge, Massachusetts, February 5th, 2014.
50. "Nanophononic Metamaterials: Thermal Conductivity Reduction by Local Resonance," *Invited talk*, Department of Mechanical Engineering, Massachusetts Institute of Technology, Cambridge, Massachusetts, February 4th, 2014.
51. "Nanophononic Metamaterial: Thermal Conductivity Reduction by Local Resonance," *Invited talk*, JILA, University of Colorado, Boulder, Colorado, January 17th, 2014.
52. "Nanophononic Metamaterials: Thermal Conductivity Reduction by Local Resonance," *Invited talk*, Department of Physics, University of Colorado Boulder, Boulder, Colorado, December 5th, 2013.
53. "Generalized Bloch's Theorem for Damped Phononic Materials and the Phenomenon of Metadamping," *Invited talk*, School of Aerospace Engineering, Beijing Institute of Technology, Beijing, China, October 16th, 2013.
54. "Damped and Nonlinear Wave Dispersion in Homogeneous and Periodic Media," *Invited talk*, Department of Mechanics, Beijing Jiaotong University, Beijing, China, October 15th, 2013.
55. "Phononics: Control of Material Motion Across Scales and Disciplines," *Invited talk*, Department of Aerospace Engineering Sciences, University of Colorado Boulder, Boulder, Colorado, September 25th, 2013.
56. "Phononics: Controlling Material Motion Across Scales and Disciplines," *Invited talk*, Department of Mechanical and Industrial Engineering, University of Illinois at Chicago, Chicago, Illinois, April 12th, 2013.
57. "*Designer* Silicon: Tailoring of Thermal Conductivity by Phonon Engineering" *Invited talk*, Department of Physics, The American University in Cairo, Cairo, Egypt, January 3rd, 2013.
58. "Phononics: Controlling Material Motion Across Scales and Disciplines," *Invited talk*, Department of Physics, The American University in Cairo, Cairo, Egypt, October 2nd, 2011.
59. "Phononics: Controlling Material Motion Across Scales and Disciplines," *Invited talk*, Department of Mechanical Engineering, University of California, Berkeley, California, September 9th, 2011.

60. "Phononic Materials Across Multiple Scales: Computer Models and Dynamical Characteristics," *Invited talk*, Department of Mechanical Engineering, University of New Mexico, Albuquerque, New Mexico, February 25th, 2011.
61. "Wave Propagation in Phononic Materials: Effects of Periodicity *Type*, *Properties* and *Termination*," *Invited talk*, G.W. Woodruff School of Mechanical Engineering and D. Guggenheim School of Aerospace Engineering, Georgia Institute of Technology, Atlanta, Georgia, January 7th, 2011.
62. "Crossflow of Concepts and Techniques from Structural Dynamics to *Material Dynamics*," *Invited talk*, Department of Mechanical Engineering, University of British Columbia, Vancouver, British Columbia, November 19th, 2010.
63. "Crystallinity at Multiple Scales: Theory, Techniques and Applications," *Invited talk*, Department of Aerospace Engineering Sciences, University of Colorado Boulder, Boulder, Colorado, September 13th, 2010.
64. "Dynamics of Materials: A Narrative for Interdisciplinary Research," *Invited talk in Graduate Research Seminar*, School of Sciences and Engineering, The American University in Cairo, Cairo, Egypt, March 4th, 2010.
65. "Dynamics of Materials: Theory, Phenomena and Applications," *Invited*, Department of Mechanical Engineering, The American University in Cairo, Cairo, Egypt, February 28th, 2010.
66. "Computational Dynamics of Periodic Materials: Discrete and Continuous Models," *Invited talk*, Sandia National Laboratories, Albuquerque, New Mexico, December 17th, 2009.
67. "Analysis and Design of Phononic Crystals Across Different Length Scales," *Invited talk*, Sound and Vibration Laboratory, Ain Shams University, Cairo, Egypt, July 30th, 2009.
68. "Thermal Transport Mechanisms in Nanoscale Phononic Crystals," *Invited talk in First International Workshop on Phononic Crystal (PnC) Materials, Devices, and Applications,* Nice, France, June 25th, 2009.
69. "Analysis of Phononic Crystals by Bloch Mode Decomposition," *Invited talk in First International Workshop on Phononic Crystal (PnC) Materials, Devices, and Applications,* Nice, France, June 24th, 2009.
70. "Structural Vibrations Control using Phononic Crystals," *Invited talk in Structural and Material Systems Seminar Series*, Department of Aerospace Engineering Sciences, University of Colorado at Boulder, Boulder, Colorado, April 16th, 2008.
71. "Vibration Control using Periodic Structural Building Blocks," *Invited talk in Dynamics and Vibrations Tea Time Seminar Series*, Department of Engineering, University of Cambridge, Cambridge, UK, June 1st, 2007.
72. "Banded Materials and Structures: Building Blocks for a New Paradigm in Vibration Engineering," *Invited talk*, Ball Aerospace & Technologies, Boulder, Colorado, June 28th, 2006.
73. "Dispersive Dynamics of Periodic Materials and Structures: A Multiscale/Multiphysics Perspective," *Invited talk*, Department of Aerospace Engineering Sciences, University of Colorado at Boulder, Boulder, Colorado, April 24th, 2006.
74. "Microdynamics of Periodic Materials: From Vibration Isolation to Heat Insulation," *Invited talk in Micromechanics Seminar Series*, Department of Engineering, University of Cambridge, Cambridge, UK, January 20th, 2006.
75. "Dynamics of Dispersive Materials and Structures: Computational Analysis and Design in Multiple Scales," *Invited talk*, Department of Civil and Environmental Engineering, Carnegie Mellon University, Pittsburgh, Pennsylvania, May 9th, 2005.
76. "Dispersive Wave Motion in Periodic Materials and Structures: Multiscale Methodologies for Computation and Design using Finite Element Analysis," *17th Annual Robert J. Melosh Medal Symposium*, Rensselaer Polytechnic Institute, Troy, New York, April 29th, 2005 (received Robert J. Melosh medal).
77. "Band-Gap Materials and Structures for Control of Mechanical Vibrations," *Invited lecture in Graduate Course EECS 598: Photonic Crystals*, Department of Electrical Engineering and Computer Science, University of Michigan, Ann Arbor, Michigan, November 24th, 2004.
78. "Dynamics of Continuous and Atomistic Band-Gap Materials/Structures: Analysis, Design and Computation," *Invited talk*, Rockwell Scientific Company, Thousand Oaks, California, November 17th, 2004.
79. "A Multidisciplinary Perspective on Dispersion: Its Role in Thermal Transport and Dynamics of Composite Materials and Structures," *Invited talk*, Naval Research Laboratory, Washington, D.C., October 25th, 2004.
80. "Introduction to Finite Volume Analysis," *Invited lecture in Graduate Course ME 511: Computational Methods in Engineering*, Department of Engineering, The American University in Cairo, Cairo, Egypt, December 31st, 1995.

81. "Frequency Domain Analysis of Nonlinear Systems in Structural Dynamics," *Invited talk in Graduate Research Seminar*, Department of Engineering, The American University in Cairo, Cairo, Egypt, October 19th, 1995.

SERVICE TALKS/LECTURES

1. Frew, E.W. and **Hussein, M.I.**, "Fall 2018 Engineering Majors Lecture Series–Aerospace Engineering and Mechanical Engineering," College of Engineering and Applied Science, University of Colorado Boulder, November 5, 2018.
2. **Hussein, M.I.**, Colvin, C., "Introduction to Pre-Engineering," Meet Your Major Session, Engineering Launch Event, College of Engineering and Applied Science, University of Colorado Boulder, August 23, 2018.
3. **Hussein, M.I.**, Colvin, C., "Introduction to Pre-Engineering," Meet Your Major Session, Engineering Launch Event, College of Engineering and Applied Science, University of Colorado Boulder, August 24, 2017.
4. Aboul-Ela, F., Campoy, M., Dostálek, J., Jonas, U., Kasry, A., **Hussein, M.I.** and Liu, W.K. "Some Advice on Graduate Studies and Research," *Volunteer panelist, Event at The Egyptian Materials Research Society 32nd International Conference on Materials Science and Applications*, Aswan and Luxor, Egypt [6-9 January, 2016], January 9th, 2016.
5. Kasry, A. and **Hussein, M.I.**, "Some Advice on Graduate Studies and Research," *Volunteer panelist, Event at The Egyptian Materials Research Society XXXI International Conference on Materials Science and Applications*, Hurghada, Egypt [6-9 January, 2015], January 9th, 2015.
6. Hallowell, M.R., **Hussein, M.I.** and Marden, J., "NSF CAREER Expert Tips from Panel of Previous Winners," *Invited panelist 2014 CAREER Proposal Symposium: Key Tips and Takeaways*, College of Engineering and Applied Science, University of Colorado, Boulder, Colorado, May 14th, 2014.
7. **Hussein, M.I.** "Tips and Strategies for Success in Engineering," *Invited talk in Academic Support Session for New International Students*, College of Engineering and Applied Science, University of Colorado, Boulder, Colorado, September 20th, 2013.
8. Khajehtourian. R. and **Hussein, M.I.** "Wave Propagation in Nonlinear Elastic Metamaterials," *Materials Research Day*, University of Colorado, Boulder, Colorado, May 2nd, 2013.
9. Bickers, K., **Hussein, M.I.** and Young, P.S.K., "Advice for First Years," *New Faculty Orientation*, University of Colorado, Boulder, Colorado, August 8th, 2011.
10. Frew, E., Starkey, R., **Hussein, M.I. et al.**^,, "Aerospace Engineering Systems–From Atoms to Aircraft: Focus Area Overview," *Focus Area Presentation in Graduate Student Orientation*, Department of Aerospace Engineering Sciences, University of Colorado, Boulder, Colorado, August 20th, 2010.
11. **Hussein, M.I. et al.**^, "Structural and Material Systems: Focus Area Overview," *Focus Area Presentation in Graduate Student Orientation*, Department of Aerospace Engineering Sciences, University of Colorado, Boulder, Colorado, August 20st, 2009.
12. **Hussein, M.I.** and Ahmed, A.A. "Academic Differences, Expectations and Strategies for Success," *Invited talk in Student Workshop 'Strategies for Academic Success at CU-Boulder,'* College of Engineering and Applied Science, University of Colorado, Boulder, Colorado, February 17th, 2009.
13. **Hussein, M.I. et al.**^, "Structural and Material Systems: Focus Area Overview," *Focus Area Presentation in Graduate Student Orientation*, Department of Aerospace Engineering Sciences, University of Colorado, Boulder, Colorado, August 21st, 2008.
14. **Hussein, M.I.** and Ahmed, A.A. "Academic Differences, Expectations and Strategies for Success," *Invited talk in Student Workshop 'Strategies for Academic Success at CU-Boulder,'* College of Engineering and Applied Science, University of Colorado, Boulder, Colorado, October 7th, 2008.
15. **Hussein, M.I.**, "Multiscale Dynamics of Composite Materials and Structures: A Research Overview," *Invited talk in Prospective Graduate Students Visitor Day*, Department of Aerospace Engineering Sciences, University of Colorado, Boulder, Colorado, March 6th, 2008.
16. **Hussein, M.I.**, "Academic Differences, Expectations and Strategies for Success," *Invited talk in Student Workshop 'Strategies for Success in Science and Engineering,'* College of Engineering and Applied Science, University of Colorado, Boulder, Colorado, February 26th, 2008.
17. **Hussein, M.I.**, "Multiscale Dynamics of Composite Materials and Structures: A Research Overview," *Invited talk in Wednesday Seminar Series on Teaching, Professional Development, and Research*, Department of Aerospace Engineering Sciences, University of Colorado, Boulder, Colorado, October 10th, 2007.

18. **Hussein, M.I.**, "New Faculty Research Overview: Mahmoud I. Hussein," *Research Presentation to the External Advisory Board of the Department of Aerospace Engineering Sciences at the University of Colorado at Boulder*, University of Colorado, Boulder, Colorado, October 5th, 2007.

Note: Presentations marked with an "^" include work done by other faculty in addition to those listed.

TEACHING AND ADVISING

POSTDOCTORAL RESEARCHERS ADVISED/ADVISING AT CU BOULDER

Researcher Name

Alan S. Hsieh 08/2018-11/2018 (Postdoctoral Research Assoc., AES)^
Hossein Honarvar 07/2018-present (Postdoctoral Research Assoc., JILA/AES)^
Lina Yang 10/2014-12/2015 (Postdoctoral Research Assoc., AES)

^ Co-advised with other faculty member being the prime advisor

PHD STUDENTS GRADUATED

- Clémence L. Bacquet, "Dispersion and dissipation in viscoelastic metamaterials: Theory, experiments and applications" PhD Dissertation, University of Colorado Boulder, Spring 2018, Advisor: Mahmoud I. Hussein
- Hossein Honarvar, "Phonon transport in nanophononic metamaterials using large-scale atomistic models" PhD Dissertation, University of Colorado Boulder, Spring 2018, Advisor: Mahmoud I. Hussein
- Romik Khajehtourian, "Nonlinear dispersive elastic waves in solids: Exact, approximate, and numerical solutions" PhD Dissertation, University of Colorado Boulder, Summer 2016, Advisor: Mahmoud I. Hussein
- Dimitri Krattiger, "Fast band-structure computation for phononic and electronic waves in crystals" PhD Dissertation, University of Colorado Boulder, Summer 2016, Advisor: Mahmoud I. Hussein
- Alec Kucala, "Control of transitional and turbulent flows using direct numerical simulation" PhD Dissertation, University of Colorado Boulder, Summer 2015, Advisor: Sedat Biringen; Co-advisor: Mahmoud I. Hussein
- Osama R. Bilal, "Design and optimization of phononic crystals and metamaterials for flow control and other applications" PhD Dissertation, University of Colorado Boulder, Summer 2015, Advisor: Mahmoud I. Hussein
- Michael J. Frazier, "Dissipative wave propagation in phononic crystals and metamaterials: Models and analysis" PhD Dissertation, University of Colorado Boulder, Summer 2015, Advisor: Mahmoud I. Hussein
- Bruce L. Davis, "Lattice dynamics and thermal transport properties of nanophononic materials" PhD Dissertation, University of Colorado Boulder, Spring 2013, Advisor: Mahmoud I. Hussein

MS STUDENTS GRADUATED

- Edgar Flores, BS/MS Aerospace Engineering Sciences – No thesis option; Summer 2011.
- Andrew Tomchek, MS Aerospace Engineering Sciences – No thesis option; Spring 2011.
- Liao Liu, MS Aerospace Engineering Sciences – No thesis option; Spring 2010.

COURSES TAUGHT AT CU-BOULDER

Undergraduate:
ASEN 1022: Materials Science for Aerospace Engineers (*co-taught with K. Maute, J. Jackson*)
ASEN 2519: Materials Science for Aerospace Engineers*
ASEN 3112: Structures (*co-taught with C. Felippa*)
ASEN 4123: Vibration Analysis*
ASEN 4018: Senior Projects I – Design Synthesis
ASEN 4028: Senior Projects II – Design Practicum

Graduate:
ASEN 5012: Mechanics of Aerospace Structures
ASEN 5227: Mathematics for Aerospace Engineering Sciences I
ASEN 5519: Special Topics – Vibrations in Mechanics & Physics*
ASEN 5519: Special Topics – Introduction to Phononics*

* Newly developed course (see next section)

COURSE DEVELOPMENT

- Development and teaching of "ASEN 1022 Materials Science for Aerospace Engineers," a new freshman-level course first offered in Spring 2013 (in pilot form as ASEN 2519), University of Colorado Boulder.
- Development and teaching of "ASEN 4123 Vibration Analysis," a new senior-level course first offered in Fall 2010, University of Colorado Boulder.
- Development and teaching of "ASEN 5519 Vibrations in Mechanics and Physics," a new graduate course offered in Spring 2008 and Spring 2010, University of Colorado Boulder.
- Development and teaching of "ASEN 5519 Introduction to Phononics," a new graduate course first offered in Spring 2013, University of Colorado Boulder. This is believed to be the first course exclusively focusing on *phononics* to be offered at a US university. This course has evolved from "ASEN 5519 Vibrations in Mechanics and Physics," listed below.

OUTREACH

- Co-organized and supervised a class given to 4th graders on "Structures and Vibrations", Superior Elementary School, Superior, Colorado, October 8, 2010. The prime instructor was my PhD student B. Davis.
- Co-organized and supervised a class given to 4th graders on "Structures and Vibrations", Fireside Elementary School, Louisville, Colorado, August 30, 2010. The prime instructor was my PhD student B. Davis.

TRAINING

Attended a two-and-a-half-day skill-based workshop organized by CU-Boulder's Leadership Education for Advancement and Promotion (LEAP) program (Boulder, June 9-11, 2009). The workshop sessions covered time management, negotiation, difficult conversations, tenure review and a conversation about teaching.

SERVICE

UNIVERSITY SERVICE

Aug. 2019 – present	Member, AES Building Art & Memorabilia Committee, Smead Aerospace Engineering Sciences Department, University of Colorado Boulder
Aug. 2019 – present	Member, Faculty Evaluations Committee, Smead Aerospace Engineering Sciences Department, University of Colorado Boulder
Aug. 2019 – Dec 2019	Member, PUEC (Torin Clark), Smead Aerospace Engineering Sciences Department, University of Colorado Boulder
Jan. 2019 – Feb. 2019	Interdisciplinary Research Theme (IRT)-Imaging Science Seed Grant Review Committee, College of Engineering and Applied Science, University of Colorado Boulder
Jan. 2019 – Feb. 2019	Chancellor's Fellowship Program Award Selection Committee, University of Colorado Boulder
Aug. 2018 – May 2019	Member, PUEC (Jelliffe Jackson), Smead Aerospace Engineering Sciences Department, University of Colorado Boulder
Aug. 2018 – present	Member, Undergraduate Committee for Operations, Smead Aerospace Engineering Sciences, University of Colorado Boulder
Aug. 2018 – present	Member, Mentoring Committee, Mentored Faculty: Morteza Lahijanian, Smead Aerospace Engineering Sciences, University of Colorado Boulder
July 2018 – Aug. 2018	Member, Teets Family Graduate Fellowship Awards Committee, College of Engineering and Applied Science, University of Colorado Boulder
Aug. 2017 – present	Member, Mentoring Committee, Mentored Faculty: Tomoko Matsuo, Smead Aerospace Engineering Sciences, University of Colorado Boulder
Aug. 2017 – present	Member, Undergraduate Education Council, College of Engineering and Applied Science, University of Colorado Boulder

Aug. 2017 – present	Director, Pre-Engineering Program, College of Engineering and Applied Science, University of Colorado Boulder
Aug. 2017 – July 2018	Member, Faculty Oversight Board, Campus Imaging Facility, University of Colorado Boulder
Aug. 2017 – July 2018	Member, Dean's FLAG Committee, College of Engineering and Applied Science, University of Colorado Boulder
Jan. 2017 – May 2017	Member, PUEC (Donna Garren), Aerospace Engineering Sciences Department, University of Colorado Boulder
Feb. 2017 – July 2017	Member, International Strategy Group, University of Colorado Boulder
Sept. 2016 – Jan. 2017	Member, New Building Committee, Aerospace Engineering Sciences, University of Colorado Boulder
Dec. 2015 – present	Member, Smead Selection Committee (SSC), Aerospace Engineering Sciences, College of Engineering, University of Colorado Boulder
Sept. 2015 – May 2016	Member, Dean's FLAG Committee, College of Engineering and Applied Science, University of Colorado Boulder
Sept. 2014 – May 2015	Member, Faculty Search Committee, Aerospace Engineering Sciences, College of Engineering, University of Colorado Boulder
Aug. 2013 – July 2014	Member, Undergraduate Committee, Aerospace Engineering Sciences Department, University of Colorado Boulder
Sept. 2013 – May 2014	Member, Faculty Search Committee, Mechanical Engineering, College of Engineering, University of Colorado Boulder
Sept. 2013 – May 2014	Member, Faculty Search Committee, Civil, Environmental, and Architectural Engineering, College of Engineering, University of Colorado Boulder
Aug. 2012 – July 2013	Member, Graduate Committee, Aerospace Engineering Sciences Department, University of Colorado Boulder
Jan. 2013 – May 2013	Member, PUEC (Jim Voss), Aerospace Engineering Sciences Department, University of Colorado at Boulder
Nov. 2011 – May 2012	Member, Instructor Search Committee, Aerospace Engineering Sciences Department, University of Colorado Boulder
Aug. 2010 – May 2012	Member, Facilities Committee, Aerospace Engineering Sciences Department, University of Colorado at Boulder
Aug. 2009 – July 2010	Member, Graduate Committee, Aerospace Engineering Sciences Department, University of Colorado at Boulder
Jan. 2008 – present	Member, Mechanics and Materials (MaM) Colloquium Organization Group, College of Engineering, University of Colorado at Boulder
Jan. 2008 – May 2008	Member, Faculty Search Committee (Materials Engineering), College of Engineering, University of Colorado at Boulder
Aug. 2007 – July 2008	Member, Graduate Committee, Aerospace Engineering Sciences Department, University of Colorado at Boulder

SERVICE TO SCIENTIFIC COMMUNITY

Journal Editing

- Associate Editor, *Journal of Vibration and Acoustics-Transactions of the ASME* [2014-2017, 2017-2020].
- Assistant Editor, *Computational Mechanics* [2012-2015].
- Guest Editor, Special Edition on Frontiers in Mechanical Metamaterials, *Extreme Mechanics Letters* (published April 2017); see Publications.
- Academic Editor, Special Topic on Phononics: Selected Articles from Phononics 2015, *AIP Advances* (published Dec. 2016); see Publications.
- Academic Editor, Special Topic on Phononics: Selected Articles from Phononics 2013, *AIP Advances* (published Dec. 2014); see Publications.
- Guest Associate Editor, Special Issue on Dynamics of Phononic Materials and Structures, *Journal of Vibration and Acoustics-Transactions of the ASME* (published Oct. 2013); see Publications.

- Academic Editor, Special Topic on Phononics: Selected Articles from Phononics 2011, *AIP Advances* (published Dec. 2011); see Publications.

Societal Activities

- Co-Founder, International Phononics Society (Incorporated as a Scientific Society on March 24, 2017).
- Founding Vice President, International Phononics Society, March 2017-present.
- Co-founder (2016) and Chair of Phononic Crystals and Metamaterials Committee, ASME Noise Control and Acoustics Division, 2016-pesent.
- Member of Structural Acoustics Committee, ASME Noise Control and Acoustics Division, 2006-2016; chair, 2014-2016.
- Member of Technical Committee on Vibration and Sound, ASME Design Division, 2012-2015.

Conference and Symposium Chairmanship

- Chair or Co-chair of symposia on phononic materials, ASME International Mechanical Engineering Congress and Expedition, 2006 (Chicago, IL), 2007 (Seattle, WA), 2008 (Boston, MA) and 2009 (Lake Buena Vista, FL), 2010 (Vancouver, BC), 2011 (Denver, CO), 2012 (Houston, TX), 2013 (San Diego, CA), 2014 (Montreal, QC), 2015 (Houston, TX), 2016 (Phoenix, AR), 2017 (Tampa, FL), 2018 (Pittsburgh, PA).
- Chair or Co-chair of symposium on band-gap materials and structures, *ASME Biennial Conference on Mechanical Vibration and Noise*, 2007 (Las Vegas, NV), 2009 (San Diego, CA), 2011 (Washington, DC).
- Co-chair of symposium on elastic wave propagation, *ASME Annual Conference on Mechanical Vibration and Noise*, 2013 (Portland, OR), 2014 (Buffalo, NY).
- Co-chair of symposia on nanoscale phononic materials, US National Congress on Computational Mechanics, 2009 (Columbus, OH), 2011 (Minneapolis, MN).
- Co-Chair, "*Phononics 2013:* Second International Conference on Phononic Crystals/Metamaterials, Phonon Transport and Optomechanics", Sharm El-Sheikh, Egypt, 2–8 June 2013 (*www.phononics2013.org*). Over 125 participants attended including 70 invited speakers. Co-organized ONR-Global-sponsored student competition. An editorial was written in *Ultrasonics* in which it was stated that "with the successful conclusion of Phononics 2013, … the field can now be said to have come of age" (see Every, A. G., "Phononics−A field that has come of age," *Ultrasonics*, **54**, 1, 2014).
- Co-Chair, "*Phononics 2011:* First International Conference on Phononic Crystals, Metamaterials and Optomechanics", Santa Fe, New Mexico, 29 May – 2 June 2011 (*www.phononics2011.org*). Note: This is world's first conference to bring together the various sub-disciplines concerned with phononic wave propagation in periodic materials across the various scales and across disciplines. Over 125 participants attended including 61 invited speakers. Co-organized NSF-sponsored student fellowship and competition.
- Member, International Organizing Committee; Chair, Awards Committee, Phononics 2015: 3rd International Conference on Phononic Crystals/Metamaterials, Phonon Transport and Phonon Coupling, Paris, France, 31 May-5 June, 2015.

Review Paper(s)

- Invited by *Applied Mechanics Reviews* and *Journal of Vibration and Acoustics* to write, as lead author with two colleagues, a review article on "dynamics of phononic materials and structures" (appeared in *AMR* in July 2014 in a special joint issue by the two journals); see Publications.
  [This paper is currently the most cited article among of all the review papers published by *ASME Applied Mechanics Reviews* in the last ten years (a total of 193 papers); it has 616 citations on Google Scholar to date).

Internet Scientific Blogs

- Wrote a blog, and moderated subsequent discussion, for the Journal Club of *www.iMechanica.org* titled "Phononics: Structural Dynamics of Materials" (April 2012; http://imechanica.org/node/12210). Received ~15685 visits by October 16, 2019.

Journal Peer Review

- Reviewer for *Proceedings of the National Academy of Sciences of the United States of America, Proceeding of the Royal Society A, Science Advances, Nature Communications, Scientific Reports, Advanced Materials, Nanoscale, Physical Review Letters, Physical Review B, New Journal of Physics, Annalen der Physik, Journal of Applied Physics, Applied Physics Letters, AIP Advances, Physics Letters A, Physica Status Solidi (B), Journal of Sound and Vibration, Journal of Vibration and Acoustics, Journal of the Acoustical Society of America, Journal of Vibration Control, Wave Motion, Journal of the Mechanics and Physics of Solids, Journal of Applied Mechanics, International Journal for Solids and Structures, Journal of Elasticity, International Journal of Nonlinear Mechanics, Nonlinear Dynamics, Ultrasonics, Computer Methods in Applied Mechanics and Engineering, Finite Elements in Analysis and Design, Computational Mechanics, Structural and Multidisciplinary Optimization,* others.