

COLLEGE OF ENGINEERING BIOGRAPHICAL DATA
UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Department(% appointment): Aerospace Engineering (AE) (100%), Mechanical Science and Engineering (MechSE) (0%), Beckman Institute of Advanced Science and Technology (0%), Civil and Environmental Engineering (CEE) (0%), National Center for Supercomputing Applications (NCSA) (0%), Computational Science and Engineering (CSE) (0%)

Date: February 2018

1. Name: Geubelle Philippe H. Date of Birth: August 19, 1964
(last) (first) (m.i.)
Citizenship: USA

2. Present Academic Rank: Full Professor 3. Tenure Status (as listed in the budget) Tenured

4. Administrative Title (if any now held) Director of Illinois Space Grant Consortium, Head of Aerospace Engineering Department, President of the National Space Grant Foundation Board

List the following information, starting with the most recent date. (attach additional pages as needed)

5. Degrees (field, institution, year awarded)

Ph.D.	Aeronautics, California Institute of Technology	1993
M.S.	Aeronautics, California Institute of Technology	1989
B.S.	Mech. Engr., Catholic University of Louvain (LLN, Belgium)	1988

6. Academic Positions at U of I and elsewhere (rank, institution, inclusive dates)

Bliss Professor (100%), AE, U of I	2011-present
Full Professor (100%), AE, U of I	2006-2011
NCSA Faculty Associate (0%), U of I	2008-present
CEE Faculty Associate (0%), U of I	2006-present
MechSE Faculty Associate (0%), U of I	2007-present
Part-time Faculty Associate (0%), Beckman Institute, U of I	2004-present
Visiting Professor, Ecole Polytechnique Fédérale de Lausanne, Switzerland	2011
Visiting Professor, Catholic University of Louvain, Belgium	2002
Associate Professor (100%), AE, U of I	2000-2006
MIE Faculty Associate (0%), U of I	2001-2007
TAM Faculty Fellow (0%), U of I	1998-2007
Assistant Professor (100%), AE, U of I	1995-2000
N.A.T.O. Postdoctoral Research Associate, Harvard University	1993-1994

7. a. Other Professional Employment (title, organization, location, inclusive dates)

Graduate Research Assistant, California Institute of Technology	1989-1993
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b. Major Consulting Activities (past five years) (list organization and location)

American Bureau of Shipping, Houston, TX (2003-2005)
Short Graduate Course on Fracture Mechanics, Graduate School of Mechanics, UCL, Belgium (November 2002)
AdTech Systems, Dayton, OH (2001-2002)
Short Course on Fracture Mechanics, ARL, Aberdeen, MD (March 2001)

c. Professional Registrations (filed, location, date)

d. Other

8. Honors, Recognition and Outstanding Achievements (since PhD)

- a. Teaching
 - Stanley H. Pierce Award, College of Engineering, U. of Illinois, 2007
 - Accenture Excellence in Advising Award, U. of Illinois College of Engineering, 2005
 - List of Teachers Rated as Excellent by Their Students, U. of Illinois, 1995, 1996, 1997, 1999, 2000, 2001, 2002, 2005, 2007, 2009, 2012, 2015, 2016
 - College of Engineering Everitt Teaching Award, U. of Illinois, 2000
 - AIAA Teacher of the Year Award, University of Illinois, 1998, 2008
 - Provost Award for Excellence in Undergraduate Research Mentoring, University of Illinois, 2014
- b. Research
 - Bliss Professorship, College of Engineering, U. of Illinois, 2011
 - ASME Fellow, 2009
 - Best Paper of the Year Award, Materials Division, ASME, 2007
 - Best Paper of the Year Award, Fluid Dynamics, AIAA, 2014
 - Bliss Faculty Scholar, College of Engineering, U. of Illinois, 2005
 - American Society for Composites Best Paper Award, 16th Technical Conference, Polymer Matrix Composite Division, 2001
 - University of Illinois College of Engineering Xerox Research Award, 1999, 2005
 - NSF Career Award, 1998
 - N.A.T.O. Postdoctoral Fellowship, 1994
- c. Public Service
- d. Other

FACTUAL INFORMATION

A. Resident Instruction and Continuing Education

1. Resident Instruction (see attached Teaching Activity Report)
2. Continuing Education (credit courses only)

<u>Year</u>	<u>Course</u>	<u># of Students</u>	<u>Delivery Method</u>
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3. Other Instructional Activities

Ph.D. Preliminary Exams:

Justin Berman (AAE)	1996	
Qi Zhu (AAE)	1999	
Junlan Wang (TAM)	2000	
Mike Kessler (TAM)	2000	
Spandan Maiti (AAE)	2000	
Dhirendra Kubair (AAE)	2000	
Ming Li (MIE)	2000	
Daniel O'Brien (MIE)	2001	
Eric Brown (TAM)	2001	
J. Liu (ECE)	2001	
X. Ma (CS)	2002	
J. Lee (CS)	2002	
Rajeev Jaiman (AE)	2004	
Greg Koenig (CS)		2004
Jamie Kimberly (AE)	2004	
Kathie Toohey (TAM)	2005	
K. Nakshatrala (CEE)	2005	
Jason Kamphaus (AE)	2006	
K. Jonnalaga (AE)	2007	
A. Abd El-Rahman (MechSE)	2007	
Q. Chen (AE)	2007	
S. Kweon (MechSE)	2008	

Justin Mach (MechSE)	2008	
Ben Blaiszik (MechSE)	2008	
K. Cochran (CEE)		2008
Jeronymo Pereira (CEE)	2008	
Krishnan Srinivasan (AE)	2008	
H. Zhao (MechSE)	2008	
P. Sumant (MechSE)	2008	
Mariana Silva (TAM)	2009	
Andrew Hamilton (TAM)	2009	
Patrick O'Hara (CEE)	2009	
A. Patel (AE)	2009	
Brian Kozola (AE)	2010	
Nikhil Karanjgaokar (ME)	2010	
Fernando Stump (TAM)	2010	
Mahesh Suscheendran (AE)	2010	
M. Scot Breitenfeld (AE)	2010	
Henghua Jin (AE)		2011
Soheil Soghrati (CEE)	2011	
Chris Ostoich (AE)	2011	
Tanil Ozkan (AE)		2012
Asha-Dee Celestine (AE)	2012	
Sivakumar Yagnamurthy (AE)	2012	
Pavan Kolluru (AE)	2012	
Varun Gupta (CEE)	2012	
Sean Hubbard (AE)	2012	
Yuya Matsumura (AE)	2012	
Jason Patrick (CEE)	2012	
Martha Grady (TAM)	2013	
Praveen Nakshatrala (ME)	2013	
Mohith Manjunath (AE)	2013	
Raj Pal (ME)	2013	
Md. Arif Hasan (TAM)	2013	
Kevin Hart (AE)	2014	
Ahmad Najafi (TAM)	2014	
Marcus Tan (ME)		2015
Stephen Pety (MatSE)	2015	
Debashish Das (AE)	2015	
Dimitrios Antartis (AE)	2015	
Ruizhi Li (AE)	2015	
Robert Waymel (AE)	2015	
Tianjian Lu (ECE)		2015
Sang Yup Kim (MechSE)	2016	
Philippe Alves (CEE)	2016	
Shakti Saurabh (AE)	2016	
Abhilash Harpale (AE)	2016	
Kedi Zhang (ECE)	2017	

Ph.D. Final Exams:

Y. Kim (AAE)	1997
A. Gollarud (CEE)	1999
J. Berman (AAE)	2000
Q. Zhu (AAE)	2000
D. Kubair (AAE)	2001
M. Kessler (TAM)	2002

J. Liu (ECE)	2002	
S. Maiti (AAE)	2002	
J. Lee (CS)	2003	
X. Bi (AE)	2003	
D. Therriault (AE)		2003
E. Brown (TAM)	2003	
X. Ma (CS)	2003	
Q. Li (CS)	2004	
J. P. Petti (CEE)	2004	
J. Lin (AE)	2004	
J. Armando-Bueno (AE)	2004	
H. Zhao (TAM)	2006	
G. Koenig (CS)	2007	
R. Jaiman (AE)	2007	
K. Babu (CEE)	2007	
K. Toohey (MechSE)	2007	
M. Keller (MechSE)	2007	
F. Xu (MechSE)	2007	
J. Kimberly (AE)	2007	
M. Tonks (MechSE)	2008	
K. Jonnalagadda (AE)	2008	
Kartik Srinivasan (AE)	2008	
A. Abd El-Rahman (MechSE)	2009	
Helen Inglis (MechSE)	2008	
S. Kweon (MechSE)	2009	
K. Cochran (CEE)		2009
Justin Mach (MechSE)	2009	
Ben Blaiszik (TAM)	2009	
Mariana Silva (TAM)	2009	
H. Zhao (MechSE)	2009	
P. Sumant (ECE)	2010	
Jeronymo Pereira (CEE)	2010	
Patrick O'Hara (CEE)	2010	
Phuong Tran (TAM)	2010	
Alejandro Aragon (CEE)	2010	
Andrew Hamilton (TAM)	2011	
Henghua Jin (AE)		2012
Nikhil Karanjgaokar (ME)	2012	
Mahesh Sucheendran (AE)		2013
Chris Ostoich (AE)	2013	
Soheil Soghrati (CEE)	2013	
Sivakumar Yagnamurthy (AE)	2013	
Fernando Stump (TAM)	2013	
Tanil Ozkan (AE)		2013
M. Scot Breitenfeld (AE)	2013	
Asha-Dee Celestine (AE)	2014	
Varun Gupta (CEE)	2014	
Martha Grady (TAM)	2014	
Guilherme Amadio (AE)	2014	
Pavan Kolluru (AE)	2014	
Jason Patrick (CEE)	2014	
Mohith Manjunath (AE)	2014	
Raj K. Pal (TAM)		2014
Amanda Emnett (TAM)	2015	
Anthony Coppola (AE)	2015	
Kevin Hart (AE)	2016	
Ahmad Najafi (TAM)	2016	
Tianjian Lu (ECE)		2016

Marcus Tan (TAM)	2017
Ruizhi Li (AE)	2017
Stephen Pety (MatSE)	2017
Debashish Das (AE)	2017
Dimitrios Antartis (AE)	2017
Sang Yup Kim (ME)	2017
Shakti Saurabh (AE)	2017
Kohran Sahin (AE)	2017
Robert Waymel (AE)	2017

Course development:

Introduced in 2004 the NASA- and Boeing-supported Undergraduate Research Opportunity Program (UROP) in Aerospace Engineering and Science involving every summer 15 to 25 undergraduate students who take part in intensive research activities in aerospace engineering and science.

Complemented in 2007-2009 the UROP program with an NSF REU Site for undergraduate research in aerospace engineering and science. The program brought ten highly qualified undergraduate students from outside the U. of I. to campus for 8 to 10 weeks of active research.

New course – AE 199 SD: Applied Spacecraft Design (Freshmen Design Course) – First taught in Fall 2004 to 60 AE freshmen organized in 10 teams. Each team is asked to design, build and fly a model rocket with a variety of sensors (camera, altimeter, pressure sensor, accelerometers). Emphasis is also placed on data analysis, programming, report writing and engineering ethics. The course is now labeled AE100SD and is offered every year to about half of the AE freshmen class.

New course – AE199: Initiated a new 1 credit hour course in which students involved in two design projects (IRIS Lunabotics, and SAB Student Aircraft Builders) present their progress at weekly meetings. Initially introduced in the Fall of 2013 to about 40 undergraduate students. This course was expanded in the fall of 2014 to a third student project: SSS (Student Spacecraft Systems), which focuses on high-power rocketry.

New course – AE 598 FM (formerly AAE 493 FM): Advanced Fracture Mechanics – Now cross-listed with CEE as AE/CEE 575.

New course – AE 370 (formerly AAE 270 and AE470): Computational Methods in Aerospace Engineering – Now a required junior-level course of AE undergraduate curriculum. Strong emphasis on programming (in Matlab).

Updating of AE 323 (formerly AAE 221 and AE322): Aerospace Structures II.

Major redesign of AE 420 (formerly AAE 320): Introduction to the Finite Element Method (FEM) – Crosslisted with ME 471 – Strong emphasis on programming (with Matlab) and on theory of FEM. Introduction to commercial FE packages.

4. Undergraduate Advising, current year only

a) academic advising 20 students (AE Chief Undergraduate Advisor, 2007-2008)

b) student organizations

As part of the new course (AE199) I created in 2013, I am working with three students organizations: Student Aircraft Builders, Illinois Robotics in Space, and Student Space Systems. I am the official faculty advisor for Student Space Systems.

c) design teams

Structural design consultant for the Floating Illini, 2000, 2001

Faculty mentor for three AE teams participating in Midwest Space Grant Rocket Competition, 2012

d) other:

Undergraduate Research Advising:

P. Lee (AAE)	1997-1998
M. Zaczek (AAE)	1998
D. Perveiler (AAE)	2000
C. Navarro (AAE)	2001
W. Harris (AAE)	2001-2002
J. Kowtko (AAE)	2001, 2002
M. Anderson (AAE)	2003

W. Bauer (AAE)	2003-2004
Y. Chew (AE)	2004
J. Gu (CS)	2004-2005
R. Page (AE)	2005
B. Collins (MIE)	2005
D. Ofman (ECE)	2005
S. Stetak (CS)	2005
J. Kramer (MechSE)	2006
J. Patel (AE)	2006-2007
J. Wayer (AE)	2007
A. Lovero (GE)	2007
J. Honcharovich (AE)	2007
B. O'Rourke (CS)	2007
K. Smith (AE)	2008-2009
I. Kim (AE)	2008-2009
A. Kuester (AE)	2008
E. Helaire (CS)	2009
M. Srinivasan (AE)	2009
N. Broadhuis (MatSE)	2010
N. Parillo (AE)	2010
Z. Wang (AE)	2011
M. Kandel (ECE)	2011-2012
K. Hughes (MechSE)	2011-2012
L. Gomes (AE)	2012
P. Braslaukas (AE)	2012
E. Anderson (AE)	2012-2013
J. Hsu (MatSE)	2013
J. Morton (AE)	2013
M. Feng (AE)	2013-2015
Kyle Weiskircher (AE)	2014
Melanie Ciancio (AE)	2014
Meng Feng (AE)	2016
Angel Agrawal (AE)	2016
Yuxuan (Tim) Lu (AE)	2016
Laith Yafi (AE)	2016
Nathan Hibbard (AE)	2017
Ynabin Long (AE)	2017

B. Research, Creative, and Other Scholarly Activities

1. List publications in print or accepted, with authors' names ordered the way they appear on publications. Provide inclusive page numbers for papers in proceedings and journals. Follow the outline given below for the organization of the list of publications. Within each category place items in chronological order. Place a single asterisk(*) before any publication which has undergone stringent editorial review by peers. Place a double asterisk(**) before any publication which was invited and carries with it prestige and recognition. Place an s before any publication based on your work as a student. Indicate by ! up to 5 publications that you consider to represent your most important contributions of the past decade.

a₁. Books Authored or Co-Authored, Original Editions

None

a₂. Books Authored or Co-Authored, Revisions

None

b₁. Books Edited or Co-Edited, Original Editions

Bobaru, F., Foster, J. T., Geubelle, P. H., and Silling, S. *Handbook of Peridynamic Modeling*, CRC Series: Modern Mechanics and Mathematics, CRC Press. 2016.

b₂. Books Edited or Co-Edited, Revisions

None

c. Chapters in Books

Kardomateas, G. A. and Geubelle, P. H. (2010) "Fatigue and Fracture Mechanics in Aerospace Structures". *Encyclopedia of Aerospace Engineering*. John Wiley & Sons, Ltd., DOI: 10.1002/9780470686652.eae142.

Lawlor, O. S., Breitenfeld, M. S., Geubelle, P. H., and Zheng, G. (2013) "Crack Propagation Analysis with Automatic Load Balancing". In *Parallel Science and Engineering Applications: The Charm++ Approach*. Edited by Laxmikant V. Kale and Abhinav Bhatele. Chapter 9, pp. 187-210. <http://www.crcpress.com/product/isbn/9781466504127>.

Breitenfeld, S. M., Geubelle, P. H., Weckner, O., and Silling, S. A. (2016) "Relations Between Peridynamics and Classical Cohesive Models." In *Handbook of Peridynamic Modeling*. Edited by Florin Bobaru, John Foster, Philippe Geubelle and Stewart Silling. Chapter 11, pp. 321-340.

d. Monographs (longer than an article but shorter than a book)

None

e₁. Articles in Journals

- 1) *s Geubelle, P. H. and Knauss, W. G. (1994) "Crack propagation at and near bimaterial interfaces : linear analysis". *ASME J. Appl. Mech.*, **61**, 560-566.
- 2) *s Geubelle, P. H. and Knauss, W. G. (1995) "Crack propagation at and near bimaterial interfaces under general loading : nonlinear analysis". *ASME J. Appl. Mech.*, **62:3**, 601-606.
- 3) *s Geubelle, P. H. and Knauss, W. G. (1994) "Finite strains at the tip of a crack in a sheet of hyperelastic material: 1. Homogeneous case". *J. Elasticity*, **35**, 31-98.
- 4) *s Geubelle, P. H. and Knauss, W. G. (1994) "Finite strains at the tip of a crack in a sheet of hyperelastic material: 2. Special bimaterial cases". *J. Elasticity*, **35**, 99-137.
- 5) *s Geubelle, P. H. and Knauss, W. G. (1994) "Finite strains at the tip of a crack in a sheet of hyperelastic material: 3. General bimaterial case". *J. Elasticity*, **35**, 139-174.
- 6) *s Geubelle, P. H. and Knauss, W. G. (1995) "A note related to energy-release rate computations for kinking interface cracks". *ASME J. Appl. Mech.*, **62:1**, 266-267.
- 7) *s Geubelle, P. H. (1995) "Finite deformation effects in homogeneous and interfacial fracture". *Int. J. Solids Structures*, **36:6/7**, 1003-1016.
- 8) *! Geubelle, P. H. and Rice, J. R. (1995) "A spectral method for 3D elastodynamic fracture problems". *J. Mech. Phys. Solids*, **43:11**, 1791-1824.
- 9) * Morrissey, J. W. and Geubelle, P. H. (1997) "A numerical scheme for mode III dynamic fracture problems". *Int. J. Numer. Meth. Eng.*, **40**, 1181-1196.

- 10) * Geubelle, P. H., Danyluk, M. J. and Hilton, H. H. (1997) "Dynamic mode III fracture in viscoelastic media". *Int. J. Solids Structures*, **35**, 761-782.
- 11) * Geubelle, P. H. and Breitenfeld, M. S. (1997) "Numerical analysis of dynamic debonding under anti-plane shear loading". *Int. J. Fracture*, **85**, 265-282.
- 12) * Danyluk, M. J., Geubelle, P. H. and Hilton, H. H. (1998) "2D and 3D dynamic fracture in viscoelastic media". *Int. J. Solids Structures*, **35:28-29**, 3831-3853.
- 13) * Geubelle, P. H. (1997) "A numerical method for elastic and viscoelastic dynamic fracture problems in homogeneous and bimaterial systems". *Computational Mechanics*, **20:1-2**, 20-25.
- 14) *! Breitenfeld, M. S. and Geubelle, P. H. (1998) "Numerical analysis of dynamic debonding under 2D in-plane and 3D loading". *Int. J. Fracture*, **93**, 13-38.
- 15) * Geubelle, P. H. and Baylor, J. (1998) "Impact-induced delamination of composites: a 2D simulation". *Composites B*, **29B**, 589-602.
- 16) * Breitenfeld, M. S. and Geubelle, P. H. (2000) "Parallel implementation of a spectral scheme for the simulation of 3D dynamic fracture events". *Int. J. High Performance Computing Appl.*, **14:1**, 26-38.
- 17) * Lin, G., Geubelle, P. H. and Sottos, N. R. (2001) "Simulation of fiber debonding with friction in a model composite pushout test". *Int. J. Solids Structures*, **38:46-47**, 8547-8562.
- 18) * Geubelle, P. H. and Kubair, D. (2001) "Intersonic crack propagation in homogeneous media under shear-dominated loading: Numerical analysis". *J. Mech. Physics Solids*, **49:3**, 571-587.
- 19) * Zhu Q., Li M., Geubelle, P.H. and Tucker, C. L. (2001) "Dimensional accuracy of thermoset composites: simulation of process-induced residual stresses". *J. Composite Materials*, **35:24**, 2171-2205.
- 20) * Li, M., Zhu, Q., Geubelle, P. H. and Tucker, C. L. (2001) "Optimal curing for thermoset matrix composites: thermomechanical considerations". *Polymer Composites*, **22**, 118-131.
- 21) * Zhu Q. and Geubelle, P.H. (2002) "Dimensional accuracy of thermoset composites: shape optimization". *J. Composite Materials*, **36:6**, 647-672.
- 22) * Wood, B., Loth, E. and Geubelle, P. H. (2002) "A numerical methodology for an aeroelastic supersonic viscous flow". *J. Fluid and Structures*, **16:8**, 1127-1144.
- 23) *! White, S. R., Sottos, N. R., Geubelle, P. H., Moore, J. S., Kessler, M. R., Sriram, S. R., Brown, E. N. and Viswanathan, S. (2001) "Autonomic healing of polymer composites". *Nature*, **409**, 794-797.
- 24) * Hwang, C. and Geubelle, P. (2000) "A spectral scheme to simulate dynamic fracture problems in composites". *Computer Modeling in Eng. & Science*, **1:4**, 45-56.
- 25) * Li Z., Bi X., Lambros J. and Geubelle P. H. (2002) "Dynamic fiber debonding and frictional push-out in model composite systems: experimental observations". *Experimental Mechanics*, **42:4**, 417-425.
- 26) *! Kubair, D., Geubelle, P. H. and Huang, Y. (2002) "Intersonic crack propagation in homogeneous media under shear-dominated loading: Theoretical analysis". *J. Mech. Phys. Solids*, **50:8**, 1547-1564.
- 27) * Kubair, D., Geubelle, P. H. and Huang, Y. (2003) "Analysis of a rate-dependent cohesive model for dynamic crack propagation". *Eng. Fracture Mech.*, **50:5**, 685-704.
- 28) * Bi, X., Li, Z., Geubelle, P. H. and Lambros, J. (2002) "Dynamic fiber debonding and frictional push-out in model composite systems: numerical simulations". *Mechanics of Materials*, **34**, 433-446.

- 29) * Zhu, Q., Shrotriya, P., Sottos, N. R. and Geubelle, P. H. (2003) "Three-dimensional simulation of viscoelastic response of a woven composite substrate for multilayer PCB". *Composite Science and Technology*, **63**, 1971-1983.
- 30) * Zhang, P., Huang, Y., Geubelle, P. H., Klein, P. A. and Hwang, K. C. (2002) "The elastic modulus of single-wall carbon nanotubes: a continuum analysis incorporating interatomic potentials". *Int. J. Solids Structures*, **39**, 3893-3906.
- 31) * Zhang P., Huang Y., Geubelle P. H., and Hwang K. C. (2002) "On the continuum modeling of carbon nanotubes". *Acta Mechanica Sinica*, **18:5**, 528-536.
- 32) * Kubair, D. and Geubelle, P. H. (2003) "Comparative analysis of extrinsic and intrinsic cohesive models of dynamic fracture". *Int. J. Solids Structures*, **40:15**
- 33) * Maiti, S. and Geubelle, P. H. (2002) "Mesoscale modeling of dynamic fracture of ceramic materials". *Computer Modeling in Eng. & Science*, **5:2**, 91-101.
- 34) * Jiang, H., Zhang, P., Liu, B., Huang, Y., Geubelle, P. H., Gao, H. and Hwang, K. C. (2002) "The effect of nanotube radius on the constitutive model for carbon nanotubes". *Computational Material Science*, **28**, 429-442.
- 35) * Kubair, D., Geubelle, P. H. and Lambros, J. (2005) "Asymptotic analysis of a mode III stationary crack in a ductile functionally graded material". *J. Applied Mechanics*, **72:4**, 461-467.
- 36) *! Maiti, S., Rangaswamy, K. and Geubelle, P. H. (2005) "Mesoscale analysis of dynamic fragmentation of ceramics under tension". *Acta Materialia*, **53:3**, 823-834.
- 37) * Zhang, P., Jiang, H., Huang Y., Geubelle, P. H. and Hwang, K. C. (2004) "An atomistic-based continuum theory for carbon nanotubes: analysis of fracture nucleation". *J. Mech. Physics Solids*, **52:5**, 977-998.
- 38) *! Maiti, S. and Geubelle, P. H. (2005) "A cohesive model for fatigue failure of polymers". *Eng. Fracture Mechanics*, **72:5**, 691-708.
- 39) * Kandula, S., Abanto-Bueno, J., Geubelle, P. H. and Lambros, J. (2004) "Cohesive modeling of dynamic fracture of functionally graded materials". *Int. J. Fracture*, **132**, 275-296.
- 40) * Hendrickx, J., Geubelle, P. H. and Sottos, N. R. (2005) "A spectral scheme to simulate the mode III dynamic delamination of thin films". *Eng. Fracture Mech.*, **72**, 1866-1891.
- 41) *! Maiti, S. and Geubelle, P. H. (2006) "Cohesive modeling of fatigue crack retardation in polymers: Crack closure effect". *Eng. Fracture Mech.*, **73:1**, 22-41.
- 42) * Tan, H., Liu, C., Huang, Y., and Geubelle, P.H. (2006) "Effect of nonlinear interface debonding on the constitutive model of composite materials". *International Journal for Multiscale Computational Engineering* **4**, 147-167.
- 43) * Tan, H., Huang, Y., Liu, C. and Geubelle, P. H. (2005) "The Mori-Tanaka method for composite materials with nonlinear interface debonding". *Int. J. Plasticity*, **21**, 1890-1918.
- 44) * Tan, H., Liu, C., Huang, Y. and Geubelle, P. H. (2005) "The cohesive law for the particle/matrix interfaces in high explosives". *J. Mech. Physics Solids*, **53**, 1892-1917.
- 45) * Jaiman, R. K., Jiao, X., Geubelle, P. H. and Loth, E. (2005) "Assessment of conservative load transfer schemes for nonmatching interface in fluid-solid interaction". *Int. J. Numer. Meth. Eng.*, **64**, 2014-2038.
- 46) * Matous, K. and Geubelle, P. H. (2006) "Multiscale analysis of particle debonding in reinforced elastomers subjected to finite deformation". *Int. J. Numer. Meth. Eng.*, **65**, 190-223.

- 47) * Kandula, S., Abanto-Bueno, J., Geubelle, P. H. and Lambros, J. (2006) "Cohesive modeling of quasi-static fracture in functionally graded materials". *J. Applied Mechanics*, **73**, 783-791.
- 48) * Maiti, S., Shankar, C., Geubelle, P. H. and Kieffer, J. (2006) "Continuum- and molecular-level modeling of fatigue crack propagation in self-healing composite". *J. Eng. Mater. Technology*, **128:4**, 595-602.
- 49) * Jaiman, R. K., Jiao, X., Geubelle, P. H. and Loth, E. (2006) "Conservative load transfer along curved fluid-solid interface with non-matching meshes". *J. Computational Physics*, **218:1**, 372-397.
- 50) * Matous, K., Inglis, H. M., Gu, X., Rypl, D., Jackson, T. L. and Geubelle, P. H. (2007) "Multiscale modeling of solid propellants: From particle packing to grain failure." *Composites Science & Technology*, **67:7-8**, 1694-1708. DOI: 10.1016/j.compscitech.2006.06.017.
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- 44) Zhang, K., Najafi, A. R., Geubelle, P. H. and Jin, J.-M. "A 2D interface-enriched generalized FEM for EM analysis of composite materials." 2015 IEEE International Symposium on Antennas and Propagation and North-American Radio Science Meeting. Vancouver, BC, Canada. July 19-25, 2015.
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Patents

Patent number: 6858659

Multifunctional autonomically healing composite material

Date of Patent: February 22, 2005

Assignee: The Board of Trustess of the University of Illinois

Inventors: Scott R. White, Nancy R. Sottos, Philippe H. Geubelle, Jeffrey S. Moore, Suresh R. Sriram, Michael R. Kessler, Eric N. Brown

Patent number: 6651935

Method and apparatus for control of shock/boundary-layer interactions

Date of Patent: November 25, 2003

Assignee: The Board of Trustees of the University of Illinois

Inventors: Eric Loth, Philippe H. Geubelle, Scott R. White, Andrew G. Alleyne, Stephen T. Mcllwain, J. Craig Dutton, Daniel Tortorelli, David Davis

Publication number: 20030060569

Multifunctional autonomically healing composite material

Publication date: March 27, 2003

Inventors: Scott R. White, Nancy R. Sottos, Philippe H. Geubelle, Jeffrey S. Moore, Suresh R. Sriram, Michael R. Kessler, Eric N. Brown

Patent number: 6518330

Multifunctional autonomically healing composite material

Date of Patent: February 11, 2003

Assignee: Board of Trustees of University of Illinois

Inventors: Scott R. White, Nancy R. Sottos, Philippe H. Geubelle, Jeffrey S. Moore, Suresh R. Sriram, Michael R. Kessler, Eric N. Brown

Method and apparatus for control of shock/boundary-layer interactions

Publication number: 20020190164

Publication date: December 19, 2002

Inventors: Eric Loth, Philippe H. Geubelle, Scott R. White, Andrew G. Alleyne, Stephen T. Mcllwain, J. Craig Dutton, Daniel Tortorelli, David Davis

Publication number: 20020111434

Multifunctional autonomically healing composite material

Publication date: August 15, 2002

Inventors: Scott R. White, Nancy R. Sottos, Philippe H. Geubelle, Jeffrey S. Moore, Suresh R. Sriram, Michael R. Kessler, Eric N. Brown

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USNCCM meeting in Albuquerque, NM – July 21-25, 2003 – 3 papers (all invited)

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Kandula, S., Tran, P., Geubelle, P. H. and Sottos, N. R. "Dynamic delamination of patterned thin films." Paper IMECE 2008-68930, 2008 ASME International Mechanical Engineering Congress and Exhibit, Boston. November 2008.

Inglis, H. and Geubelle, P. H. "Micromechanics models for debonding in heterogeneous materials." AfriCOMP09, Sun City, South Africa.

Kulkarni, M. G., Geubelle, P. H. and White, S. R. "Multiscale modeling of adhesive-cohesive failure in heterogeneous epoxy adhesives." 2nd International Conference on Self-Healing Materials. Chicago, June 2009.

Aragon, A. M., Geubelle, P. H. and White, S. R. "Multiphysics optimization of microvascular materials." 2nd International Conference on Self-Healing Adhesives. Chicago, June 2009.

Matous, K., Srinivasan, K., Jackson, T. L. and Geubelle, P. H. Numerical simulation of heterogeneous propellant combustion by generalized finite element method." USNCCM-10, Columbus, OH, July 2009.

Stump, F. V., Karanjaokar, N., Jonnalagadda, K., Chasiotis, I. and Geubelle, P. H. "Modeling the rate dependency of nano-crystalline materials through inter- and intra-granular inelastic mechanisms." USNCCM-10, Columbus, OH, July 2009.

Aragon, A. M., Duarte, C. A. and Geubelle, P. H. "Generalized finite element enrichment functions for discontinuous gradient fields." USNCCM-10, Columbus, OH, July 2009.

Kulkarni, M. G., Matous, K. and Geubelle, P. H. "Multi-scale cohesive simulation of failure in heterogeneous adhesives." USNCCM-10, Columbus, OH, July 2009.

Silva, M., Tortorelli, D. A. and Geubelle, P. H. "A topological derivative application in fracture mechanics: the estimation of the energy release rate." USNCCM-10, Columbus, OH, July 2009.

Geubelle, P. H., Patel, J. and Inglis, H. "Debonding-driven failure of composites: a study based on a stochastic homogenization scheme." USNCCM-10, Columbus, OH, July 2009.

Geubelle, P. H. "Multiphysics modeling of biomimetic materials for autonomic healing and cooling applications." IMECE 2009-11204, Orlando, Florida, November 13-19, 2009.

Geubelle, P. H., Tran, P., Grady, M. and Sottos, N. R. "A combined experimental/numerical test protocol to measure interface toughness of thin films." IMECE 2009-10824, Orlando, Florida, November 13-19, 2009.

Geubelle, P. H., Kulkarni, M. and Matous, K. "Multiscale cohesive modeling of heterogeneous adhesives." IMECE 2009-12346, Orlando, Florida, November 13-19, 2009.

Ostoich, C., Bodony, D. J. and Geubelle, P. H. "Coupled computational fluid/thermal investigation of hypersonic flow over a quilted dome surface." APS Meeting, Minneapolis, MN, November 2009.

Sucheendran, M., Bodony, D. J. and Geubelle, P. H. "Interaction of sound with an elastic plate in a rectangular duct." APS Meeting, Minneapolis, MN, November 2009.

Matous, K., Kulkarni, M. and Geubelle, P. H. "Multiscale cohesive modeling of heterogeneous material layers" ECCM 2010, Paris, France, May 16-21, 2010.

Selvarasu, P., Tran, P., Grady, M., Geubelle, P. H. and Sottos, N. R. "Dynamic delamination of thin films using a laser-induced acoustic pulse." Paper USNCTAM2010-1023. 16th U.S. National Congress of Theoretical and Applied Mechanics, State College, PA. June 27 to July 2, 2010.

Geubelle, P. H., Aragón, A., Soghrati, S., Kozola, B. and White, S. R. "Modeling and design of microvascular materials for active cooling application." Paper USNCTAM2010-1003. 16th U.S. National Congress of Theoretical and Applied Mechanics, State College, PA. June 27 to July 2, 2010.

Soghrati, S., Aragón, A.M., Geubelle, P.H. and White, S.R. "Design of microvascular materials in actively-cooled high-temperature composites." 47th Annual Technical Meeting, Society of Engineering Science, October 3-6, 2010, Iowa State University.

Stump, F., Karanjgaokar, N., Geubelle, P.H. and Chasiotis, I. "A multiscale model for rate dependence of nanocrystalline thin films." 47th Annual Technical Meeting, Society of Engineering Science, October 3-6, 2010, Iowa State University.

Awasthi, A. P., Smith, K. J., Geubelle, P. H. and Lambros, J. "Large-scale modeling and computational design of wave-tailoring granular media." Paper IMECE2010-38773. International Mechanical Engineering Congress and Exposition. November 12-18, 2010. Vancouver, B.C.

Smith, K.J., Awasthi, A.P., Geubelle, P.H. and Lambros, J. "Plastic dissipation effects on wave propagation in granular media." Paper IMECE2010-38806. International Mechanical Engineering Congress and Exposition. November 12-18, 2010. Vancouver, B.C.

Tortorelli, D.A., Silva, M. and Geubelle, P.H. "Energy release rate approximation using the topological derivative." Paper IMECE2010-40986. International Mechanical Engineering Congress and Exposition. November 12-18, 2010. Vancouver, B.C.

Awasthi, A., Smith, K., Leonard, A., Daraio, C., Geubelle, P. H. and Lambros, J. "Analysis of wave propagation in 2D granular media." McMat2011-4110 Paper. McMat2011 ASME Conference, Chicago, May 30-June 1, 2011.

Geubelle, P. H., Soghrati, S., Thakre, P. R., Lin, J. H., White, S. R. and Sottos, N. R. "Computational design of microvascular multifunctional composites for high temperature applications." McMat2011-4128 Paper. McMat2011 ASME Conference, Chicago, May 30-June 1, 2011.

Thakre, P. R., Soghrati, S., Sottos, N. R., Geubelle, P. H., and White, S. R. "Active cooling of three-dimensional microvascular composites." McMat2011-4169 Paper. McMat2011 ASME Conference, Chicago, May 30-June 1, 2011.

Manjunath, M., Awasthi, A. and Geubelle, P. H. "Wave propagation in random granular media." McMat2011-4199 Paper. McMat2011 ASME Conference, Chicago, May 30-June 1, 2011.

Soghrati, S., Aragón, A. M. and Geubelle, P. H. "Design of actively-cooled microvascular materials: genetic algorithm inspired topology and shape optimization." McMat2011-4206 Paper. McMat2011 ASME Conference, Chicago, May 30-June 1, 2011.

Geubelle, P. H., Soghrati, S., Lin, J. H., Thakre, P., Sottos, N. R. and White, S. R. "An interface-based generalized finite element method for the meso-scale design of microvascular high-temperature composites." 3rd International Conference on Self-Healing Materials, Bath, England, June 27-29, 2011.

Aragón, A. M. and Geubelle, P. H. "Computational design of microvascular materials." 3rd International Conference on Self-Healing Materials, Bath, England, June 27-29, 2011.

Geubelle, P. H., and Aragón, A. "A multiscale framework for 3-D cohesive modeling of failure in heterogeneous adhesives and coatings." Keynote presentation, CFRAC 2011, Barcelona, Spain, June 5-8, 2011.

Geubelle, P. H., Aragón, A., Sottos, N. R. and Kieffer, J. "Multiscale modeling and experimental assessment of failure in polymeric coatings and multi-layered systems." Paper IMECE2011-64093, ASME IMECE 2011, Denver, CO, November 2011.

Geubelle, P. H., Soghrati, S., Thakre, P., Lin, J.-H., Sottos, N. R. and White, S. R. "Computational design and assessment of microvascular composites for high temperature applications." Paper IMECE2011-63349, ASME IMECE 2011, Denver, CO, November 2011.

Breitenfeld, M. S., Geubelle, P. H. and Weckner, O. "An Implicit Non-ordinary State-based Peridynamics Implementation for Fracture." Paper IMECE2012-86183, ASME IMECE 2012, Houston, TX, November 2012.

Geubelle, P.H., Aragon, A.M. and Soghrati, S. "Effect of in-plane stresses on cohesive failure law of heterogeneous adhesives: a multi-scale study based an interface-enriched generalized finite element scheme." Workshop on Multiscale Modeling. Marne-la-Vallée, France. March 2012.

Geubelle, P.H. "Multiscale modeling and experimental assessment of failure in polymeric coatings and multi-layered systems." American Coatings Conference, Indianapolis, May 7-9, 2012.

Geubelle, P.H. "Computaitonal modeling and design of microvascular composites." ECCM15. Workshop on Regenerating Materials. Venice, Italy, June 25-28, 2012.

Geubelle, P.H., Aragon, A.M. and Soghrati, S. "Effect of in-plane deformations on the failure of heterogeneous adhesives: a 3D multi-scale cohesive analysis based on an interface-enriched finite element scheme." IUTAM 2012 Symposium on Fracture Phenomena in Nature and Technology. Brescia, Italy, July 1-5, 2012.

Soghrati, S., Najafi, A. and Geubelle, P.H. "Computational Modeling and Design of Actively-Cooled Microvascular 3D Woven Glass/Epoxy Composites." SES Meeting, Atlanta, GA, October 2012.

Soghrati, S., Duarte, C.A., Sottos, N.R., White, S.R. and Geubelle, P.H. "An Interface-Enriched Generalized Finite Element Method for the Design of Actively-Cooled High-Temperature Microvascular Woven Composites." Paper IMECE2012-86062, ASME IMECE 2012, Houston, TX, November 2012.

Soghrati, S., Najafi, A.R., Thakre, P.R., Sottos, N.R., White, S.R. and Geubelle, P.H. "Manufacturing and Computational Design of Actively-Cooled microvascular 3D Woven Composites." Paper IMECE2012-86064, ASME IMECE 2012, Houston, TX, November 2012.

Pal, R.K., Awasthi, A., Wang, E., On, T., Lambros, J. and Geubelle, P.H. "Wave Propagation in Elasto-Plastic Granular Systems." Paper IMECE2012-86384, ASME IMECE 2012, Houston, TX, November 2012.

Wang, E., On, T., Awasthi, A., Pal, R.K., Geubelle, P.H. and Lambros, J. "Experimental Study of the Nonlinear Elasto-Plastic Stress Wave Propagation and Mitigation in Ordered Granular Materials." Paper IMECE2012-86434, ASME IMECE 2012, Houston, TX, November 2012.

Stump, F., Karanjaokar, N., Chasiotis, I. and Geubelle, P.H. "Film Thickness And Strain-rate Sensitivity Of Nanocrystalline Thin Films." Paper IMECE2012-86448, ASME IMECE 2012, Houston, TX, November 2012.

Awasthi, A., Pal, R.K., Wang, E., On, T., Lambros, J. and Geubelle, P.H. "High Amplitude Solitary Waves in Preconditioned Elasto-Plastic Granular Chains." Paper IMECE2012-88611, ASME IMECE 2012, Houston, TX, November 2012.

Awasthi, A., Wang, Z., Braodhurst, N. and Geubelle, P.H. "Wave Propagation in 2D Granular Layers." Paper IMECE2012-88619, ASME IMECE 2012, Houston, TX, November 2012.

Manjunath, M., Awasthi, A., and Geubelle, P.H. "Effect Of Randomness On Highly Nonlinear Wave Propagation In Granular Media." Paper IMECE2012-88622, ASME IMECE 2012, Houston, TX, November 2012.

Awasthi, A. P., Grady, M. E., Sottos, N. R. and Geubelle, P. H. "Molecular tailoring of interfaces using self-assembled monolayers." IUTAM Symposium on Materials and Interfaces under High Strain Rate and Large Deformation, Metz, France, June 17-21, 2013.

Soghrati, S., Najafi, A., Safdari, M., and Geubelle, P. H. "An interface-enriched generalized finite element method for the computational analysis and design of microvascular composites." Keynote presentation. USNCCM XII, Raleigh, NC, July 21-25, 2013.

Awasthi, A. P., Grady, M. E., Sottos, N. R. and Geubelle, P. H. "Multi-scale failure modeling of interfaces tailored with self-assembled monolayers." USNCCM XII, Raleigh, NC, July 21-25, 2013.

Awasthi, A. P., Grady, M. E., Sottos, N. R. and Geubelle, P. H. "Interfacial molecular tailoring using self-assembled monolayers." 2013 Conference of the ASCE Engineering Mechanics Institute, Evanston, IL, August 4 – 7, 2013.

Awasthi, A. P., Pal, R. K., Manjunath, M., Wang, E., Lambros, J., and Geubelle, P. H. "Pre-conditioning as a means for achieving high amplitude wave propagation in 1D chains and for creating force chains in 2D granular media". 2013 IMECE, San Diego, CA, November 2013.

Awasthi, A. P., Grady, M. E., Sottos, N. R., and Geubelle, P. H. "Atomically tailored functional surfaces using self-assembled monolayers." 2013 IMECE, San Diego, CA, November 2013.

Najafi, A. R., Safdari, M., Tortorelli, D. and Geubelle, P. H. "Computaitonal optimization of material microstructure using an analytic sensitivity analysis over a fixed mesh." Mach Conference, Annapolis, MD, April 9-11, 2014.

Safdari, M. and Geubelle, P. H. "Computational analysis of complex heterogeneous materials: an image-based approach." Mach Conference, Annapolis, MD, April 9-11, 2014.

Awasthi, A., Grady, M. E., Sottos, N. R., and Geubelle, P. H. "Molecular tailoring of interfaces using self-assembled monolayers: a multiscale study of roughness effects." 17th USNCTAM, Michigan State U., East Lansing, MI, June 16-20, 2014.

Najafi, A. R., Safdari, M., Tortorelli, D., and Geubelle, P. H. "Microstructural design of a microvascular composite: a gradient-based shape optimization scheme using Interface-enriched GFEM." 17th USNCTAM, Michigan State U., East Lansing, MI, June 16-20, 2014.

Tan, M. H., Safdari, M., Najafi, A. R., and Geubelle, P. H. "A NURBS-based interface-enriched generalized finite element scheme for the thermal analysis and design of microvascular composites." 17th USNCTAM, Michigan State U., East Lansing, MI, June 16-20, 2014.

Safdari, M., Najafi, A. R., Sottos, N. R., and Geubelle, P. H. "An Isogeometric Interface-enriched Generalized Finite Element Method for Problems with Complex Discontinuous Gradient Field." 17th USNCTAM, Michigan State U., East Lansing, MI, June 16-20, 2014.

Manjunath, M., Awasthi, A., and Geubelle, P. H. "Planar Impact on 2D and 3D Periodic Granular Media." 17th USNCTAM, Michigan State U., East Lansing, MI, June 16-20, 2014.

Pal, R. K., and Geubelle, P. H. "Wave tailoring by precompression in confined granular systems." 17th USNCTAM, Michigan State U., East Lansing, MI, June 16-20, 2014.

Breitenfeld, M. S., Geubelle, P. H., Weckner, O., and Silling, S. A. "Cohesive zone modeling in peridynamics." 17th USNCTAM, Michigan State U., East Lansing, MI, June 16-20, 2014.

Zhang, K., Jin, J.-M., and Geubelle, P. H. "Multi-Scale Modeling of an Aircraft Coated with Complex Composite Materials". Paper 1563. 2014 IEEE International Symposium on Antennas and Propagation. July 6-11, 2014. Memphis, TN.

Safdari, M., Sottos, N. R., and Geubelle, P. H. "Statistical Analysis of Failure in Polymer Matrix Composites". Proceedings of the 144th TMS Annual Meeting, Orlando, FL, USA, March 15-19, 2015.

Geubelle, P. H., and Manjunath, M. "A new family of solitary plane waves in ordered granular crystals." McMat 2015, Seattle, WA. June 30-July 2, 2015.

Geubelle, P. H., Zhang, C., Sottos, N. R., and Sung, J. "Tailoring the failure properties of film/substrate interfaces with self-assembled monolayers: Effect of surface roughness." McMat 2015, Seattle, WA. June 30-July 2, 2015.

Safdari, M., Sottos, N. R., and Geubelle, P. H. "Computational modeling of micro-level damage and debonding in polymer matrix composites", Proceedings of the Society of Engineering Science 52nd Annual Technical Meeting, College Station, TX, USA, Oct 26-28, 2015.

Safdari, M., Tan, M. H., Petty, S., Naja_, A. R., White, S. R., and Geubelle, P. H. "Optimal design of actively-cooled microvascular composite panels for Li-ion battery applications", Proceedings of the Society of Engineering Science 52nd Annual Technical Meeting, College Station, TX, USA, Oct 26-28, 2015.

Tan, M., Najafi, A. R., Pety, S., Geubelle, P. H. and White, S. R. "Efficient gradient-based optimization for the design of microvascular composites for battery cooling". IMECE 2015, Houston, TX. Paper IMECE2015-50817. November 13-20, 2015.

Safdari, M., and Geubelle, P. H. "NIGFEM: a 3D framework to simulate mesoscale damage in complex heterogeneous materials". IMECE 2015, Houston, TX. Paper IMECE2015-51207. November 13-20, 2015.

Najafi, A. R., Safdari, M., and Geubelle, P. H. "Microstructural design of heterogeneous materials using a NURBS-based optimization method". IMECE 2015, Houston, TX. Paper IMECE2015-51523. November 13-20, 2015.

Zhang, K., Jin, J.-M., and Geubelle, P. H., "Electro-magnetic properties of heterogeneous media: A multi-scale simulation based on an interface-enriched finite element method." IMECE 2015, Houston, TX. Paper IMECE2015-52732. November 13-20, 2015.

Zhang, C., Sung, J., Sottos, N. R., and Geubelle, P. H. "Multiscale simulation of the cohesive strength of self-assembled monolayers with the effects of interface roughness." IMECE 2015, Houston, TX. Paper IMECE2015-52788. November 13-20, 2015.

Geubelle, P. H., Zhang, C., Sung, J., and Sottos, N. R. "Dynamic spallation of film/substrate interfaces tailored with self-assembled monolayers." IUTAM Symposium on Integrated Computational Structure-Material Modeling of Deformation and Failure Under Extreme Conditions. Baltimore, MD. June 19-22, 2016.

Waymel, R., Par, R., Lambros, J., and Geubelle, P. H. "Solitary Wave Propagation in an Acoustic Switch Using Lateral Contacts and Inclination." Paper IMECE2016-67262. International Mechanical Engineering Congress and Exposition. Phoenix, AZ, November 11-17, 2016.

Brandyberry, D. R., Safdari, M., Dang, Q., and Geubelle, P. H. "An Adaptive Interface-Enriched Generalized Finite Element Scheme for the Multiscale Analysis of Heterogeneous Materials with Complex Microstructures". Paper IMECE2016-66382. International Mechanical Engineering Congress and Exposition. Phoenix, AZ, November 11-17, 2016.

Najafi, A. R., Safdari, M., Tortorelli, D. A., and Geubelle, P. H. “Multi-scale Design of Nonlinear Materials Using a NURBS-Based Shape Optimization Method.” Paper IMECE2016-67302. International Mechanical Engineering Congress and Exposition. Phoenix, AZ, November 11-17, 2016.

Zacek, S., Montgomery, C., Safdari, M., Sottos, N. R., and Geubelle, P. H. “Mesoscale Modeling of the Transverse Failure of Carbon/Epoxy Composites: Effect of Microstructural Statistics.” Paper IMECE2016-67627. International Mechanical Engineering Congress and Exposition. Phoenix, AZ, November 11-17, 2016.

Zhang, K., Geubelle, P. H., and Jin, J.-M. “A Gradient-Based Shape Optimization Using an Interface-Enriched Finite Element Method for Electromagnetic Design of Heterogeneous Materials.” Paper IMECE2016-67399. International Mechanical Engineering Congress and Exposition. Phoenix, AZ, November 11-17, 2016.

Shakiba, M., Zacek, S., Brandyberry, D., and Geubelle, P.H. “Transverse failure of carbon fiber composites: analytical sensitivity with respect to the distribution of fiber/matrix interface properties.” Mach 2017 Conference, April 5-7, 2017, Annapolis, MD.

Geubelle, P.H., Shakiba, M., Zacek, S., and Brandyberry, D. “Dependence of transverse failure of composites on statistics of fiber/matrix interface properties.” CFRAC 2017, June 14-16, 2017, Nantes, France. Keynote presentation.

Brandyberry, D., and Geubelle, P. H. “Multiscale analysis and material sensitivity of failure in heterogeneous materials using an interface-enriched generalized FEM.” CFRAC 2017, June 14-16, 2017, Nantes, France.

Geubelle, P.H., Zacek, S., and Brandyberry, D. “A multi-interface-enriched generalized FEM to simulate the transverse failure of composite laminates.” X-DMS 2017, June 19-21, Umea, Sweden.

Invited (non-conference) presentations

“A spectral scheme for three-dimensional dynamic fracture problems”. University of Delaware, Solid Mechanics Seminar Series. November 8, 1996.

“Simulation of 3D dynamic fracture events”. University of Michigan, Department of Aerospace Engineering. February 1997.

“Numerical simulation of dynamic fracture : Spectral scheme”. University of Illinois, AAE Departmental Graduate Seminars. November 1998.

“Numerical simulation of dynamic fracture : Cohesive/volumetric finite element scheme”. Center for the Simulation of Advanced Rockets, University of Illinois. March 1999.

“Fundamental problems in dynamic fracture mechanics”. University of Illinois, Department of Theoretical and Applied Mechanics. March 9, 2000.

“Spectral-based simulations of 2D and 3D fundamental dynamic fracture problems”. University of Notre Dame. Department of Aerospace Engineering. April 4, 2000.

“Numerical analysis of dynamic fracture”. Washington University in St. Louis. Department of Mechanical Engineering. Sept. 14, 2000.

- “Simulation of dynamic fracture events”. Northwestern University. Solid Mechanics Seminar. Dec.1, 2000.
- “Simulation of dynamic fracture events in solid propellant rockets”. University of Iowa. Mechanical Systems Graduate Seminar. November 1, 2001.
- “A self-healing composite”. C.R.I.F. Solid Mechanics Seminar. Sart-Tilman, Liège, Belgium. November 23, 2001.
- “Dynamic failure of solid propellant rockets”. Los Alamos National Lab. Combustion Seminar. December 13, 2001.
- “Numerical modeling of dynamic fracture”. CESAME Seminar Series, Catholic University of Louvain, Belgium. October 15, 2002
- “Self-healing composite concept”. Materials Research Seminar Series, Max Planck Institute, Stuttgart, Germany. November 2002.
- “Failure of a self-healing composite under monotonic and fatigue loading”, University of Notre Dame, December 2003.
- “Monotonic and fatigue failure of a self-healing composite”, Johns Hopkins University, March 2004.
- “Failure of a self-healing composite under monotonic and fatigue loading: experiments and cohesive modeling”, University of Maryland, March 1, 2005.
- “Fatigue response of a self-healing composite: experiments and multiscale modeling”, Brown University, April 4, 2005.
- “Multiscale cohesive modeling of self-healing composite”, Michigan Tech., April 21, 2005.
- “Multiphysics modeling of solid propellant rockets”, ADD, TaeJong, South Korea, May 2006.
- “Cohesive modeling of fracture”, Korea Aerospace Research Institute, TaeJong, South Korea, May 2006.
- “Numerical modeling of fluid/structure interaction”, National Technical University Pusang, South Korea, May 2006.
- “Stable and accurate modeling of transient fluid/structure interaction events”, Mechanical Engineering Department Seminar, University of California Riverside. February 23, 2007.
- “A biomimetic self-healing composite material: Fatigue response and multiscale cohesive modeling “. Mechanical and Materials Engineering Seminar. Washington State University, Pullman, WA. April 5, 2007.
- “Fatigue response of a biomimetic self-healing material: experimental observations and multiscale cohesive modeling” Departmental seminar, Department of Mechanical and Aerospace Engineering, University of Notre Dame, South Bend, IN, November 2007.
- “A new class of biomimetic self-healing/cooling polymeric materials”. Departmental seminar, Aerospace Engineering, University of Michigan, Ann Arbor, MI. November 20, 2008.
- “Stable and accurate modeling of transient fluid/structure interaction events”, Aeronautical Engineering Department Seminar, Purdue University. April 2, 2009.
- “Large-scale modeling and computational design of wave tailoring granular media”. LSMS Seminar, EPFL, Lausanne, Switzerland, January 11, 2011.

“Biomimetic materials for self-healing and active cooling applications: experimental observations and multiscale modeling.” Computational Science and Engineering Seminar, ETH, Zurich, April 12, 2011.

“Biomimetic materials for self-healing and active cooling applications: experimental observations and multiscale modeling.” Materials Science Seminar, EPFL, Lausanne, May 16, 2011.

“An interface-enriched generalized finite element method (GFEM) for thermal and structural modeling of heterogeneous materials.” The Boeing Company, Seattle, June 2, 2011.

“Energy release rate approximation using the topological derivative.” The Boeing Company, Seattle, June 3, 2011.

“Microvascular composites for high temperature applications.” Graduate Seminar, Aerospace Engineering Department, University of Michigan, January 2012

“Microvascular composites for high temperature applications.” Navy Research Labs, Washington, DC, February 2012.

“Microvascular composites for high temperature applications.” Aerospace Seminar, Texas A&M University, Sept. 27, 2012.

“Microvascular composites for high temperature applications.” Graduate Seminar, Department of Mechanical and Materials Engineering, University of Nebraska-Lincoln, April 2, 2013.

“Multi-disciplinary analysis and design of heterogeneous materials using an Interface-enriched Generalized Finite Element approach.” Navy Research Labs, Washington, DC, February 2014.

“Microvascular composites for high temperature applications.” Graduate Seminar, Civil Engineering Department, Vanderbilt University, April 21, 2015.

“Microvascular composites for high temperature applications.” Graduate Seminar, School of Aeronautics and Astronautics, Purdue University, September 24, 2015.

“Computational analysis of design of microvascular composites for high temperature applications.” Graduate Seminar, Department of Aerospace Engineering, Georgia Institute of Technology, October 29, 2015.

“Computational Analysis and Design of Actively Cooled Microvascular Composites for High Temperature Applications.” Departmental Seminar, Aerospace Engineering, Embry-Riddle. April 22, 2016.

“Computational analysis and design of microvascular composites for high temperature applications” Departmental Seminar, Department of Energy and Mechanics, Universidad Autónoma de Occidente, Cali, Colombia. September 20, 2016.

“Computational analysis and design of biomimetic microvascular composites” Director’s Seminar, Beckman Institute of Advanced Science and Technology, University of Illinois. November 10, 2016.

“Multi-functional microvascular composites: Computational analysis and design” Distinguished Seminar Series, Department of Aerospace Engineering, University of Washington, Seattle, January 30, 2017.

“Multiscale shape optimization of microstructures using an interface-enriched generalized finite element method.” Departmental Seminar, Mechanical Engineering, T.U. Delft, Netherlands, March 23, 2017.

2. Grants, Contracts and gifts received for your research and teaching (in chronological order for past six years)

a) For Research

Years	Brief Title or Description	Source of Funds	Total funding	Funding Allocated to this Professor	# of PI's & Lead PI if not this Professor
97-01	Experimental and Analytical Investigation of Dynamic Fiber Pull-Out in Composites	NSF	\$252,000	\$110,000	2 (P. Geubelle, PI)
97-07	ASCI Center for the Simulation of Advanced Rockets	DOE	\$40,000,000	\$1,800,000	20 (M. Heath, PI)
97-00	Dimensional Stability and Optimization of Composite Manufacturing	NSF	\$305,000	\$100,000	3 (S. White, PI)
97-99	Preliminary Numerical Design of Smart Bleeding System for Supersonic Inlets (2-year CSE Fellowship – Brett Wood, Graduate Student)	CSE, U OF I	\$50,000	\$50,000	2 (P. Geubelle, PI)
98-02	High Speed Grinding of Ceramics	NSF (Career Award)	\$208,000	\$208,000	1 (P. Geubelle, PI)
98	Smart Mesoflaps for Aeroelastic Transpiration for SBLI Flow Control	AFOSR	\$85,401	\$20,000	5 (E. Loth, PI)
99-02	Smart Mesoflaps for Aeroelastic Transpiration for SBLI Flow Control	DARPA	\$2,120,318	\$200,000	6 (E. Loth, PI)
98-00	Health Monitoring and Maintenance of Composite Structures	U OF I, CRI	\$200,000	\$50,000	3 (S. White, PI)
99-01	Development of Self-Healing Structural Composite Materials	AFOSR	\$85,662	\$20,000	4 (S. White, PI)
01-04	Dynamic Fracture of Functionally Graded Materials	NSF	\$330,000	\$100,000	3 (G. Paulino, PI)
01-02	Dynamic Failure of Z-Pinned Composite Laminates	AFSOR (SBIR – Phase I)	\$200,000	\$20,000	1 – Academic consultant for AdTech Syst., Dayton, OH
03-04	Quasi-Static and Dynamic Failure of Z-Pinned Composite Laminates	AFOSR (SBIR – Phase II)	\$700,000	\$130,000	1 – Subcontract for AdTech Syst., Dayton, OH
01-05	A Finite Element Framework for Very Large Scale Dynamic Fracture Simulations on the IBM BlueGene	NSF	\$750,000	\$95,000	4 (L. Kale, PI)
02-05	Multiscale Modeling of Fatigue Response of Self-Healing Structural Composite	AFOSR (MEANS)	\$900,000	\$250,000	3 (S. White, PI)
03-04	Development of a CVFE code for the simulation of dynamic response of a LNG insulation system	American Bureau of Shipping	\$30,000	\$30,000	1 (P. Geubelle, PI)
04-07	Thin film fracture and decohesion in micro- and nano-patterned devices	NSF	\$165,000	\$70,000	2 (N. Sottos, PI)
05-10	MURI- Microvascular autonomic composite	AFOSR	\$5,467,683	\$500,000	11 (S. White, PI)
05-08	Multiscale Experimental and Numerical Design of a Self-Healing Epoxy Adhesive	NSF	\$310,000	\$120,000	4 (P. Geubelle, PI)
05-07	Multiscale modeling of damage in solid propellants	ATK-Thiokol	\$288,770	\$140,000	2 (K. Matous, PI)
06-11	Midwest Structural Science Center	AFRL	\$2,175,000	\$350,000	8 (G. Paulino and J. Lambros, PIs)
06-09	Impact MEMS Center	DARPA	\$800,000	\$60,000	10 (A. Cangelaris, PI)
07-10	GOALI: Dynamic adhesive failure of patterned thin films	NSF	\$300,000	\$120,000	2 (N. Sottos, PI)
08-11	Development of a laser spallation protocol for	SRC	\$216,687	\$100,000	2 (N. Sottos, PI)

09-12	rapid characterization of interface reliability Experiments and models on room temperature creep of nanocrystalline metallic films	NSF	\$398,521	\$180,000	2 (I. Chasiotis, PI)
09-12	Development of peridynamics scheme for fracture problems and application to multiscale modeling of materials	Boeing	\$308,551	\$308,551	(P. Geubelle, PI)
09-15	MURI – Development of wave tailoring materials	ARO	\$4,500,000	\$750,000	6 (J. Lambros, PI)
09-15	MURI – Development of hybrid materials for high-temperature applications	AFOSR	\$4,500,000	\$350,000	15 (D. Lagoudas (TA&M), PI)
10-12	IRI – Multiscale modeling and assessment of polymeric coatings and adhesive systems	IRI	\$500,000	\$150,000	3 (P. Geubelle, PI)
12-18	Center of Excellence of Integrated Multiscale Modeling of Materials (Lead Institution: Johns Hopkins University)	AFOSR	\$1,900,000	\$890,000	2 (P. Geubelle and N. Sottos)
12-13	Computational Modeling and Simulation of Composite Materials Based on Tomographic Images (RA Support for Elena Caraba, CS)	CSE	\$60,000	\$60,000	2 (P. Geubelle and M. Heath)
12-15	Efficient Energy Release Rate Computations for Cracks with Arbitrary Location and Geometry	NSF	\$323,719	\$161,000	2 (D. Tortorelli, PI)
12-15	Molecular Tailoring of Interface Fracture	NSF	\$340,979	\$150,000	2 (N. Sottos, PI)
13-15	Multiscale modeling of an aircraft with morphing radar signature (RA Support for Kedi Zhang, ECE)	CSE	\$60,000	\$60,000	2 (P. Geubelle and Jianming Jin)
14-17	Multidisciplinary design of microvascular composites based on a hierarchical approach	NSF	\$350,000	\$175,000	2 (P. Geubelle, PI)
15-16	An autonomous high-performance mesh pre-processor for computational analysis of complex heterogeneous materials	CSE	\$30,000	\$30,000	2 (P. Geubelle and S. Har-Peled)
15-19	Center of Excellence on Regenerating Composites	AFOSR	\$4,300,000	\$700,000	5 (S. White, PI)
15-17	Microvascular Composites for Novel Thermal Management Devices – STTR Phase 2 Grant with CUAerospace and Lockheed-Martin	AFOSR	\$258,803	\$120,000	2 (S. White, PI)

b) For Instruction and workforce development

Years	Brief Title or Description	Source of Funds	Total funding	Funding Allocated to this Professor	# of PI's & Lead PI if not this Professor
98	Undergraduate Course Development Award: Development of AAE 270	U of I	\$8,000	\$8,000	1 (P. Geubelle, PI)
00-01	Innovative use of information technology for curriculum redesign	U of I	\$38,000	\$38,000	3 (P. Geubelle PI)
03	Illinois Space Grant	NASA	\$465,000	NA	(P. Geubelle, PI)
04-05	NASA Workforce Development Grant – Development of Aerospace UROP	NASA	\$100,000	NA	3 (P. Geubelle, PI)
04-05	2005 Summer UROP in Aerospace Engineering and Science	Boeing	\$25,000	NA	2 (P. Geubelle, PI)
04-06	2006 Summer UROP in Aerospace Engineering and Science	Boeing	\$25,000	NA	2 (P. Geubelle, PI)
05-06	NASA Space Grant Augmentation	NASA	\$162,875	NA	(P. Geubelle, PI)
07	Illinois Space Grant Consortium	NASA	\$590,000	NA	(P. Geubelle, PI)
07-09	REU Site for Undergraduate Research Opportunity in Aerospace Engineering and	NSF	\$261,000	NA	10 (P. Geubelle, PI)

	Science				
08	Illinois Space Grant Consortium	NASA	\$590,000	NA	(P. Geubelle, PI)
09	Illinois Space Grant Consortium	NASA	\$785,000	NA	(P. Geubelle, PI)
10	Illinois Space Grant Consortium	NASA	\$845,000	NA	(P. Geubelle, PI)
11	Illinois Space Grant Consortium	NASA	\$815,000	NA	(P. Geubelle, PI)
12	Illinois Space Grant Consortium	NASA	\$575,000	NA	(P. Geubelle, PI)
13	Illinois Space Grant Consortium	NASA	\$575,000	NA	(P. Geubelle, PI)
14	Illinois Space Grant Consortium	NASA	\$575,000	NA	(P. Geubelle, PI)
15	Illinois Space Grant Consortium	NASA	\$575,000	NA	(P. Geubelle, PI)
15-16	Engaging Community College Students in STEM through High Altitude Ballooning: A Partnership between the Illinois Space Grant Consortium and the City Colleges of Chicago	NASA	\$500,000	NA	(P. Geubelle, PI)
16	Illinois Space Grant Consortium	NASA	\$760,000	NA	(P. Geubelle, PI)
15-18	New Talbot Lab addition for instructional laboratories for nano-satellite technology, material radiation and composite manufacturing	University of Illinois	\$5,200,000	NA	(P. Geubelle and J. Subbins, co-PI)

3. Areas of Research (brief description, key words are adequate)

Fracture mechanics
 Computational solid mechanics
 Manufacturing of composite materials
 Computational aeroelasticity
 Multiscale modeling of advanced materials
 High performance computing
 Computational design of novel materials
 Modeling of damage and failure of thin films and MEMS

4. Graduate Thesis Research Advising

(a) M.S. Degrees (name and year)

M. J. Danyluk	1996
A. Hegeman (S. White, co-advisor)	1997
J. Baylor	1997
M. S. Breitenfeld	1997
B. Wood (E. Loth, co-advisor)	1999
S. Viswanathan	2000
M. Zaczek	2001
J. Thomas	2002
L. Ozkahya	2003
K. Soma	2004
V. Dantuluri	2004
K. Rangaswamy	2004
S. Mangala	2006
B. Roe	2006
H. Dewey (B. Balachandar, co-advisor)	2006
N. Chennimalai	2006
P. Nittur (AE)	2006
J. Patel (AE)	2009
P. Selvarasu (AE)	2011
S. Potukuchi (AE)	2015
Q. Dang (AE)	2017
S. Zacek (AE)	2017

(c) Ph.D. Degrees (name and year)

Q. Zhu (AE – Currently at GE Research)	2000	
D. Kubair (AE – Currently research scientist at Johns Hopkins)	2001	
S. Maiti (AE – Currently on faculty at U. Pittsburgh)	2002	
X. Bi (co-advised with J. Lambros) (AE – Currently Washington State U.)	2003	
R. Jaiman (co-advised E. Loth) (AE – Currenty on faculty Nat. U. Singapore)		2007
H. Inglis (ME – Currently on faculty at U. Pretoria)	2008	
K. Srinivasan (co-advised with T. Jackson and K. Matous) (AE)	2008	
S. Kandula (co-advised with N. Sottos) (AE – Currently at Intel)	2008	
M. Kulkarni (co-advised with K. Matous) (AE – Currently at Exxon Research)		2009
A. Aragón (CEE – Currently on faculty at TU Delft)	2010	
P. Tran (co-advised with N. Sottos) (TAM – Currently at U. Melbourne)	2010	
M.S. Breitenfeld (AE – Currently at HDF)	2013	
M. Susheendran (co-advised with D. Bodony) (AE)	2013	
F. Stump (TAM – Currently at Exxon Research)	2013	
C. Ostoich (co-advised with D. Bodony) (AE)	2013	
S. Soghрати (CEE – Currently on faculty at Ohio State U.)	2013	
M. Manjunath (AE – Currently postdoc at UIUC)	2014	
R. K. Pal (TAM – Currently postdoc at Georgia Tech)	2014	
E. Caraba (co-advised with M. Heath) (CS)	2014	
A. R. Najafi (TAM – Currently postdoc at Beckman Institute)	2016	
M. Tan (TAM)	2017	
C. Zhang (AE)	In progress	
K. Zhang (co-advised with Jianming Jin) (ECE)	In progress	
E. Goli (CEE)	In progress	
D. Brandyberry (AE)	In progress	
I. Kim (AE)	In progress	

5. Editorships of Journals or Other Learned Publications

6. Post-doctoral Associates and Visiting Scientists (>3 months stay) in the past 3 years (list name, year(s), country of origin, permanent employer)

- G. Lin, Post-doc, 1998-1999, China, Ansys, Pittsburgh, PA
- C. Hwang, Post-doc, 1999-2003, Korea, Seoul Information Technology University
- S. Maiti, Post-doc, 2002-2005, India, Assistant Professor in Mechanical Engineering, Michigan Tech. University. Currently a faculty member in Department of Bioengineering, University of Pittsburgh.
- K. Matous, Research Scientist, 2003-2009, Currently Associate Professor, Mechanical Engineering, U. Notre Dame
- S. Breitenfeld, Research Programmer, 1999-2008. Currently at HDF Group in Champaign, IL
- R. Arciniega, Post-doc, 2006, Abaqus, Providence, RI.
- J. Hendrickx, Visiting Scholar, 2005, Faculty member at Catholic University of Louvain, Belgium
- A. Gurol, Visiting Scholar, 2007
- Y. Wei, Visiting Faculty, China, 2007-2008
- A. Aragón, Postdoctoral Research Associate, 2010-2011. Faculty member at TU Delft (Netherlands)
- A. Awashti, Postdoctoral Research Associate, 2010-2014. Research Professor at U. Florida.
- M. Safdari, Postdoctoral Research Associate, 2013-2015. Research Scientist at Illinois RocStar
- M. Shakiba, Postdoctoral Research Associate, 2016. Faculty member in Civil Engineering at Virginia Tech
- F. Barras, Visiting Scholar, 2014, EPFL
- D. Spielmann, Visiting Scholar, 2015, EPFL
- R. Carpaij, Visiting Scholar, 2017, EPFL

7. Other Scholarly Activities in the past 5 years (conferences organized or chaired, unpublished presentations, etc.)

- Organizer and chairman of a symposium on Dynamic Rupture Mechanics, ASME Summer Meeting, Baltimore, June 1996.

Organizer and chairman of a symposium on Experimental and Numerical Fracture Mechanics, ASME Summer Meeting, Chicago, June 1997.

Organizer and chairman of a symposium on Recent Advances in Dynamic Properties of Materials, ASME IMECE 2000, Orlando, November 2000.

Organizer of a symposium on Dynamic Fragmentation of Brittle Materials, ASME IMECE 2004, Anaheim, November 2004.

Co-organizer of symposium on Fragmentation of Brittle Materials, ASME IMECE 2005, Orlando, November 2005.

Co-organizer of symposium on Recent Advances in Cohesive Modeling, WCCM7, Los Angeles, July 2006.

Co-organizer of symposium on Mechanics of Thin Films, SES07, Texas A&M, October 2007

Co-organizer of symposium on Fluid/Structure Interaction, SES08, University of Illinois, October 2008.

Co-organizer of symposium on Damage and Failure of Heterogeneous Materials, SES08, University of Illinois, October 2008.

Member of organizing committee, SES 2008, University of Illinois, October 2008.

Member of organizing committee, 2nd Int. Conference on Self-Healing Materials, Chicago, June-July 2009.

Member of organizing committee, USACM, Columbus, OH, July 2009.

Co-organizer of Regional Meeting of Great Midwest Space Grant Consortia, Cleveland, Sept. 2009

Co-organizer of Regional Meeting of Great Midwest Space Grant Consortia, Minneapolis, Sept. 2010

Co-organizer of symposium on wave tailoring and meta-materials, IMECE 2010, Vancouver, BC, November 2010.

Technical Program Chair, ASME McMat2011 Meeting, Chicago, May 30-June1, 2011.

Co-organizer of symposium on multifunctional materials and structures, McMat2011 Meeting, Chicago, May 30-June1, 2011.

Chair of Regional Meeting of Great Midwest Space Grant Consortia, Champaign, September 2011.

Co-organizer of symposium on mechanics of thin films and layered materials, IMECE 2011, Denver, CO, November 2011.

Co-organizer of USACM Workshop on Peridynamics and Nonlocal Methods, San Antonio, March 2013.

Co-organizer of Symposium on Granular and Meta-Materials, IMECE 2013, San Diego, CA, November 2013.

Co-organizer of Symposium on Statistical Approaches to Materials Modeling, Mach 2017 Conference, Annapolis, MD

Co-organizer of Symposium on Statistical Approaches to Materials Modeling, Mach 2018 Conference, Annapolis, MD

Reviewer for the AIAA Journal

Reviewer for the International Journal of Fracture

Reviewer for the International Journal of Solids and Structures

Reviewer for the Journal of the Mechanics and Physics of Solids

Reviewer for the Journal of Engineering Materials and Technology
 Reviewer for the Quarterly Journal of Mechanics and Applied Mathematics
 Reviewer for the Communications in Numerical Methods in Engineering
 Reviewer for the International Journal for Numerical Methods in Engineering
 Reviewer for the Journal of Applied Mechanics
 Reviewer for Engineering Fracture Mechanics
 Reviewer for the Journal of Engineering Mechanics
 Reviewer for Mechanics of Materials
 Reviewer for Proceedings A of the Royal Society of London
 Reviewer for Mechanics Research Communications
 Reviewer for Computational Mechanics

Reviewer for NSF proposals (1998, 2006, 2014, 2015)
 Reviewer for ISF proposal (Israel Science Foundation) – April 2002, April 2009
 Reviewer for CDRF proposal (2005)

C. Service in the Past Three Years

1. Professional Society (list membership; office held, with dates; major committees or boards)

Memberships	American Society of Mechanical Engineers (ASME) U.S. Association for Computational Mechanics (USACM) American Institute of Aeronautics and Astronautics (AIAA) Society of Engineering Science (SES) American Academy of Mechanics (AAM)
Technical Committees	ASME AMD Technical Committee of Fracture and Failure ASME AMD Technical Committee on Computations in Applied Mechanics (Vice-chair: 2009-2011, Chair: 2011-2014) ASME AMD Technical Committee on Dynamic Response of Materials (Secretary 2005-2007, Chair: 2007-2009) ASME MD: Member of Executive Committee (2017-present)

2. University (department, college and campus committees, administration, etc.)

ASCI/CSAR Science Steering Committee (1997 to 2008)
 Department Admission Committee (Chair 1998-2003)
 Department Undergraduate Curriculum Committee (1995-2000, 2002-2008)
 Department Advisory Committee (1998-2000, 2003-2007)
 Department Computer Resource Committee (1999-2000)
 Department Qualifying Exam Committee (Chair, 2000-2001, 2006-present)
 Department Ad Hoc Teaching Assistanship Committee (Chair, 2001-2002)
 Department T.A. Committee (2002-2005)
 Department Computer Committee (2004-present)
 Department Faculty Search Committee (2003 (Chair) and 2005)
 Department Ad Hoc Committee on Qualifying Exam (2004)
 Department Planning Committee (2003-2007)
 Department Graduate Policy Committee (2006-2007)
 Department Associate Head for Undergraduate Program and Chief Undergraduate Advisor (2007-2008)
 Department Associate Head for Graduate Programs (2008-2011)
 Department Interim Head (2011-2012)
 Department Head (2012-present)
 College Engineering Workstation Steering Committee (1997 to 2002, Chair 9/2001 to 5/2002)
 College Strategic Planning Committee (2002-2003)
 College Search Committee in Nano-Technology (2004-2005)
 College Search Committee for CEE Department Head (2004)
 College Search Committee for AE Department Head (1998 and 2007)

College Teaching Evaluation and Improvement Committee (2005-2008)
 College Steering Committee on Information Services (Chair) (2008-2010)
 College Engineering Council on Global Initiatives (2008-2009)
 College Committee on Advancement of the Recruitment and Retention Environment (2009-2011)
 College Steering Committee on IT@Engineering (2010-2011)
 College Committee on Faculty Teaching Development (Chair) (2011-2012)
 College Committee on Space Allocation (Chair) (2013)
 College Committee on ICR Allocation Policy (2013-2014)
 College Committee on Scholarship Campaign (2013-2014)
 College Working Group on IT Strategy Alignment (2015-2016)
 College GEPI Professorship Committee (2015-present)
 College Committee on Performance Review for NPPE Head (2016)
 University Committee on Graduate Tuition Allocation and Expenditure Pilot Program (2013-2014)
 University Committee on Doctoral Candidacy (2014)
 University Committee on Performance Review for Director of Beckman Institute (2015)
 University Council of Unit Executive Officers (2014-2015)
 University Search Committee for Director of Beckman Institute (2016-2017 - Chair)
 University Campus Budget Oversight Committee (Chair, 2016-present)

3. Federal and State (*government commissions and panels, community, industrial extension, etc.*)

IMM Think Tank on the role of experimental mechanics in current U.S. research program, Houston, March 25-26, 1996
 Reviewer for NSF proposals (Jan. 98 and March 06 CMS review panels)
 Illinois Space Grant Consortium Director (2003-present)
 Chair of Great Midwest Association of Space Grant Consortium (2008-2011)
 Board member of the National Space Grant Foundation (2009-present)
 President of the Board of the National Space Grant Foundation (2015-present)
 National Space Grant Foundation Board: Chair of the Committee charged to recruit the new Executive Director (2015-2016)

3. Other Outside Service

Director of Illinois Aerospace Institute for high school students (Summers of 1996 to 2001)

D. Other Service

E. Improvement Activities (list any specific programs in which you have participated to improve teaching and professional competence)

Retreats on active learning, U of I (1999, 2001)