

CURRICULUM VITAE

JONGHWAN SUHR

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EDUCATIONAL PREPARATION

- Ph.D. 2002~2005 Mechanical Engineering, Rensselaer Polytechnic Institute, Troy, NY (Aug, 2005)
Academic advisors: Professors Nikhil A. Koratkar and Pulickel M. Ajayan
- M.S. 1995~1997 Mechanical Engineering, Sungkyunkwan University (Korea) (Feb., 1997)
- B.S. 1991~1995 Mechanical Engineering, Sungkyunkwan University (Korea) (Feb., 1995)

PROFESSIONAL EXPERIENCE

- Jan., 2007 ~ *Assistant Professor*, Mechanical Engineering Dept, Univ. of Nevada, Reno
- Aug., 2005~Dec. 2006 *Postdoctoral Research Associate*, NYS-Focus Center at R.P.I.
- Aug., 2002~Aug., 2005 *Research Assistant*, Mechanical Engineering Department at R.P.I.
(Sponsor: Army Research Office, Program Director: Dr. Gary Anderson)
- Jan., 2001~Apr., 2002 *Researcher*, Safety and Structural Integrity Research Center (S. Korea)
- Dec., 1996~Dec., 2000 *Senior Research Engineer*, R&D Center for Hankook Tire Co. Ltd. (S. Korea)

PRINCIPAL AREAS OF INTEREST

Multifunctional Composites Structures, Energy Absorbing Materials, Energy Efficient Systems, Structural Health Monitoring, and Bio-Inspired Materials & Structures.

HONORS AND AWARDS

- NSF CAREER Award (May 2009~ April 2014).
- UNR Junior Faculty Research Award (2007).

JOURNAL PUBLICATIONS

19. J. Jang, J. Varischetti, G. Lee, J. Suhr, "Engineered Multifunctional Nano-composites", *Journal of Materials*, (In review), 2009.
18. L. Sun, R. Gibson, F. Gordaninejad, J. Suhr, "Energy Absorption Capability of NanoComposites: A Review", *Composite Science & Technology*, Vol. 69, pp. 2392~2409, 2009.
17. J. Suhr, L. Ci, V. Pushparaj, X. Zhang, P. M. Ajayan, "Continuous Carbon Nanotube Reinforced Composites", *Nano Letters*, Vol. 8, No. 12, pp. 2762~2766, 2008. (**Impact factor: 10.371; Time Cited: 10**)
16. J. Suhr and N. A. Koratkar, "Energy Dissipation in Carbon Nanotube Composites: A Review",

Journal of Material Science, Vol. 43, pp. 4370~4382, 2008.

15. V. Pushparaj, L. Ci, S. Sreekala, A. Kumar, S. Kesapragada, D. Gall, O. Nalamasu, P. Ajayan, J. Suhr, "Effects of compressive strains on electrical conductivities of a macroscale carbon nanotube block", *Applied Physics Letters*, Vol. 91, 153116, 2007.
14. J. Suhr, V. Pushparaj, L. Ci, S. Sreekala, X. Zhang, O. Nalamasu, P. Ajayan, "Viscoelastic Response and Fatigue Resistance of Carbon Nanotube Blocks Under Cyclic Compression", *Nature Nanotechnology*, Vol. 2, pp. 417~421, 2007. **(Impact factor: 20.571; Time Cited: 14)**
14. J. Suhr, A. Joshi, L. Schadler, R. S. Kane, and N. A. Koratkar, "Effect of Filler Geometry on Interfacial Friction Damping in Polymer Nano-Composites", For special issue of *Journal of Nanoscience and Nanotechnology*, Vol. 7, No. 4-5, pp. 1684~1687, 2007.
13. J. Ryoo, P. Hajela, J. Suhr and N. Koratkar, "Estimation of Young's Modulus of Single-Walled Carbon Nanotube Using Cellular Automata", For special issue of *Advances In Engineering Software*, Vol. 38, pp. 531~537, 2007.
12. J. Suhr, W. Zhang, P. Ajayan and N. Koratkar, "Temperature Activated Interfacial Friction Damping in Carbon Nanotube Polymer Composites", *Nano Letters*, Vol. 6, No. 2, pp. 219~223, 2006. **(Impact factor: 10.371; Time Cited: 16)**
11. J. Suhr and N. Koratkar, "Effect of pre-strain on nanotube-polymer sliding energy dissipation mechanism", *Journal of Nanoscience and Nanotechnology*, Vol. 6, No. 2, pp. 483~486, 2006.
10. W. Zhang, J. Suhr and N. Koratkar, "Observation of High Buckling Stability in Carbon Nanotube Polymer Composites", *Advanced Materials*, Vol. 18, Issue 4, pp. 452~456, No. 3, 2006. **(Impact factor: 8.191; Time Cited: 14)**
9. J. Suhr, N. Koratkar, D.-X. Ye and T.-M. Lu, "Damping properties of epoxy films with nanoscale fillers", *Intelligent Materials Systems and Structures*, Vol. 17, No. 3 pp. 255-260, 2006.
8. W. Zhang, J. Suhr, N. Koratkar, "Multi-functional Polymer Nano-Composite for Self Strain Sensing", *Journal of Nanoscience and Nanotechnology*, Vol. 6, No. 4 pp. 960-964, 2006. **(Impact factor: 1.929; Time Cited: 20)**
6. D.-B. Cho, J. Suhr and N. Koratkar, "Carbon nanotube thin film coating for improved thermal management in piezoceramic sheet actuators", *Intelligent Materials Systems and Structures*, Vol. 17, No. 3 pp. 209-216, 2006.
6. P. Ajayan, J. Suhr and N. Koratkar, "Utilizing Interfaces in Carbon Nanotube Reinforced Polymer Composites for Structural Damping", For special issue of *Journal of Material Science (Review Paper)*, Vol. 41, No. 23, pp. 7824~7829, 2006.
5. J. Suhr, N. Koratkar, P. Keblinski and P. Ajayan, "Viscoelasticity in Carbon Nanotube Composites", *Nature Materials*, Vol. 4, pp. 134~137, 2005. **(Impact factor: 23.132; Time Cited: 77)**
3. N. Koratkar, J. Suhr, A. Joshi, R. Kane, L. Schadler, P. Ajayan, and S. Bartolucci, "Characterizing energy dissipation in single-walled carbon nanotube polycarbonate composites", *Applied Physics Letters*, Vol. 87, 063102, 2005. **(Impact factor: 3.726; Time Cited: 18)**

2. M.-W. Suh, J. Suhr, and W.-H. Yang, "Condensed Joint Matrix Method for the Joint structure of the Vehicle Body", *Proceedings of the Institute of Mechanical Engineers, Part D, Journal of Automobile Engineering*, Vol. 216, No. D1 pp. 35~41, 2002.
1. M.-W. Suh, W.-H. Yang, and J. Suhr, "Analysis of the Joint Structure of the Vehicle Body by Condensed Joint Matrix Method", *KSME International Journal*, Vol. 15, No. 12, pp.1207~1216, 2001.

INVITED BOOK CHAPTER

N. Koratkar and J. Suhr, "Structural Damping in Nanocomposites", in 2nd edition of "Encyclopedia of Nanoscience and Nanotechnology", American Scientific Publishers (In press), 2009.

PATENTS AND INVENTION DISCLOSURES

1. Injecting Mechanical Damping into Composite Structures using Carbon Nanotube Fillers (Disclosure RPI Case Number 955), January 3, 2005.
2. Order of Magnitude Enhancement in Damping of Bulk Polymer System using Carbon Nanotube Fillers (Disclosure RPI Case Number 967), January 3, 2005.

RESEARCH SPONSORS (*Since January 2007*)

NSF, US Army NSRDEC, Boeing Company, and NV NASA.

PEER REVIEWED CONFERENCE PUBLICATIONS

19. J. Jang, J. A. Varischetti, G.W. Lee, and J. Suhr, "Hybrid Nano-Composite Materials for Thermal Stability", *Proceedings of the ASME Conference on Smart Materials, Adaptive Structures and Intelligent Systems*, Oxnard, CA, September 21-23, (2009).
18. J. Suhr, "Soft-Tissue Like Behavior of CNT Structures Under Compressive Loadings", ISNIT, Jeju island, Korea, June 17-19, (2009).
17. J. Jang, J. A. Varischetti, and J. Suhr, "Energy Absorbing CNFs included Epoxy Composite Materials", In proceedings of Society for the Advancement of Material and Process Engineering EUROPE 2009, Paris, France, March 22-March 25, (2009).
16. J. Jang, J. A. Varischetti, G.W. Lee, and J. Suhr, "Energy Absorbing Hybrid Nano-Composite Materials", In proceedings of the SPIE's 16th International Symposium on Smart Structures and Integrated Systems, San Diego, CA, March 8- March 12, (2009).
15. L. Ci, J. Suhr and P. M. Ajayan, "Composites Reinforced with Continuous Carbon Nanotubes", In proceedings of the MRS Fall Meeting, Boston, MA, Dec. 01-05, (2008).
14. J. Suhr, L. Ci, J. Jang, V. Pushparaj, and P. M. Ajayan, "Continuous Carbon Nanotube-PDMS Composites", *Proceedings of the ASME Conference on Smart Materials, Adaptive Structures and Intelligent Systems*, Ellicot City, MD, October 28-30, (2008).
13. J. Suhr and G. Mathur, "Nanotechnology Enabled Multifunctional Damping For Aerospace

- Composite Structures”, *15th International Congress on Sound and Vibration*, Daejeon, Korea, July 6-10, (2008).
12. J. Suhr, “Fatigue Characteristics of Carbon Nanotube Blocks Under Compression”, In proceedings of the *SPIE’s 14th International Symposium on Smart Structures and Integrated Systems*, San Diego, CA, March 18- March 22, (2008).
 11. J. Suhr, “Visco-elastic properties of Aligned Multi-walled Carbon Nanotube Blocks”, 2007 ASME International Mechanical Engineering Congress & Exposition, Seattle, WA, November 11-15, (2007).
 10. J. Suhr, G. Mathur, and P. Ajayan, “Carbon Nanotube Damping for Aerospace Composite Structures: A New Paradigm”, In proceedings of the NoiseCon2007, Reno, NV, October 22-24, (2007).
 9. J. Suhr, “Nanostructured Material Systems for Engineering Applications”, In proceedings of the *SPIE’s 14th International Symposium on Smart Structures and Integrated Systems*, San Diego, CA, March 18- March 22, (2007).
 8. V. L. Pushparaj, L. Ci, J. Suhr, O. Nalamasu and P. Ajayan, “Electromechanical Sensors Based on Ultra Long Free Standing Aligned Carbon Nanotubes”, In proceedings of the MRS Fall Meeting, Boston, MA, Nov. 27 - Dec. 1, (2006).
 7. J. Suhr and N. Koratkar, “Facilitating Interfacial Slip in Carbon Nanotube Polycarbonate Composites”, In proceedings of *47th AIAA/ASME/ASCE/AHS Structures, Structural Dynamics and Materials Conference*, May 1-4, New Port, RI (2006).
 6. J. Suhr, N. Koratkar, and P. Ajayan, “Exploiting the Nanotube-Polymer Sliding Energy Dissipation Mechanism to Engineer Mechanical Damping in Composite Materials”, In proceedings of the MRS Spring Meeting, San Francisco, CA, April 17-21, (2006).
 5. J. Suhr, and N. Koratkar, “Effect of nanotube-matrix covalent bonding on the stiffness and damping properties of polymer nano-composites”, In proceedings of the *SPIE’s 13th International Symposium on Smart Structures and Integrated Systems*, San Diego, CA, February 26- March 2, (2006).
 4. J. Suhr, N. Koratkar, and L. Schadler, “Characterization of multiwalled carbon nanotube polymer composites”, In proceedings of the *SPIE’s 12th International Symposium on Smart Structures and Integrated Systems*, San Diego, CA, March 6-10, (2005).
 3. J. Suhr, L. Schadler, P. Ajayan and N. Koratkar, “Comparing damping properties of singlewalled and multiwalled carbon nanotube polymer composites”, In proceedings of *46th AIAA/ASME/ASCE/AHS Structures, Structural Dynamics and Materials Conference*, April 18-21, Austin, Texas, (2005).
 2. J. Suhr and N. Koratkar, “Viscoelastic characterization of carbon nanotube thin films”, In proceedings of the *SPIE’s 11th International Symposium on Smart Structures and Integrated Systems*, San Diego, CA, March 14-18, (2004).

1. A. Modi, J. Suhr, E. Lass and N. Koratkar, "Temperature effects on resistivity of Mesoscopic Carbon Nanotube Ensembles" In proceedings of the 44th AIAA/ASME/ASCE/AHS Structures, Structural Dynamics and Materials Conference, April 7-10, Norfolk, VA (2003).

COURSES TAUGHT

- "ME452: Design Synthesis", senior capstone course (Since Spring 2007).
- "ME451: System Design, senior capstone course (Since Fall 2007), Redevelopment.
- "ME343: Dynamics of Machinery", junior level required course (Since Fall 2008), Redevelopment.
- "ME791: Advanced Topics in Soft Materials, graduate course (Since Fall 2009), New development.

CURRENT STUDENTS

Graduate students and postdoctoral researcher

- Joshua Varischetti (Doctoral student), started May 2007.
- Research topic: Energy absorbing fiber composites
- Eung Kang (Master student), started December 2007.
- Research topic: Low-velocity impact resistant polymer composites
- Jae Jang (Postdoctoral researcher), started February 2008.
- Research topic: Multifunctional fiber composites
- Gyo Woo Lee (Visiting professor), started August 2008.
- Research topic: Synthesis and characterization of piezoelectric nanofiber structures

Undergraduate research assistants

- Kyle Egelhofer (Senior), started May 2007.
- Research project: Fabrication of nanocomposites and fiber composites
- Maxwell Fleming (Senior), started June 2009.
- Research project: Measurement of wave speeds of honeycomb structures
- Christopher Dudley (Junior), started August 2009.
- Research project: Characterization of coefficient of thermal expansion of composite materials

PROFESSIONAL ACTIVITIES

- Technical Committee Member for ASME Adaptive Structures & Material Systems.
- Member Program Committee for the Behavior and Mechanics of Multifunctional and Composite Materials (part of SPIE's Symposium on Smart Structures and Materials).
- Co-organizer of the session on "Multifunctional Damping for Aerospace Structures" for International Congress on Sound and Vibration.
- Reviewer of the Journal of Sound & Vibration, Nanotechnology, ASME, and AIAA, the Journal of Materials Research, the Journal of Nanoscience and Nanotechnology, Micro & Nano letters, Journal of Physics, Applied Physics Letters, and Composites Part A.
- Panel Review for NSF/ENG/CMMI program(s).

- Member of SPIE, ASME and MRS.

INVITED SEMINARS

- Phantom Works, Boeing Company (Huntington Beach, CA), September 24, 2009.
- School of Aerospace Engineering, Georgia Institute of Technology (Atlanta, GA), May 1, 2009
- Department of Mechanical and Aerospace Engineering, University of California-Irvine (Irvine, CA), March 13, 2009
- Department of Mechanical Engineering, Texas A&M University (College Station, TX), January 15, 2009.
- KAIST Institute for Design of Complex Systems, Korean Advanced Institute of Science and Technology (KAIST) (Daejeon, Korea), July 9, 2008.
- Samsung Advanced Institute of Technology (Suwon, Korea), June 12, 2007.
- Department of Mechanical Engineering, Dong-Guk University (Seoul, Korea), June 8, 2007.
- Research & Development Division, Hyundai Motor Company & Kia Motors Corporation (Hwaseong, Korea), June 7, 2007.
- Department of Materials Science and Engineering, Korea University of Technology and Education, June 6, 2007.
- Department of Mechanical Engineering, Sungkyunkwan University (Suwon, Korea), May 30, 2007.

UNIVERSITY SERVICE

- Faculty Advisor, Human Powered Vehicle Student Team (March 2007 - present).
- Member, Graduate committee, Mechanical Engineering, (January 2007 - present)

DOCTORAL ADVISORS AND COLLABORATORS

- Dr. Pulickel M. Ajayan (Postdoctoral Advisor and Doctoral Co-advisor), Benjamin M. and Mary Greenwood Anderson Chair Professor of the Department of Mechanical Engineering and Material Science at Rice University (Houston, TX).
- Dr. Nikhil A. Koratkar (Doctoral Advisor), Professor of the Department of Mechanical, Aerospace and Nuclear Engineering at Rensselaer Polytechnic Institute (Troy, NY).
- Dr. Gopal P. Mathur, Boeing Technical Fellow, Program Manager of Aero-Science Technology Group, the Boeing Company (Huntington Beach, CA).
- Dr. Sanjay Sampath, Professor of Material Science and Engineering at State University of New York Stony Brook and Director, Center for Thermal Spray Research, NSF Material Research Science and Engineering Center (Stony Brook, NY).
- Dr. Ronald F. Gibson, Distinguished Research Professor of Mechanical Engineering at University of Nevada, Reno (Reno, NV).