January 1, 2020

CURRICULUM VITAE

R. Byron Pipes, PhD, NAE, IVA

John L. Bray Distinguished Professor of Engineering
School of Materials Engineering
School of Aeronautics and Astronautics
School of Chemical Engineering

Degrees

Ph.D.	**University of Texas at Arlington, 1972**
M.S.E.	**Princeton University, 1969**
B.S.	**Louisiana Polytechnic Institute, 1964**

Relevant Experience

Dr. R. Byron Pipes was elected to the National Academy of Engineering in 1987 in recognition of his development of an exemplary model for relationships between corporate, academic and government sectors to foster research and education in the field of composite materials. In 2018 at the 150th anniversary of the founding of engineering in the UK, he was awarded the honorary DOCTOREM HONORIS CAUSA by the University of Edinburgh, Scotland. As co-founder and director of the Center for Composite Materials at the University of Delaware, he developed an industrial consortium of over forty corporate sponsors from the USA, Japan, Germany, France, Italy, United Kingdom, Belgium, Sweden and Finland. Today, almost 40 years after its founding, the University of Delaware Center is the largest and most successful of its kind in the United States. Research expenditures have exceeded $100 million.

Dr. Pipes' most recent research programs focus on the development of composites manufacturing with emphasis on simulation and additive manufacturing. He currently leads the Indiana Modeling and Simulation Technology Area of the DOE Institute for Advanced Composites Manufacturing Innovation (IACMI). This enterprise will occupied the Indiana Manufacturing Institute in the Purdue Research Park in 2016. He has active programs in the study of the advanced manufacturing science for composite materials. He developed the Composites Design and Manufacturing HUB (cdmHUB) to meet the simulation needs of the growing composites industry in 2013. To date, the cdmHUB has supported by five corporate sponsors (Boeing, Rolls Royce, Cytec, Dassault Systemes, Henkel, e-Xstream Engineering/MSC and DARPA. In 2007 he founded the Purdue Institute for Defense Innovation with the goal of establishing centers of excellence in support of the missions of the Departments of Defense and Home Land Security. Centers developed include: Center for Traumatic Brain Injury Research, Center for Systems Integrity, Center for Thermal Management, Center for Military Electronics and Center for Nanocomposites. As founder of the Akron Global Polymer Academy, he engaged in the development of Internet-based collaborative research wherein scientific instruments

are shared by research groups located in academic, corporate and government scientific centers worldwide.

Dr. Pipes served as the 17th President of Rensselaer Polytechnic Institute from 1993-98. A hallmark of Pipes' career has been his commitment to innovation and change. He is recognized as a pioneer in revitalizing undergraduate education; a leader in creating new partnerships between governments, the private sector and academia; and an international expert in advanced composite materials. As a visionary in higher education, he initiated faculty led restructuring efforts at Rensselaer that addressed: curriculum reform, efficiency of educational processes, re-engineering administrative processes for enhanced efficiencies with improved service, and introduction of an incentive-based budgeting program to align Rensselaer's strengths with marketplace needs. The incentive-based budget program has provided a foundation for entrepreneurial ventures within the university and for growth of academic and research programs. Five-year school business plans and the contribution margin methodology yielded new academic programs and research directions with enhanced revenue and national recognition.

Awards

Recipient, DOCTOREM HONORIS CAUSA, University of Edinburgh, 2018
Recipient, THEODORE M. HESBURGH AWARD, (as President), 1995
Recipient, BOEING EDUCATOR AWARD, (as President), 1995
Recipient, PEW LEADERSHIP AWARD, (as President), 1996
Member, SWEDISH ROYAL ACADEMY OF ENGINEERING (IVA), 1993
Member, NATIONAL ACADEMY OF ENGINEERING, 1987
Recipient, GUSTUS L. LARSON AWARD of Pi Tau Sigma, 1983
Recipient, CHAIRE FRANCQUI, Distinguished Visiting Scholar Award, Catholic University of Louvain, Belgium, 1984-85
Recipient, AMERICAN SOCIETY OF COMPOSITES, OUTSTANDING RESEARCH AWARD, 1994
Recipient, MEDAL OF EXCELLENCE IN COMPOSITE MATERIALS, 1994
Recipient, GLOBAL FELLOW, Intern. Conf. on Comp. Mat. (ICCM), 2015

Employment Experience

Executive Director, Composites Manufacturing Simulation Center, 2015-present
Director of the Modeling and Simulation Technology Area of Institute for Advanced Composites Manufacturing Innovation, Indiana Center of Excellence, 2015-present
Director, Composites Design and Manufacturing HUB 2012-present
Director, Purdue Institute for Defense Innovation, 2007-2014
John L. Bray Distinguished Professor of Engineering, Purdue University, 2004-present
Goodyear Professor of Polymer Engineering, University of Akron, 2001- 2004
Distinguished Visiting Scientist, College of William and Mary, 1998-2001
President and Institute Professor, Rensselaer Polytechnic Institute, 1993-1998
Provost and Vice President for Academic Affairs, University of Delaware, 1991-93
Dean, College of Engineering, University of Delaware, 1985-91
Robert L. Spencer Professor of Engineering, 1989-93

Director, NSF National Engineering Research Center, "Center for Composites Manufacturing Science and Engineering," University of Delaware and Rutgers University, 1985
Professor of Mechanical and Aerospace Engineering, University of Delaware, 1980-89
Visiting Scientist, Imperial Chemicals Incorporated, Welwyn Garden City, United Kingdom, 1981
Director, Center for Composite Materials, University of Delaware, 1978-85
Acting Director, Center for Composite Materials, University of Delaware, 1977-78
Associate Professor, Mechanical and Aerospace Engineering, University of Delaware, 1974-80
Assistant Professor, Mechanical Engineering, Drexel University, 1972-74.

Professional Activities

Visiting Professor	University of Edinburgh, 2016-19
Member	Integrating Materials and Manufacturing Innovation Editorial Oversight Committee, TMS, 2012-2014
Chairman	Army Research Laboratory Technical Assessment Board, 2013-14
Chairman	NRC Panel on Armor and Armaments, 2011-12
Member	NRC Committee Panel on Building and Fire Research, 2008-10
Chairman	NRC Committee on Bridging Design and Manufacturing, 2002-04
Chairman	NRC Panel on Technologies for Aeronautics and Aerospace, 1997-98
Chairman	Middle States Accreditation of Stevens Institute of Technology, 1997-98
Chairman	New England Accreditation of the University of New Hampshire, 1992-93
Chairman	U.S. Org. Committee of the U.S.-Sweden Joint Seminar, 1988
Chairman	Delaware Governor's High Technology Task Force, 1986-88
Chairman	NMAB Thermoplastic Composites for Structural Applications, 1985-86.
Chairman	NMAB NDI of Metal Matrix Components, 1982-83
Fellow	American Society of Mechanical Engineers
Fellow	Society for Advanced Materials and Process Engineering
Fellow	American Society for Composites
Fellow	World Fellow: International Conference on Composite Materials
Member	United States Advisory Committee, Council on Competitiveness, 1994-98
Member	Commission on Independent Colleges and Universities, 1993-98
Member	Capital Region Technology Development Council, 1993-98
Member	New York's Capital Reg., Ctr. for Economic Growth, 1993-98
Member	U.S. Army Science Board, 1988-91
Member	National Materials Advisory Board, 1980-86
Member	Advisory Panel, Office of Tech. Assessment, U.S. Congress, 1983-84
Member	NMAB, Characterization of Organic Matrix Composites, 1981-82
Member	Pioneer Savings Bank, Board of Directors, 1993-99
Member	GenCorp Board of Directors, 1993-99
Member	Omnova Solutions, Inc. Board of Directors, 1999-2008
Member	Northeast Health Board, 1996-2000
Member	Civil Engineering Research Foundation Board, 1995-1999
Member	Troy Redevelopment Foundation Board, 1995-98
Member	Boy Scouts of America Twin Rivers District Board, 1996-98

Member Tau Beta Pi, National Engineering Honorary
Member Pi Tau Sigma, National Mechanical Engineering Honorary
Member Omicron Delta Kappa, National Leadership Honorary

Academic Legacy

Dr. Pipes has supervised over 150 graduate degree recipients including doctoral and masters students. While serving as both Dean and Provost he supervised an average of six graduate students per year. He currently supervises 8-12 graduate students and 6 post-doctoral fellows.

Books

Co-Author, *Experimental Characterization of Advanced Composite Materials*, Prentice-Hall, 1987, translated to Japanese and German, 2nd Edition, Technomic Publication Co., 1997. Third edition CRC Press, 2002 and Fourth Edition, 2014, CRC Press.

Editor, *Composite Materials*, multivolume series, Elsevier - Applied Science, 1986-96.

Co-Author, *Experimental Mechanics of Fiber-Reinforced CompositeMaterials*, Prentice-Hall/SEM, 1982, reprinted 1985.

Editor, *Non-Destructive Evaluation and Flaw Criticality for Composite Materials*, ASTM, 1979

Co-Editor, *Application of Composite Materials in the Automotive Industry*, ASME, 1978.

Scholarship

Dr. Pipes has authored over 183 archival publications. Together, these have received over 11,000 citations, as documented in the *Google Scholar*. His Google Scholar h-index is 47 and i-10 index is 144 (2018).

Patents

Patent 9,944,026, April 17, 2018, "Method and System of Vacuum Assisted Resin Transfer Moldings for Repair of Composite Materials and Structure."

Patent 10,201,918 B1, February 12, 2019, "Molding System for Preparing Fiber-Reinforced Thermoplastic Article."

Patent Pending, 15938597, March 28, 2018, "Methods and Apparatus for Embedding Heating Circuits into Molds Made by Additive Manufacturing."

Patent Application 62658366, April 16, 2018, "Methods and Apparatus for Additive Manufacturing of Articles by Coextruding Continuous Multifunctional Composite Materials, and Articles Made Thereof."

Selected Publications

Velocci, Jr., Anthony L. and Pipes, R. Byron, "Democratize Innovation," Viewpoint Guest Editorial, *Aviation Week and Space Technology*, December 1-23, (2018).

Denos, B.R., Sommer, D.E., Favaloro, A.J. and Pipes, R.B., Avery, W.B., "Fiber Orientation Measurement from Mesoscale CT Scans of Prepreg Platelet Molded Composites," *Composites A*, Volume 114 (2018), pp. 241-249.

Sommer, D.E., Favaloro, A.J., Pipes, R.B., "Coupling Anisotropic Viscosity and Fiber Orientation in Applications to Squeeze Flow," *Journal of Rheology*, 62, 669 (2018); https://doi.org/10.1122/1.5013098

Kravchenko, S.G., Sommer, D.E. and Pipes, R.B., "Uniaxial Strength of a Composite Array of Overlaid and Aligned Prepreg Platelets," *Composites Part A*, Volume 109, (2018), Pages 31- 47.

Brenken, Bastian, Barocio, Eduardo, Favaloro, Anthony, Kunc, Vlastimil, Pipes, R. B., "Fused Filament Fabrication of Fiber-Reinforced Polymers: A Review," *Additive Manufacturing*, Vol. 21, (2018), 1-16. https://doi.org/10.1016/j.addma.2018.01.002.

Pipes, R.B., "A Vision to Accelerate the Composites Industry," *ACMA Composites Manufacturing Magazine,* May-June 2012 Issue.

Condit, P., Pipes, R.B., "The Global University," *Issues in Science and Technology*, National Academy of Sciences, Volume XIV, Number 1, (1997), pp. 27-28.

Pipes, R.B., Wilson, J.M., "A Multimedia Model for Undergraduate Education," *Technology in Society*, Vol. 18, No. 3, (1996), pp. 387-401.

Pipes, R.B., Coffin, D.W., Shuler, S.F., Simacek, P., "Non-Newtonian Constitutive Relationships for Hyper Concentrated Fiber Suspensions," *Journal of Composite Materials*, Vol. 28, No. 4, (1994), pp. 343-350.

Pipes, R.B., Lewis, C.S., "Research Centers in Sciences and Engineering," *Innovative Models for University Research*, edited by C.R. Haden, North- Holland, (1992).

Pipes, R.B., "Anisotropic Viscosities of an Oriented Fiber Assembly with a Power-Law Matrix Fluid," *Journal of Composite Materials*, Vol. 26, No. 10, (1992), pp. 1536-1552.

Pipes, R.B., Hearle, J.W.S., Beaussart, A.J., Okine, R.K., "Influence of Fiber Length on the Viscous Flow of an Oriented Fiber Assembly," *Journal of Composite Materials*, Vol. 25, (1991), pp. 1379-1398.

Pipes, R. B., "Interdisciplinary Engineering Research: A Case Study," *Engineering Education*, Vol. 78, No. 1, (1987), pp. 19-22

Research Funding

In 2015, Dr. Pipes' team won the Indiana Modeling and Simulation Technology Area of the DOE Institute for Advanced Composites Manufacturing Innovation (IACMI) and almost $40 million in funding over 2015-20. As founding director of the Purdue Institute for Defense Innovation (2007), Dr. Pipes led an effort for the establishment of centers of excellence that meet the needs of the Department of Defense and Home Land Security with a goal of $50 million/year in new sponsored programs of research and development. As stated above, the research funding for the Center for Composite Materials of the University of Delaware exceeded $65 million during the period 1974-1999. The annual research expenditures of Rensselaer Polytechnic Institute were $40 million annually during 1993-98. Current research grants:

"INSTITUTE FOR ADVANCED COMPOSITES MANUFACTURING INNOVATION, INDIANA CENTER OF EXCELLENCE," $40 million, 2015-2020, Department of Energy, R. B. Pipes, P.I.

Total List of Publications

Books

Co-Author,	*Experimental Characterization of Advanced Composite Materials*, Prentice-Hall, 1987, translated into Japanese and German, 2nd Edition, Technomic Publications Co., 1994, 3rd edition CRC Press, 2002 and Fourth edition, 2014.
Series Editor,	*Composite Materials*, Twelve-Volume Series, Elsevier-Applied Science, 1986-1999.
Editor,	*Materials Futures: Strategies and Opportunities*, U.S-Sweden Joint Symposium, Materials Research Society, 1988.
Co-Author,	*Experimental Mechanics of Fiber-Reinforced Composite Materials*, Prentice-Hall/SEM, 1982, reprinted 1985.
Editor,	*Non-Destructive Evaluation and Flaw Criticality for Composite Materials*, ASTM, 1979.
Co-Editor,	*Application of Composite Materials in the Automotive Industry*, ASME, 1978.

Archival Publications

2020

Sommer, D.E., Kravchenko, S.G., Denos, B., Favaloro, A.J., Pipes, R.B., "Integrative Analysis for Prediction of Process-Induced, Orientation-Dependent Tensile Properties in a Stochastic Prepreg Platelet Molded Composite," *Composites A,* accepted for publication.

Barocio, E., Brenken, B. Favaloro, A., Bogdanor and Pipes, R.B., "Extrusion Deposition Additive Manufacturing with Fiber-Reinforced Thermoplastic Polymers," Additive Manufacturing of Polymer / Polymer Composites**,** Elsevier**,** In Press.

2019

Knauf, M., Przybyla, C., Ritchey, A., Trice, R. and Pipes, R.B., "Measuring the Effects of Heat Treatment on SiC/SiC Ceramic Matrix Composites Using Raman Spectroscopy," accepted for publication by *J of the Am Ceram Soc.*, (2019).

Knauf, M., Przybyla, C., Ritchey, A., Trice, R. and Pipes, R.B., "Residual Stress Determination of Silicon Containing Boron Dopants in CMCs," *J Am Ceram Soc*. Volume102, Issue5, (2019), pp. 2820-2829.https://doi.org/10.1111/jace.15942

Kravchenko, S.G., Sommer, D.E., Denos, B.R., Avery, W.B., Tow, CM. and Pipes, R.B., "Tensile Properties of a Stochastic Prepreg Platelet Molded Composite," *Composites A,* 124, (2019), pp. 1-24.

Kravchenko, S.G., Sommer, D.E., Denos, B.R., Avery, W.B. and Pipes, R.B., "Structure-property Relationship for a Prepreg Platelet Molded Composite with Engineered Meso-morphology," *Composite Structures*, Volume 210, 15 February (2019), pp. 430-445.

Brenken, Bastian, Barocio, Eduardo, Favaloro, Anthony, Kunc, Vlastimil, Pipes, R. B., "Development and Validation of Extrusion Deposition Additive Manufacturing Process Simulations," *Additive Manufacturing*, Vol. 25, (2019), pp. 218-226. https://doi.org/10.1016/j.addma.2018.10.041

2018

Denos, B.R., Sommer, D.E., Favaloro, D.J. and Pipes, R.B., "Fiber orientation measurement from mesoscale CT scans of prepreg platelet molded composites," Composites Part A, 114, (2018), 241–249.

Velocci, Jr., Anthony L. and Pipes, R. Byron, "Democratize Innovation," Viewpoint Guest Editorial, *Aviation Week and Space Technology*, December 1-23, (2018).

Suksangpanya, N., Yaraghi, N.A., Pipes, R.B., Kisailus, D. and Zavattieri, P., "Crack Twisting and Toughening Strategies in Bouligand Architectures," *International Journal of Solids and Structures*, (2018); https://doi.org/10.1016/j.ijsolstr.2018.06.004.

Favaloro, A.J., Sommer, D.E., Denos, B.R. and Pipes, R.B., "Simulation of Prepreg Platelet Compression Molding: Method and Orientation Validation," *J. Rheo.,* Vol. 62, No. 6 (2018), pp. 1443-1455.

Favaloro, A.J., Tseng, H-C., Pipes, R.B., A new anisotropic viscous constitutive model for composites molding simulation, *Composites Part A*, 115, (2018), pp. 112–122.

Rique, O., Goodsell, J.E., Yu, W. and Pipes, R.B., "Three-dimensional thermoelastic properties of general composite laminates," *Journal of Composite Materials,* (2018), Vol. 52(13) 1799–1808.

Sommer, D.E., Favaloro, A.J., Pipes, R.B., "Coupling Anisotropic Viscosity and Fiber Orientation in Applications to Squeeze Flow," *Journal of Rheology*, 62, 669 (2018); https://doi.org/10.1122/1.5013098

Brenken, Bastian, Barocio, Eduardo, Favaloro, Anthony, Kunc, Vlastimil, Pipes, R. B., "Fused Filament Fabrication of Fiber-Reinforced Polymers: A Review," *Additive Manufacturing*, Vol. 21, (2018), 1-16. https://doi.org/10.1016/j.addma.2018.01.002.

2017

Goodsell, J., Peng, B., Pipes, R.B., Yu, W., "Interlaminar Stresses in Composite Laminates Subjected to Twisting Deformation," *Journal of Applied Mechanics*, Vol. 84, (2017), 104503-1

Sertse, H.M., Goodsell, J., Ritchey, A.J., Pipes, R.B. and Yu, W., "Challenge problems for the benchmarking of micromechanics analysis: Level I initial results," *Journal of Composite Materials*, Vol. 52(1) 61–80, (2017), DOI: 10.1177/0021998317702437.

Sharp, N., Li, C.L., Strachan, A. and Pipes, R.B., "Effects of Water on Epoxy Cure Kinetics and Glass Transition Temperature utilizing Molecular Dynamics Simulations," in press, *Journal of Polymer Science, Part B: Polymer Physics*, 55, (15), (2017), pp. 1150-1159.

Kravchenko, Oleksandr; Qian, Xin; Misiego, Rocio; Kravchenko, Sergii; Pipes , R. B.; Manas-Zloczower, Ica, "Role of Hierarchical Morphology of Helical Carbon Nanotube Bundles on Thermal Expansion of Polymer Nanocomposites," *Journal of Materials Research*, (2017), DOI: 10.1557/jmr.2017.214.

Kravchenko, Oleksandr, Kravchenko, Sergii, Pipes, R.B., "Cure History Dependence of Residual Deformation in a Thermosetting Laminate, *Composites: Part A*, 99, (2017), pp. 186–197.

Ribeiro, B, RB Pipes, R.B, Costa, M.L. and Botelho, E.C., "Electrical and rheological percolation behavior of multiwalled carbon nanotube-reinforced poly (phenylene sulfide) composites," *Journal of Composite Materials*, (2017), Vol. 51(2), 199–208.

2016

Goodsell, J. and Pipes, R.B., "Free-Edge Interlaminar Stresses in Angle-Ply Laminates: A Family of Analytic Solutions," *Journal of Applied Mechanics*, (2016), Vol. 83 / 051010-1.

Peng, B., Goodsell, J., Pipes, R.B. and Yu, W., "Generalized Free-Edge Stress Analysis Using Mechanics of Structure Genome," *Journal of Applied Mechanics*, (2016), Vol. 83 / 101013-1.

Kravchenko, O.G., Misiego, R., Kravchenko, S.G., Pipes, R.B. and Manas-Zloczower, I., "Modeling of Hierarchical Morphology of Carbon Nanotube Bundles in Polymer Composites," *Macromolecular Theory and Simulation*, (2016), DOI: 10.1002/mats.201600064.

Xie, Y., Kravchenko, O.G., Pipes, R.B. and Koslowski, M., "Phase field modeling of damage in glassy polymers," *Journal of the Mechanics and Physics of Solids*, 93, (2016), pp. 182–197.

Kravchenko, O., Kravchenko, S.G., Pipes, R.B., "Chemical and thermal shrinkage in thermosetting prepreg," *Composites: Part A*, 80 (2016) 72–81.

2015

Kravchenko, S., Kravchenko, O., Carlsson, L.A. and Pipes, R.B., "Influence of through-thickness reinforcement aspect ratio on mode I delamination fracture resistance," *Composite Structures*, Vol.125, July (2015).

2014

Pipes, R.B., "Accelerating the Certification Process for Aerospace Composites*," High Performance Composites,* March (2014).

Chen, S, Schueneman, G., Pipes, R.B., Youngblood, J. and Moon, R.J., "Effects of Crystal Orientation on Cellulose Nanocrystals−Cellulose Acetate Nanocomposite Fibers Prepared by Dry Spinning," *BioMacromolecules*, (2014) 10:14:49 | 9 | JCA.

Kravchenko, O. G., Li, C., Strachan, A., Kravchenko, S.G. and Pipes, R.B. "Prediction of the chemical and thermal shrinkage in a thermoset polymer," *Composites Part A: Applied Science and Manufacturing,* Volume 66, (2014), Pages 35–43.

Goodsell, J. E., Moon, R. J., Huizar, A. and Pipes , R. B., "A Strategy for Prediction of the Elastic Properties of Epoxy-Cellulose Nanocrystal-Reinforced Fiber Networks," *Nordic Pulp and Paper Research Journal,* Vol. 29, No. 1, (2014).

2013

Kravchenko, S., Kravchenko, O., Wortmann, M., Pietrek, M., Horst, P., Pipes, R.B, Composite Toughness Enhancement with Interlaminar Reinforcement, *Composites: Part A*, (2013), doi: http:// dx.doi.org/10.1016/j.compositesa.(2013.07.006)

Misiego, C.R. and Pipes, R.B., "Dispersion and its Relation to Carbon Nanotube Concentration in Polyimide Nanocomposites," *Composites Science and Technology*, 85, (2013), pp. 43-49.

Goodsell, J., Pagano, N.J., Kravchenko, O, and Pipes, R.B., "Interlaminar Stresses in Composite Laminates Subjected to Anticlastic Bending Deformation," *Journal of Applied Mechanics*, ASME *J Appl Mech,* (2013); 80(4): 041020-1 - 041020-7.

Cadena, M., Misiego, R., Smith, K.C., Avia, A., Pipes, R.B., Reifenberger, R. and Raman, A., "Subsurface Imaging of Carbon Nanotube-polymer Composites Using Dynamic AFM Methods*," Nanotechnology*, 24 (2013), 135706.

Carlsson, L.A., Adams, D. F. and Pipes, R. B., "Basic Experimental Characterization of Polymer Matrix Composite Materials," *Polymer Reviews*, 53:2, 277-302, (2013).

2012

Dustin, J. and Pipes, R.B., "Free-Edge Singularities Meet the Microstructure: Important Considerations," *Composites Science and Technology*, 72, (2012), pp. 933-937.

2011

Siengchin**,** S**.** and Pipes, R.B., "Rheological and Dynamic Thermo-mechanical Properties of Epoxy Composites Reinforced with Single and Multi-Walled Carbon Nanotubes," *Mechanics of Composite Materials*, 47, No. 6, (2011).

Mendoza Jasso, A.J., Goodsell, J.E., Ritchey, A.J., Pipes, R.B. and Koslowski, M., "A parametric study of fiber volume fraction distribution on the failure initiation location in open hole off-axis tensile specimen," *Composites Science and Technology*, 71 (2011) 1819–1825.

Mendoza Jasso, A.J., Goodsell, J.E., Pipes, R.B. and Koslowski, M., "Validation of Strain Invariant Failure Analysis in an Open Hole Off-Axis Specimen*," Journal of Materials,* Vol. 6, No. 3, (2011), pp. 43-48.

Ritchey, A., Dustin, J., Gosse, J. and Pipes, R.B. "Self-Consistent Micromechanical Enhancement of Continuous Fiber Composites," Advances in Composites, INTEC Publications, (2011).

2010

Pipes, R.B., Goodsell, J., Ritchey, A. and Gosse, J., "Interlaminar Stresses in Composite Laminates: Thermoelastic Deformation," *Composites Science and Technology*, Vol. 70, (2010), pp. 1605-1611.

2009

Buchanan, D.L., Gosse, J.H., Wollschlager, J.A., Ritchey, A., Pipes, R.B., "Micromechanical Enhancement of the Macroscopic Strain State for Advanced Composite Materials," *Composites Science and Technology*, 69 (2009), pp. 1974-1978.

Strus, M.C., Cano, C., Pipes, R.B., Nguyen, C., and Raman, A., "Interfacial Energy between Carbon Nanotubes and Polymers from Nanoscale Peel Testing the Atomic Force Microscope," *Composites Science and Technology*, Vol. 69, (2009), pp. 1580–1586.

2008

Strus, M.C., Zalamea, L., Raman, A., and Pipes, R.B., Nguyen, C., and Stach, E.A., "Peeling Force Spectroscopy: Exposing the Adhesive Nanomechanics of One-Dimensional Nanosctuctures," *Nano Letters*, Vol. 8, No. 2, (2008), pp. 544-550.

2007

Zalamea, L., Kim, H., and Pipes, R.B., "Stress Transfer in Multiwalled Carbon Nanotubes," *Composites Science and Technology*, Vol. 67, No. 15, (2007), pp. 3425-3433.

Pedraza, E.P., Cano, C.I., Van Dalen, J., Pipes, R.B. and Youngblood, J.P., "Reduction of Fixture Time of a Two-component Structural Acrylic Adhesive*," International Journal of Adhesion and Adhesives*, Vol. 20, No. 6, (2007), pp. 283-90.

Cano, C.I., Clark, M.I., Kyu, T., and Pipes, R.B., "Modeling Particle Inflation from Poly(amic acid) Powdered Precursors (Part II): Morphological Development During Bubble Growth," *Polymer Engineering & Science*, Vol. 47, No. 5, (2007), pp. 572-581.

Cano, C.I., Kyu, T., and Pipes, R.B., "Modeling Particle Inflation from Poly(amic acid) Powdered Precursors (Part I): Preliminary Stages Leading to Bubble Growth," *Polymer Engineering & Science*, Vol. 47, No. 5, (2007), pp. 560-571.

2006

Zalamea, L. and Pipes, R.B., "Harmonic Oscillators of Carbon Nanotube Arrays," Nanoscience and Nanotechnology, Vol. 6, No. 4, (2006), pp. 1177-1181.

Pipes, R.B. and Zalamea, L., "Energetics of Imperfectly Bonded Carbon Nanotube Arrays in Flexure," Composites Science and Technology, Vol. 66, No. 15, (2006), pp. 2844-2854.

Salvetat, J-P, Bhattacharyya, S., and Pipes, R.B., "Progress on Mechanics of Carbon Nanotubes and Derived Materials," Journal of Nanoscience and Nanotechnology, Vol. 6, No. 7, (2006), pp. 1857-1882.

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Pipes, R.B., Hubert, P., Salvetat, J.-P. and Zalamea, L., **"**Flexural Deflection as a Measure of van der Waals Interaction Forces in the CNT Array,**"** *Composites Science and Technology*, Vol. 66, No. 9, (2006), pp. 1125-1131.

2005

Cano, C.I., Weiser, E.S., Kyu, T., and Pipes, R.B., "Polyimide Foams from Powder: Experimental Analysis of Competitive Diffusion Phenomena," *Polymer*, 46(22), (2005), pp. 9296-9303.

T.E. Chang, L.R. Jensen, A. Kisliuk, R.B. Pipes, R. Pyrz, A.P. Sokolov, "Microscopic Mechanism of Reinforcement in Single-Wall Carbon Nanotube / Polypropylene Nanocomposite," *Polymer*, Vol. 46, (2005), pp 439-444.

2004

Coffin, D.W. and Pipes, R.B., "Flange Wrinkling in the Forming of Thermoplastic Composite Sheets," *Materials Processing and Design: Modeling, Simulation and Applications NUMIFORM* , AIP Conference Proceedings, Vol. 712. New York: American Institute of Physics, (2004), p.294-299

Camilo I. Cano, C.I., Weiser, E.S. and Pipes, R.B., "Solid State Polyimide Foaming from Powder Precursors: Effect of Morphology and Process Parameters on the Diffusive Phenomena," *Cellular Polymers*, Vol. 23, No. 5, (2004), pp. 299.

G.M. Odegard, R.B. Pipes and P. Hubert, "Comparison of Two Models of SWCN Polymer Composites," *Composites Science and Technology*, Vol. 64 (2004), pp. 1011-1020.

2003

R. B. Pipes, P. Hubert, "Scale Effects in Carbon Nanostructures: Self-Similar Analysis," *Nano Letters*, Vol. 3, No. 2, (2003), pp 239-243.

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