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**Donald C. Phillips Professor of Civil and Environmental Engineering**  
**Department of Materials Science & Engineering**  
**Department of Civil & Environmental Engineering**  
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[Dr. Gillespie's Google Scholar's page](#)

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**Executive Summary**

Dr. Gillespie has served the University of Delaware Center for Composite Materials (UD-CCM) in several roles since 1981, achieving the position of Director in 1996. As director, Professor Gillespie has established an intellectually stimulating and highly interdisciplinary research environment for affiliated faculty, research professionals, graduate and undergraduate students, postdoctoral fellows, and visiting scholars to collaborate among themselves as well as with the Center's government and industrial sponsors. Dr. Gillespie has maintained a dedicated state-of-the-art facility and maintains an open-lab philosophy to encourage participation in research and educational activities. Currently, more than 120 projects in composites-related fields are ongoing. Dr. Gillespie is the Principal Investigator of two Army Research Laboratory (ARL) Centers of Excellence, one in multifunctional composite materials and the other in mechanics and performance of composites. Both of these Centers were renewed in 2006-2014. He is also co-principal investigator for a third Center of Excellence focused on advanced materials and

intelligent processing funded by the Office of Naval Research (ONR) from 1997 to 2014. In addition, Dr. Gillespie is co-principal investigator for a fourth Center of Excellence, hosted by Wichita State University. Funded by the Federal Aviation Association, the FAA center focuses on advanced composite materials for commercial aircraft. In 2012, ARL established a Cooperative Research Alliance with Hopkins, Rutgers and Cal Tech and UD on Materials Under Extreme Dynamic Environments of which Dr. Gillespie is a member of the core management team and UD's PI.

Building on traditional strengths and funding new initiatives, Dr. Gillespie has increased faculty participation to the highest levels in the Center's history with more than 45 faculty involved and advising graduate students in exciting new areas of basic research in multifunctional composites. Dr. Gillespie has maintained a commitment to undergraduate research by continuing the CCM undergraduate research program and expanding it to include an external internship at the Army Research Laboratory. In 2016, more than 200 researchers including 150 students and interns have been involved in CCM activities.

In 1996, Dr. Gillespie assumed leadership of the Center's University-Industry Consortium, "Application of Composite Materials to Industrial Products," with only three members. Today, membership exceeds 60 companies. To meet the needs for applied research and technology transfer, Dr. Gillespie has incrementally expanded the number of research professional staff and the breadth of expertise in the Center's ranks. Today, research professionals, visiting scholars, and postdoctoral fellows work closely with our industrial and government sponsors as well as the faculty and students. Dr. Gillespie has worked diligently to maintain an optimum balance of basic and applied research to ensure that CCM is not only at the forefront of the science of composites but also able to solve real-world engineering problems to benefit the Center's sponsors and society. Many of our industrial sponsors have established university-industry partnerships and major research programs led by Dr. Gillespie.

Prof. Gillespie is the Donald C. Phillips Professor of Civil and Environmental Engineering, and he also holds joint appointments in the Department of Materials Science and Engineering and the Department of Mechanical Engineering. He has advised more than 44 PhD and 59 master's. His former students have gone on to successful careers in academia (17 teaching at other universities), government, and industry. He was also chosen as the recipient of the Faculty Advisors Award from SAMPE in 2001. He was a Member of the National Science Foundation Task Force for Development of the first Doctoral Program at Tuskegee University. Today, he is an adjunct faculty member at Tuskegee. He also serves as Chair of the external advisory board for the NSF CREST for Southern University. He has hosted faculty and students from both of these HBCU schools at UD-CCM. In addition to his graduate students, Dr. Gillespie's research group also includes 15 research faculty and professionals and 10 technical and administrative support staff.

Dr. Gillespie has a proven track record of conducting high quality basic and applied research in collaboration with colleagues from academia, government and industry. He has authored/co-authored more than 800 publications in composites science and technology including 18 book/book chapters, 20 patents, and more than 313 refereed journal papers, 474 proceeding papers and more than 100 technical reports. He has received over \$187 million funding to support his research and the Center overall.

Dr. Gillespie has served as a member of the prestigious and influential National Research Council Board on Manufacturing and Engineering Design, and Chair of the National Materials Advisory Board Committee on High-Performance Structural Fibers for Advanced Polymer-Matrix Composites. Dr. Gillespie has been Editor of the Journal of Thermoplastic Composite Materials since 1993, and he serves on numerous editorial boards. Over the past few years, Dr. Gillespie was the Co-Chair of the 24<sup>th</sup> Technical Conference of the American Society for Composites and the Canadian Association for Composite Structures and Materials, Chair of the International Advisory Committee for the Second World Conference on 3D Fabrics and Their Applications, Co-Chair, TEXCOMP9, International Conference on Textile Composites and International Co-Chair of the 13<sup>th</sup> US-Japan Conference on Composite Materials, held in Tokyo, Japan.

Dr. Gillespie's contributions have been recognized through a number of honors and awards. He was a co-recipient of the U.S. Army's Paul A. Siple Memorial Award, announced at the 21st Army Science Conference in 1998, for his research on processing of multifunctional armor materials. His work on diffusion-enhanced adhesion for improved ballistics was cited in 1997 in the Department of Defense (DoD) booklet, Defense Basic Research-Rapid Transition from the Laboratory to the Field. The technology was one of only 17 examples of basic research recognized throughout the entire DoD. He was the first academic recipient of the prestigious Jud Hall Composites Manufacturing Award bestowed in 2000 by the Composites Manufacturing Association of the Society of Manufacturing Engineers. His research team was selected in 2004 by the American Composites Manufacturing Association for the Best of Show Award recognizing projects that are superior to all others in manufacturing, design, process innovation and use of composite materials. In 2008, he was acknowledged as the Most Cited Author (2005-2008) by the International Journal of Solids and Structures. In 2009, he was selected by the American Society for Composites as the recipient of the Outstanding Research Award and acknowledged with the Department of Mechanical Engineering Distinguished Career Alumni Award. In 2012, he was selected as a fellow of the American Society for Composites. In 2013 he was recognized as the co-recipient of the American Society for Civil Engineers Charles Pankow Award for Innovation. He was also one of only six individuals elected to the 2013 Society of Manufacturing Engineers College of Fellows. In 2015, he was one of four elected as a Fellow of SAMPE. In 2016, he received the Wayne W. Stinchcomb Memorial Award from the American Society for Testing and Materials. Dr. Gillespie has also received numerous best paper and best presentation awards over the years.

*Specialty Areas:* Composites, processing, mechanics, design, interphase science, adhesion, experimental methods.

## **Education**

Ph.D., 1985, Mechanical and Aerospace Engineering, University of Delaware  
M.M.A.E., 1978, Mechanical and Aerospace Engineering, University of Delaware  
B.M.E., 1976, Mechanical and Aerospace Engineering, University of Delaware

## **Experience**

### **2013 to Present**

Professor, Department of Mechanical Engineering, University of Delaware

**2005 to Present**

Named Donald C. Phillips Professor, Department of Civil & Environmental Engineering, University of Delaware

**1999 to Present**

Professor, Department of Civil & Environmental Engineering, University of Delaware  
Professor, Department of Materials Science & Engineering, University of Delaware

**1996 to Present**

Director, Center for Composite Materials, University of Delaware

**1998 to Present**

Adjunct Faculty, Materials Science and Engineering Program, Tuskegee University

**March 1989 to Present**

Senior Scientist, University of Delaware

**1996 to 1999**

Associate Professor, Department of Civil & Environmental Engineering, University of Delaware

**1994 to 1999**

Associate Professor, Department of Materials Science & Engineering, University of Delaware

**1990 to 1996**

Associate Director and Member of Board of Directors, Center for Composite Materials, University of Delaware

**February 1989 to 1994**

Research Faculty Member, Materials Science Program, University of Delaware  
Research Faculty Member, Department of Mechanical Engineering, University of Delaware

**August 1986 to 1990**

Assistant Director for Research, Center for Composite Materials, University of Delaware

**September 1986 to July 1989**

Research Assistant Professor of Mechanical Engineering, University of Delaware

**January 1986 to March 1989**

Scientist, University of Delaware

**July 1983 to December 1985**

Associate Scientist, Center for Composite Materials, University of Delaware

**October 1981 to June 1983**

Research Associate III, Center for Composite Materials, University of Delaware

**Scholarship****Awards**

1. Wayne W. Stinchcomb Memorial Award from the American Society for Testing and Materials, September 2016.
2. ASME Mechanisms & Robotics Committee Best Paper Award at the 39<sup>th</sup> Mechanisms and Robotics Conference, Boston, MA, August 4, 2015, J-H Park, S. Yarlagadda, P.

- Stegall, J. Tierney, S. K. Agrawal, S. Sharma, and J. W. Gillespie, Jr., "Wearable Upper Body Suit for Assisting Human Load Carriage."
3. SAMPE Fellow Award in recognition of your extensive history of research support, technology advancement, individual mentoring and support of the society, June 2015.
  4. Outstanding Paper Award 2<sup>nd</sup> Place SAMPE 2015, Baltimore, MD, May 18-21, 2015 Zhang, D., D. Heider, and J. W. Gillespie, Jr., "Role of Prepreg Interlayer Permeability on Void Reduction During Oven Vacuum Bag Processing of Thick Section Thermoplastic Composites."
  5. Elected in 2013 to the SME College of Fellows.
  6. Selected as co-recipient of the American Society for Civil Engineers 2013 Charles Pankow Award for Innovation.
  7. Elected in 2012 as Fellow of the American Society for Composites.
  8. Best Paper Award, presented at the 25<sup>th</sup> Annual Technical Conference, hosted by the University of Dayton, Dayton, OH, September 21, 2010, for paper presented at the 24<sup>th</sup> Annual Technical Conference of the American Society for Composite and the Canadian Association for Composite Structures and Materials, University of Delaware, Sept. 15-17, 2009, with B. A. Gama, T. A. Bogetti, and J. W. Gillespie, Jr., "Impact, Damage and Penetration Modeling of Thick-Section Composites using LS-Dyna MAT 162."
  9. 2009 ASC Outstanding Research Award; Quoting the Society guidelines: *A nominee for the ASC Outstanding Research Award shall have made contributions to the science and technology of composite materials by way of analytical modeling, numerical modeling, design methodologies, and/or experimental work that have led to a greater understanding of the behavior of composite materials.*
  10. Distinguished Career Alumni Award, Department of Mechanical Engineering, University of Delaware, May 1, 2009.
  11. 2008, Most Cited Author 2004 – 2008 Award, *International Journal of Solids and Structures*.
  12. Best Paper Award 1<sup>st</sup> Place SAMPE 2005 Symposium & Exhibition (50th ISSE), Long Beach, CA, May 1-5, 2005. with B. A. Gama, S. M. W. Islam, M. Rahman, T. A. Bogetti, B. A. Cheeseman, C-F. Yen, and C. P. R. Hoppel, "Punch Shear Behavior of Thick-Section Composites under Quasi-Static, Low Velocity, and Ballistic Impact Loading."
  13. 2004 American Composites Manufacturing Association Best of Show Award recognizing projects that are superior to all others in manufacturing, design, process innovation, and use of composite materials, November, 2004.
  14. Space Act Award, "Ceramic Composite Advanced Tow Placement (CCATP) Process: A Rapid Prototyping Technique for Continuous Fiber Reinforced Ceramic Matrix Composites," *NASA Tech Briefs Magazine*, September 2002.
  15. Faculty Advisors Award, Society for the Advancement of Material and Process Engineering, 2001.
  16. J. H. "Jud" Hall Composites Manufacturing Award of the Composites Manufacturing Association, Society of Manufacturing Engineers, 2000 Award recognizing outstanding contributions to the advancement of composites manufacturing.

17. ASCE Delaware Section Project of the Year Award: "Use of Glass-Fiber-Reinforced Composite Panels to Replace the Superstructure for Bridge 351 on N387A Over Muddy Run," February 1999.
18. Paul A. Siple Memorial Award: "Co-Injection Resin Transfer Molding for Optimization of Integral Armor," (with B. K. Fink and S. H. McKnight), 21st Army Science Conference, *Science and Technology for Army After Next*, Norfolk, VA, June 15–17, 1998 recognizes best basic research contributions in U.S. Army.
19. "Defense Basic Research-Rapid Transitions from the Laboratory to the Field" recognized notable achievements by world class scientists and engineers. Dr. Gillespie's research on Diffusion Enhanced Adhesion was selected as one of only 17 examples throughout the entire Department of Defense, May 1997.
20. Best Paper Award, Joining of Plastics & Composites Special Interest Group, ANTEC 98: "A Predictive Neural Network Controller for Thermoplastic Tow Placement," with D. Heider, and M. J. Piovoso, Society of Plastics Engineers, 1998.
21. Best Paper in the Body/Fuselage session: "The Role of Surface Preparation on the Performance of Metal to Polymer Adhesive Joints," (with S. H. McKnight and P. E. Bourban), 10th Annual ASM/ESD Advanced Composites Conference, November 7–10, 1994.
22. Best Paper in Track: "A Study of Improved Bonding Techniques for High Performance Thermoplastic Composites," (with R. C. Don and S. H. McKnight), *Advanced Composites X: Proceedings of the 10th Annual ASM/ESD Advanced Composites Conference and Exposition*, 1994.
23. Best Presentation: "Design, Analysis, and Hydrotesting of a Composite Cylinder Joint for Pressure-Hull Applications," (with S. M. Andersen, K. Newman, M. A. Lamontia and B. Olson), *ASTM STP on Compression Response of Composite Structures*, November 1992.
24. Best Advanced Composites Paper: "Processing and Performance of Resistance Welded Thermoplastic Composites," (with L. J. Bastien and R. C. Don), 45th Annual Conference of the Composites Institute (SPI), February 1990.

### **Books and Book Chapters**

1. Deitzel, J., P. McDaniel, and J. W. Gillespie, Jr., Chapter 10: High Performance Polyethylene Fibers. In *Structure and Properties of High-Performance Fibers*; Bhat, G., Ed; Elsevier, Submitted November 2015.
2. Haque, B. A. (Gama), J. W. Gillespie, "A Quasi-Static Penetration Model of Ballistic Penetration of Thick-Section Composites," *Failure in Composites – Volume 4*, A. M. Waas and B. V. Sankar (eds.) (American Society for Composites Series on Advances in Composite Materials, DEStech Publications, ISBN: 978-1-60595-088-4, December 2012.
3. McAllister, Q. P., J. W. Gillespie, Jr., M. R. Vanlandingham, *Experimental Measurement of the Energy Dissipative Mechanisms of the Kevlar Micro-fibrillar Network for Multi-Scale Application*, Chapter 8, G. P. Tandon et al. (eds.), *Experimental Mechanics of Composite, Hybrid, and Multifunctional Materials*, Volume 6, Conference Proceedings of

- the Society for Experimental Mechanics Series, DOI 10.1007/978-3-319-00873-8\_8, # The Society for Experimental Mechanics, Inc., 2014.
4. Xiao, J. R. and J. W. Gillespie, Jr., "Fracture Behaviors of Graphene Sheets and Carbon Nanotubes," accepted 'Graphene, Theory, Research and Applications, 10.5772/14948, Physics and Applications of Graphene – Theory, ISBN 978-953-307-152-7, March 2011.
  5. Gillespie, J. W. Jr. and Hoa, S., Editors, Proceedings of the 24<sup>th</sup> Annual Technical Conference of the American Society for Composites, 2009.
  6. Advani, S. G. and J. W. Gillespie, Jr., Editors, (Volume 9 in the TexComp Series) *Proceedings of TEXCOMP9: Recent Advances in Textile Composites*, 2008.
  7. Gillespie, J. W. Jr., (contributing author and Chair), *High-Performance Structural Fibers for Advanced Polymer Matrix Composites*, National Materials Advisory Board, National Research Council, National Academy Press, Washington, DC, 2005.
  8. Gillespie, J. W. Jr. (contributing author), "An Assessment of the U.S. Army's Manufacturing Technology Program Relative to the Needs of the Future Combat Systems Program in *Final Report of the Army's Future Combat Systems (FCS) Critical Technologies: Industry ManTech Independent Assessment Panel*, National Center for Advanced Technologies, Washington, D.C., Report Number 01-MT2A, July 2002.
  9. Tierney, J. J., J. W. Gillespie Jr., and P-E. Bourban, "Joining of Composites," Chapter in Volume 2, *Polymer-Matrix Composites, Comprehensive Composite Materials*, Pergamon, Elsevier Science Limited, 2001.
  10. Gillespie, J. W. Jr. (contributing author), "Composite Armored Vehicle Advanced Technology Demonstrator (CAV-ATD) Design Guide, United Defense, L. P. Ground Systems Division, Contract DAAE07-94-C-R011, August 1999.
  11. Benatar, A., K. T. Kedward, and J. W. Gillespie, Jr., "Joining of Composites," Chapter 12 in *Advanced Composites Manufacturing*, Editor: T. G. Gutowski, John Wiley & Sons Publishers, pp. 487–512, 1997.
  12. Gillespie, J. W. Jr., contributing author, *New Materials for Next-Generation Commercial Transports*, National Research Council, Publication NMAB-476, National Academy Press, Washington, DC, 1996.
  13. Hansen, U. and J. W. Gillespie Jr., "Transverse Cracking of Composite Laminates with Interleaves: A Variational Approach," *Fracture of Composites*, E. Armanios (ed.), TransTec Publications, Ltd., Switzerland, pp. 521–548, 1996.
  14. Advani, S. G. and J. W. Gillespie, Jr., Editors, *Proceedings of CADCOMP 92: Third International Conference on Computer Aided Design in Composite Material Technology*, 1992.
  15. Carlsson, L. A., J. W. Gillespie Jr., and K. Friedrich, "Fracture of Thermoplastic Composites," *Thermoplastic Composite Materials*, L. A. Carlsson (volume ed.), Elsevier Book Series on Composite Materials, R. B. Pipes (series ed.) Elsevier Science Publishers, 1990.
  16. Gillespie, J. W. Jr., Series Editor, *Delaware Composites Design Encyclopedia*, Volumes 1–6, Technomic Publishing Company, Inc., Lancaster, PA, 1990.

17. Gillespie, J. W. Jr., and L. A. Carlsson, "Interlaminar Fracture of Composite Materials," Vol. 6, *Delaware Composites Design Encyclopedia*, Technomic Publishing Company, Inc., Lancaster, PA, 1990.
18. L. A. Carlsson, and J. W. Gillespie Jr., "Mode II Interlaminar Fracture," *Application of Fracture Mechanics to Composite Materials*, Volume Editor: K. Friedrich, Elsevier Book Series on Composite Materials, Series Editor: R. B. Pipes, Elsevier Science Publishers, 1989.

### **Patents**

1. DeLuca, M. J., C. J. Felker, D. Heider, G. Pandey, A. Abu-Obaid, E. T. Thostenson, and J. W. Gillespie, Jr., "System and Methods for use in Monitoring a Structure," U. S. Patent No. 9,329,021, May 3, 2016.
2. Heider, D., J. Dossmann, and J. W. Gillespie, Jr., "Composites Material Forming with Carrier Layer," Invention Disclosure No. UD16-16, October 14, 2015.
3. Yarlagadda, S., J. W. Gillespie, Jr., J. Tierney, and S. Sharma, "Wearable Upper Body Suit to Assist Load Carriage," Invention Disclosure No. UD16-13, September 18, 2015.
4. Gillespie, Jr., J. W., D. Heider, E. T. Thostenson, G. Pandey, A. Abu-Obaid, "Carbon Nanotube-based Sensing Skin for Real-Time Structural Health Monitoring," Provisional Patent Disclosure No. 13-0219, May 2013.
5. Cavanagh, P. R., T. B. Hurley, J. Tierney, J. W. Gillespie, Jr., "Footwear System with Composite Orthotic," Provisional Application No. 61/773,479, Patent Pending.
6. Gillespie, J. W., Jr., J. Tierney, N. Shevchenko, D. Heider, and D. Sandusky, "Composite Hockey Stick and Related Method of Manufacture," Provisional Application 61768640, UD13-09, February 25, 2013.
7. Nilakantan, G., J. W. Gillespie, Jr., and M. Keefe, "Ballistic Resistant Fabric Armor," Publication No. US 2010/0154621 A1. June 24, 2010.
8. Gerhard, J. K., E. J. Lynam, M. R. Shaffer, S. Yarlagadda, N. B. Shevchenko, B. K. Fink, D. Heider, J. J. Tierney, J. W. Gillespie, Jr., "Apparatus and Method for Induction Lamination of Electrically Conductive Fiber-Reinforced Composite Materials," U. S. Patent No. 7,419,373, issued September 2, 2008.
9. Vaidyanathan, K. R., J. Walish, M. Fox, J. W. Gillespie, Jr., S. Yarlagadda, M. R. Effinger, A. C. Mulligan, and M. J. Rigali, "Continuous Fiber Reinforced Composites and Methods, Apparatuses, and Compositeions for Making the Same," U. S. Patent No. 6,899,777, issued May 2005.



10. Vaidyanathan, K. R., S. Yarlagadda, C. Green, G. J. Artz, J. W. Gillespie Jr., "Composite Components with Integral Protective Casings," U. S. Patent No. 6,935,594, issued August, 30, 2005
11. Gerhard, J. K., E. J. Lynam, M. R. Shaffer, S. Yarlagadda, N. B. Shevchenko, B. K. Fink, D. Heider, J. J. Tierney, J.W. Gillespie Jr., "Method for Induction Lamination of Electrically Conductive Fiber Reinforced Composite Materials," U. S. Patent Number 6,881,374, issued April 19, 2005.
12. Delanoy, C. and J. W. Gillespie, Jr., "Composite Carbon Fiber Material and Method of Making Same," U. S. Patent No. 6,759,352, issued July 6, 2004.
13. Bogetti, T., J. W. Gillespie, Jr., J. Tierney, S. Yarlagadda, and J. Clews, "Automated Tape Placement of Electrical Conductive Composites Using Localized Induction Heating," patent application filed September 29, 2004.
14. Fink, B. K., J. W. Gillespie Jr., E. F. Gillio, and K. R. Bernetich, "One-Step Resin Transfer Molding of Multifunctional Composites Consisting of Multiple Resins," U. S. Patent No. 6,048,488, issued April 11, 2000.
15. Fink, B. K., J. W. Gillespie Jr., and S. Yarlagadda "Tailored Mesh Susceptors for Uniform Induction Heating, Curing, and Bonding of Method of Materials," U. S. Patent No. 6043469, issued March 28, 2000.
16. Gillespie, J. W. and M. Tanoglu, "Dynamic Interphase-Loading Apparatus and Method of Using the Same," U. S. Patent No. 6778914, issued August 2004.
17. Don, R. C., J. W. Gillespie Jr., and S. H. McKnight, "Bonding Techniques for High-Performance Thermoplastic Compositions," U. S. Patent No. 5643390, issued July 1, 1997.
18. Howie, I., R. C. Don, J. W. Gillespie Jr., and S. T. Holmes, "Adjustable Hot Gas Torch Nozzle," U. S. Patent No. 5,626,472, issued May 6, 1997.
19. Crane, R. M., D. C. Loup, J. W. Gillespie Jr., S. M. Andersen, and D. D. Coppens, "High Damping Composite Joint for Mechanical Vibration and Acoustic Energy Dissipation," U. S. Patent No. 5573344, issued November 12, 1996.
20. Lambing, C. L. T., S. M. Andersen, S. T. Holmes, R. C. Don, B. S. Leach, and J. W. Gillespie Jr., "Apparatus and Method for Resistance Welding," U. S. Patent No. 5225025, issued July 6, 1993.

### ***Refereed Publications***

**2016**

**Submitted**

1. Sockalingam, S., J. W. Gillespie, Jr., and M. Keefe, "Influence of Multiaxial Loading on the Failure of Kevlar KM2 Single Fiber," *Textile Research Journal*, Submitted July 2016.
2. McDaniel, P. B., S. Sockalingam, J. M. Deitzel, J. W. Gillespie, Jr., M. Keefe, T. A. Bogetti, T. Weerasooriya, and D. T. Casem, "The Effect of Fiber Meso/Nanostructure on the Transverse Compression Response of Ballistic Fibers," *Composites Part A*, Submitted July 2016.
3. Li, Y., W. Lu, S. Sockalingam, B. Gu, B. Sun, M. Keefe, J. W. Gillespie, Jr., and T-W. Chou, "Electromechanical Behavior of Carbon Nanotube Fibers Under Transverse Compression", *Carbon*, Submitted July 2016

### Accepted

4. Misumi, J., R. H. Ganesh, S. Sockalingam, and J. W. Gillespie, "Experimental Characterization of Tensile Properties of Epoxy Resin by Using Micro Fiber Specimens," *Journal of Reinforced Plastics and Composites*, Submitted December 2015.
5. Ganesh, R., S. Sockalingam, B. (Gama) Haque, and J. W. Gillespie, Jr., "Dynamic Effects of Single Fiber Break in Unidirectional Glass Fiber-Reinforced Composites," *Journal of Composite Materials*, Submitted March 2016.

### Published 2016

6. Tamrakar, S., B. Haque, J. W. Gillespie, Jr., "High Rate Test Method for Fiber-Matrix Interface Characterization," *Polymer Testing*, Doi: 10.1015/j.polymertesting, 2016.
7. Sockalingam, S., J. W. Gillespie, Jr., and M. Keefe, "Modeling the Fiber Length-Scale Response of Kevlar KM2 Yarn During Transverse Impact," *Textile Research Journal*, Doi: 10.1177/0040517516669074, September 2016.
8. Haque, B. Z., M. A. Ali, and J. W. Gillespie, Jr., "Modeling Transverse Impact on UHMWPE Soft Ballistic Sub-Laminate," *Journal of Thermoplastic Composite Materials*, Doi: 10.1177/0892705716637114, March 25, 2016.
9. Chowdhury, S. C., B. Z. (Gama) Haque, J. W. Gillespie, Jr., "Molecular Dynamics Simulations of the Structure and Mechanical Properties of Silica Glass using ReaxFF," *Journal of Materials Science*, Doi: 10.1007/s10853-016-0242-8, July 2016.
10. Sockalingam, S., J. W. Gillespie, Jr., S. Chowdhury, M. Keefe, "Recent Advances in Modeling and Experiments of Ballistic Fibrils, Fibers, Yarns and Flexible Textile

Fabrics – A Review,” *Textile Research Journal*, doi:10.1177/0040517516646039, May 2016.

11. Sockalingam, S. R. Bremble, J. W. Gillespie, Jr., and M. Keefe, “Transverse Compression Behavior of Kevlar KM2 Single Fiber,” *Composites Part A: Applied Science and Manufacturing*, 81, pp. 271 – 281, February 2016.
12. Haque, B. Z., S. C. Chowdhury, and J. W. Gillespie, Jr., “Molecular Simulations of Stress Wave Propagation and Perforation of Graphene Sheets under Transverse Impact,” *Carbon*, doi: 10.1016/j.carbon.2016.02.033; **102**, pp. 126-140, 2016.

## 2015

### Submitted

13. Sockalingam, S., J. W. Gillespie, Jr., and M. Keefe, “Fiber Length Scale Modeling of Kevlar KM2 Yarn Subjected to Transverse Impact,” *International Journal of Solids and Structures*, Submitted June 2015.

### Published 2015

14. Zhang, D., D. Heider, and J. W. Gillespie, Jr., “Determination of Void Statistics and Statistical Representative Volume Elements (SRVE) in Carbon Fiber Reinforced Thermoplastic Prepregs,” *Journal of Thermoplastic Composite Materials*, doi: 10.1177/0892705715618002. 2015
15. Tamrakar, S., Q. An, E. T. Thostenson, A. Rider, B. Z. Haque, and J. W. Gillespie, Jr., “Tailoring Interfacial Properties by Controlling Carbon Nanotube Coating Thickness on Glass Fibers using Electrophoretic Deposition,” *American Chemical Society Applied Materials & Interfaces*, doi: 10.1021/acsami.5b10903; **8** (2) pp. 1501-1510, December 2015.
16. McDaniel, P. B., J. M. Deitzel, and J. W. Gillespie, Jr., “Structural Hierarchy and Surface Morphology of Highly Drawn Ultra High Molecular Weight Polyethylene Fibers Studied by Atomic Force Microscopy and Wide Angle X-Ray Diffraction,” *Journal of Polymer Research*, **69**, pp. 148 – 158, 2015.
17. Abu Obaid, A., D. Heider, J. W. Gillespie, Jr., “Investigation of Electro-Mechanical Behavior of Carbon Nanotube Yarns during Tensile Loading,” *Carbon*,

- <http://www.sciencedirect.com/science/article/pii/S0008622315004984>;  
<http://dx.doi.org/10.1016/j.carbon.2015.05.091>; **93**, pp731 – 741, November 2015.
18. Sockalingam, S., J. W. Gillespie, Jr., and M. Keefe, “Dynamic Modeling of Kevlar KM2 Single Fiber Subjected to Transverse Impact,” *International Journal of Solids and Structures*, <http://dx.doi.org/10.1016/j.ijsolstr.2015.04.031>; **67-68**, pp. 297 – 310, August 2015.
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#### **2016**

1. Tamrakar, S., S. Sockalingam, E. T. Thostenso, B. Z. (Gama) Haque, and J. W. Gillespie, Jr., "Monitoring Crack Growth Along the Interface in a Microdroplet Specimen Using Non-invasive Carbon Nanotube Sensors," American Society for Composites 31<sup>st</sup> Technical Conference, Williamsburg, VA, September 19-22, 2016.
2. Chowdhury, S. C., R. M. Elder, T. W. Sirk, B. Z. (Gama) Haque, J. W. Andzelm, and J. W. Gillespie, Jr., "Molecular Dynamics Study of the Mechanical Properties of Silica Glass Using ReaxFF," American Society for Composites 31<sup>st</sup> Technical Conference, Williamsburg, VA, September 19-22, 2016.
3. Ganesh, R., S. Sockalingam, B. Z. (Gama) Haque, and J. W. Gillespie, Jr., "A Finite Element Study of Dynamic Stress Concentrations Due to a Single Fiber Break in a Unidirectional Composite," American Society for Composites 31<sup>st</sup> Technical Conference, Williamsburg, VA, September 19-22, 2016.
4. McDaniel, P., J. M. Deitzel, and J. W. Gillespie, Jr., "A Single Fiber Peel Test to Measure Fibrillary Interactions in Ultra High Molecular Weight Polyethylene Fibers," American Society for Composites 31<sup>st</sup> Technical Conference, Williamsburg, VA, September 19-22, 2016.
5. Sockalingam, S., J. W. Gillespie, Jr., and M. Keefe, "Role of Inelastic Transverse Compressive Behavior on Kevlar KM2 Single Fiber Transverse Impact," American Society for Composites 31<sup>st</sup> Technical Conference, Williamsburg, VA, September 19-22, 2016.
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#### **2015**

7. Haque, B. Z. (Gama) and J. W. Gillespie, Jr., "Progressive Composite Damage Modeling in LS-DYNA using MAT162: Part A – Properties and Parameters," American Society for Composites 30<sup>th</sup> Technical Conference, Michigan State University, September 28-30, 2015.
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9. Haque, B. Z. (Gama), M. A. Ali, and J. W. Gillespie, Jr., "Modeling Transverse Impact on Multi-Layer UHMWPE Soft Ballistic Armor Pack (SBAP)," American Society for Composites 30<sup>th</sup> Technical Conference, Michigan State University, September 28-30, 2015.
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12. Yeager, M., R. Ganesh, S. Yarlagadda, S. G. Advani, and J. W. Gillespie, Jr., "A Unit Cell Model to Predict Impact of Geometric and Processing Parameters on Energy Absorbed by Fiber Composites." Mach conference, 2015, Annapolis, MD, April 8-10, 2015.
13. Sockalingam, S., J. W. Gillespie, Jr., and M. Keefe, "Transverse Compression Behavior of Kevlar KM2 Fiber – Experimental Testing and Finite Element Analysis," Semi-finalist in the SAMPE URSP (University Research Symposium Program Competition), April 30, 2015.
14. Sharifi, M., B. Z. Haque, J. W. Gillespie, Jr., and G. R. Palmese, "Rate Dependent Mechanical Behavior of Polymer Network Isomers with Controlled Topology," Proc. SAMPE 2015.
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22. Zhang, D., D. Heider, and J. W. Gillespie, Jr., "Role of Prepreg Interlayer Permeability on Void Reduction During Oven Vacuum Bag Processing of Thick Section Thermoplastic Composites," Outstanding Paper Award, 2<sup>nd</sup> Place, SAMPE 2015, Baltimore, MD, May 18-21, 2015.

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29. Ross, A., R. Rhodes, D. Graziosi, B. Jones, R. Lee, B. S. (Gama) Haque, and J. W. Gillespie, Jr., "Z-2 Prototype Space Suite Development," 44<sup>th</sup> International Conference on Environmental Systems, Tucson, AZ, July 13-17, 2014.
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45. Chowdhury, S. C., B. Z. (Gama) Haque, and J. W. Gillespie, Jr., "Molecular Simulations of the Dynamic Impact of Graphite," Proceedings of the American Society for Composites 28<sup>th</sup> Technical Conference, September 9-11, 2013, State College, Pennsylvania, USA.
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