

Dr. Gaurav Nilakantan

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Executive Summary

Dr. Nilakantan is a Research Associate at the Center for Composite Materials, University of Delaware and the Founder of Nilakantan Composites. He is a former student of, and currently works with renowned composites expert Prof. Jack Gillespie. Dr. Nilakantan's primary research expertise is in the areas of multiscale and probabilistic computational modeling of the impact behavior of textile and textile composite structures, and experimental and statistical characterization of textile composite material properties. His other research interests include occupant safety during crash, occupant survivability during mine blast, design of energy absorbing structures, and mesh generation methods. During the course of his research he developed novel computational techniques to study the probabilistic impact response of woven fabrics used in armor applications. This pioneering work has received widespread attention and is of critical interest to the US Army. He has also developed novel multiscale modeling techniques for textile composite materials that incorporate different scales from the filament-level to the structural-level within the same finite element model. He is an expert in using LS-DYNA to simulate large scale dynamic physical phenomena.

Dr. Nilakantan spearheaded the procurement of a SGI UV1000 supercomputer at the Center for Composite Materials at the University of Delaware. Dr. Nilakantan and his co-workers at the center are using this supercomputer to investigate the various deformation and energy dissipating interactions and mechanisms that occur from the nano scale to the structural scale in textile composite materials under high strain rates. By synergistically tailoring these interactions and mechanisms at each length scale, Dr. Nilakantan's work will guide the development of new treatments, materials, and architectures as part of a materials-by-design framework that will reduce the weight and improve the impact resistance of composites based armor. He is the PI / co-PI on multiple funding proposals to the U.S. Army Research Laboratory and is a team member of the CRA-MEDE proposal recently won.

Dr. Nilakantan holds a US patent for an anti-whiplash seat mechanism and a patent pending invention for a ballistic resistant body armor. He won the prestigious American Society for Composites PhD Research Award and the R.L. McCullough Scholars Award for his contributions to composites-related research. He won the Allan P. Colburn Prize for Best Doctoral Dissertation in Engineering and Mathematical Sciences at the University of Delaware. He was awarded UD Honors Day awards during each year of his doctoral studies. As the founder of Nilakantan Composites, he developed DYNAFAB - a GUI based preprocessor that automatically generates detailed finite element models of complex textile architectures, which is currently used by academic and industrial clients in US, Canada, Europe, and Asia.

Dr. Nilakantan is active in several professional organizations such as ASME, ASC, and SAMPE, and has served as a Symposium Organizer and Session Chair at various conferences, such as organizing a composites-related symposium (~40 presenters) at the ASME McMAT2011 conference, and session chair at SAMPE 2012. He has served as the Vice Chair of Communications in the SAMPE Baltimore-Washington chapter and is the Group Owner of the 'A2E – Armor, Ballistics, Composites, and Defense Experts' group on LinkedIn (>1100 members). He is also a reviewer of several journals. He has over 25 publications that include 11 refereed journal papers (in the leading composites- and impact- related journals), 12 conference proceedings, 2 patents, and 1 user manual. Dr. Nilakantan's published research work has been recognized in both the SciVerse ScienceDirect Top 25 Hottest Articles and the ASME AMR Monthly Top 10 Most Downloaded lists. Dr. Nilakantan's Masters thesis has been downloaded over 2900 times. Dr. Nilakantan and his work have been featured in various local, national, and international publications including the International Ballistics Society newsletter, the UDaily on-line news service, the UD Research magazine, the CCM Composites Update newsletter, and the FEA Information Engineering Journal.

Dr. Nilakantan holds a PhD degree in Materials Science and Engineering from the University of Delaware (4.0 GPA), a MS degree in Mechanical Engineering from the University of Cincinnati (3.9 GPA), and a BE degree in Mechanical Engineering from Visveswaraiiah Technological University (equivalent 4.0 GPA).

Dr. Gaurav Nilakantan – Curriculum Vitae

Education

Ph.D., Materials Science and Engineering (Jan 9, 2011) 2007 - 2010
University of Delaware, DE, USA GPA 4.0 / 4.0

Dissertation Title Modeling the Impact of Flexible Textile Composites
through Multiscale and Probabilistic Methods

Advisors Prof. John W. Gillespie Jr. and Prof. Michael Keefe

Awards Allan P. Colburn Best Doctoral Dissertation

M.S., Mechanical Engineering (Aug 31, 2006) 2004 - 2006
University of Cincinnati, OH, USA GPA 3.9 / 4.0

Thesis Title Design and Development of an Energy Absorbing Seat
and Ballistic Fabric Material Model to Reduce Crew
Injury Caused by Acceleration from Mine/IED Blast

Advisor Prof. Ala Tabiei

B.E., Mechanical Engineering 1999-2003
PES Institute of Technology, Bangalore, India Equiv. GPA 4.0 / 4.0

Experience

Research

- Research Associate 2010 - present
Center for Composite Materials, University of Delaware, DE, USA
- Graduate Research Assistant 2007 - 2010
Center for Composite Materials, University of Delaware, DE, USA
- Graduate Research Assistant 2005 - 2005
Department of Mechanical Engineering, University of Cincinnati, OH, USA

Teaching

- Graduate Teaching Assistant 2006 - 2007
Department of Aerospace Engineering, University of Cincinnati, OH, USA

Work

- Founder, Nilakantan Composites 2009 - present
Bangalore, India

Scholarship

Patents

- Anti Whiplash Seat for Passenger Vehicle (US 8,052,211 – issued Nov 8, 2011)
- Ballistic Resistant Fabric Armor (Pub. No. US 2010/0154621 A1 – pending)

Honors and Awards

- Center for Composite Materials Director’s Award, CCM Student Achievement Day, 2012
- Listed in Who’s Who in America, 66th Edition, 2012
- Allan P. Colburn Prize for Best Doctoral Dissertation in Engineering and Mathematical Sciences, University of Delaware, 2011
- R.L. McCullough Scholars Award, Center for Composite Materials, 2011
- Inducted into Sigma Xi, 2011
- Center for Composite Materials Director’s Award, CCM Student Achievement Day, 2010
- SciVerse ScienceDirect Top 25 Hottest Articles (see publications), 2010
- American Society for Composites PhD Research Scholarship Award, 2009
- Center for Composite Materials Director’s Award, U Delaware Honors Day, 2009
- Center for Composite Materials Progress Award, U Delaware Honors Day, 2008
- ASME AMR Top Ten Most Downloaded Articles (see publications), 2008
- University Graduate Scholar, University of Cincinnati, OH, USA, 2004-2007
- ASME District B Travel Award for the International Student Conference, 2006
- University of Cincinnati GSGA Full Conference Travel Award, 2006
- Gold Medalist, 10th rank, Visveswararajah Technological University, India, 2003
- Distinction Award, Dept. of Mechanical Engineering, PESIT, VTU, India, 1999-2003

Prizes

- 1st place, CCM Student Achievement Day Poster Competition, University of Delaware, Newark, DE, 2010
- 2nd place, Baltimore-Washington SAMPE 14th Annual Student Symposium, Baltimore, MD, 2009
- 2nd place, SAMPE University Research Symposium International Competition, PhD Category, Long Beach, CA, 2008
- Merit prize, NASA Tech Briefs “Create the Future” Design Contest”, Energy Absorbing Seat Device, 2006

Professional Activities and Service

External

- Session Chair, *Multi-scale Modeling*, SAMPE 2012, Baltimore, May 21-24, 2012
- Vice Chair of Communications, SAMPE Baltimore-Washington, 2011-2012
- LinkedIn Group Manager for American Society for Composites, SAMPE Baltimore-Washington, A2E – Armor, Ballistics, Composites, and Defense Experts (Group Owner)
- Symposium Organizer (~40 presenters), *Behavior of Composite Materials and Structures: Experimental Testing, Sensing, and Computational Modeling*, ASME Applied Mechanics and Materials Conference McMAT-2011, Chicago, IL, May 31-June 2, 2011.
- Session Chair, *Sensing of Strain and Damage in Composite Materials - I*, ASME Applied Mechanics and Materials Conference McMAT-2011, Chicago, IL, May 31-June 2, 2011.
- Session Chair, *Computational Modeling of Composite Materials - I*, ASME Applied Mechanics and Materials Conference McMAT-2011, Chicago, IL, May 31-June 2, 2011.
- Invited Judge, *Old Guard Oral Presentation Competition*, ASME District A SPDC, Temple University, April 1-2, 2011.

- Invited Judge, *SAMPE B/W Student Night Paper Competition*, University of Maryland Baltimore County, February 9, 2011.

Internal (University of Delaware)

- Organizer, CCM Spring Research Reviews, Center for Composite Materials, March-June, 2011.
- Session Chair, *Mechanics and Design - II*, 2011 CCM Spring Research Reviews, March 23, 2011.
- Session Chair, *Mechanics and Design - V*, 2011 CCM Spring Research Reviews, June 15, 2011.

Reviewer

- Composites Science and Technology
- International Journal of Impact Engineering
- Journal of Composite Materials
- International Journal of Vehicle Structures and Systems

Memberships and Executive Positions

American Society for Composites (ASC)

Member (08-present)
LinkedIn Group Manager (11-present)

American Society of Mechanical Engineers (ASME)

District B: Student member (06-07)
District A: Student member (07-10), Member (10-present)

Golden Key International Honor Society

Student member (08-10)

International Association for Computational Mechanics (IACM)

Member (11-present)

International Ballistics Society (IBS)

Founding Member (11-present)

LinkedIn

Group Owner, A2E – Armor, Ballistics, Composites, and Defense Experts (>1000 members)

Sigma Xi – The Scientific Research Society

Member (11-present)

Society for the Advancement of Material and Process Engineering (SAMPE)

B/W Chapter: Member (10-present), Vice Chair of Communications (11-12), LinkedIn Group Manager (11-present)
UD Chapter: Student member (07-10), Webmaster (07-10)

Textile Institute

Student member (09-10), Member (10-11)

The American Ceramic Society (ACerS)

Member (11-present)

The Fiber Society

Member (11-present)

United States Association for Computational Mechanics (USACM)

Member (11-present)

Teaching and Advisement

Courses (Teaching Assistant)

- “Mechanics I” 20AEEM101 by Prof. S. Abdallah, Fall 2006, Dept. of Aerospace Engineering and Engineering Mechanics, University of Cincinnati, Cincinnati, OH, USA (teaching and grading)
- “Mechanics II” 20AEEM102 by Prof. A. Tabiei, Winter 2007, Dept. of Aerospace Engineering and Engineering Mechanics, University of Cincinnati, Cincinnati, OH, USA (teaching and grading)
- “Introduction to Compressible Flow” 20AEEM641 by Prof. K. Ghia, Winter 2007, Dept. of Aerospace Engineering and Engineering Mechanics, University of Cincinnati, Cincinnati, OH, USA (only grading)

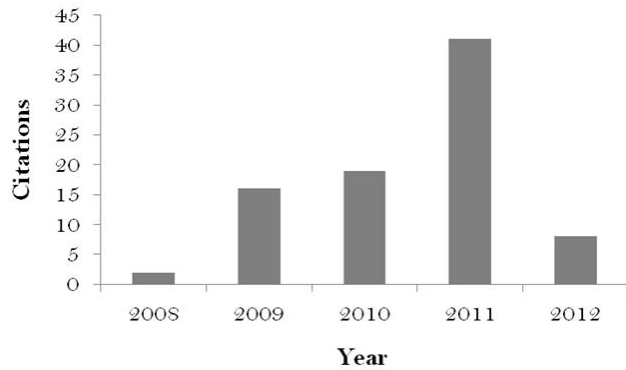
Students (Interns)

- Mr. Ross Lefkowitz (June 2012 – August 2012), Experimental Characterization of Filament Geometry, Undergraduate Intern, Dept. of Mechanical Engineering, University of Delaware, Newark, DE, USA
- Mr. Ian Beringer (July 2011 – July 2012), Characterization of Tow Geometry and Fabric Architecture, Undergraduate Intern, Dept. of Mechanical Engineering, University of Delaware, Newark, DE, USA
- Mr. Kirankumar Patil (Aug 2011 – Feb 2012), 3D CAD and FE Modeling of Fabric Composites, Graduate Intern, Dept. of Mechanical Engineering, California State University at Long Beach, Long Beach, CA, USA
- Ms. Aditi Bhatnagar (Feb – July, 2011), 3D CAD Modeling of Fabric Composites, Graduate Intern, Dept. of Aerospace Engineering, California State University at Long Beach, Long Beach, CA, USA
- Mr. Justin Koniuk (April – Dec, 2011), Experimental Characterization of Filament Geometry and Material Properties, Undergraduate Intern, Dept. of Mechanical Engineering, University of Delaware, Newark, DE, USA
- Mr. Connor McGrath (April – Dec, 2011), Experimental Characterization of the Frictional Behavior of Woven Fabrics, Undergraduate Intern, Dept. of Mechanical Engineering, University of Delaware, Newark, DE, USA
- Mr. Cameron Showell (Summer 2008, Winter 2009), Experimental Characterization of Yarns and Fabrics, Undergraduate Intern, Dept. of Mechanical Engineering, University of Delaware, Newark, DE, USA

Publications

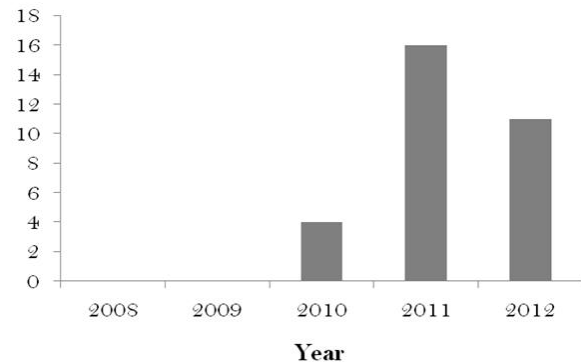
Metrics

According to **Google Scholar**
(as of May 2012)



| | All | Since 2007 |
|-----------|-----|------------|
| Citations | 86 | 86 |
| h-index | 6 | 6 |
| i10-index | 1 | 1 |

According to **ResearcherID**, using Web of Science
(as of May 2012)



| | |
|------------------------------------|------|
| Total Articles in Publication List | 11 |
| Articles With Citation Data | 8 |
| Sum of the Times Cited | 31 |
| Average Citations per Article | 3.88 |
| h-index | 4 |

| <i>Type</i> | | <i>Area</i> | |
|---------------|----|--------------------------------------------------------------|----|
| Review | 1 | Energy Absorbing Devices, Occupant Survivability, Mine Blast | 2 |
| Analytical | 1 | | |
| Experimental | 1 | Textiles, Composites, Ballistic Impact | 9 |
| Computational | 8 | | |
| Total | 11 | Total | 11 |

| <i>Journal Name</i> | <i>No. of Papers</i> | <i>Impact Factor</i> | <i>5-yr Impact Factor</i> |
|---------------------------------------------------------|----------------------|----------------------|---------------------------|
| Applied Mechanics Reviews | 1 | - | - |
| Composites Science and Technology | 1 | 2.856 | 3.549 |
| Composite Structures | 2 | 2.028 | 2.027 |
| International Journal of Impact Engineering | 2 | 1.516 | 1.749 |
| International Journal of Solids and Structures | 1 | 1.677 | 2.066 |
| International Journal of Vehicle Structures and Systems | 2 | - | - |
| Journal of Composite Materials | 2 | 0.971 | - |
| Total | 11 | | |

Refereed Journals

2012

11. *Finite Element Analysis of Projectile Size and Shape Effects on the Probabilistic Penetration Response of High Strength Fabrics*, Gaurav Nilakantan; Eric D. Wetzel; Travis A. Bogetti; John W. Gillespie Jr.; **Composite Structures**, Vol. 94, Issue 5, 2012, pp. 1846-1854.
10. *Effect of Statistical Yarn Tensile Strength on the Probabilistic Impact Response of Woven Fabrics*, Gaurav Nilakantan; Michael Keefe; Eric D. Wetzel; Travis A. Bogetti; John W. Gillespie Jr.; **Composites Science and Technology**, Vol. 72, Issue 2, 2012, pp. 320-329.

2011

9. *Computational Modeling of the Probabilistic Impact Response of Flexible Fabrics*, Gaurav Nilakantan; Michael Keefe; Eric D. Wetzel; Travis A. Bogetti; John W. Gillespie Jr.; **Composite Structures**, Vol. 93, 2011, pp. 3163-3174.
8. *Multi-Scale Ballistic Impact Simulation of Dry Woven Fabric with Elastic Crimped Fibers*, Ala Tabiei; Gaurav Nilakantan; **International Journal of Vehicles Structures and Systems**, Vol. 3, Issue 2, 2011, pp. 74-79.

2010

7. *Experimental Evaluation and Statistical Characterization of the Strength and Strain Energy Density Distribution of Kevlar KM2 Yarns: Exploring Length-Scale and Weaving Effects*, Gaurav Nilakantan; Ahmad Abu-Obaid; Michael Keefe; John W. Gillespie, Jr.; **Journal of Composite Materials**, Vol. 45, Issue 17, 2011, pp. 1749-1769.
6. *Multiscale Modeling of the Impact of Textile Fabrics Based on Hybrid Element Analysis*, Gaurav Nilakantan; Michael Keefe; Travis A. Bogetti; John W. Gillespie, Jr.; **International Journal of Impact Engineering**, Vol. 37, Issue 10, 2010, pp. 1056-1071.
5. *On the Finite Element Analysis of Woven Fabric Impact Using Multiscale Modeling Techniques*, Gaurav Nilakantan; Michael Keefe; Travis A. Bogetti; Rob Adkinson; John W. Gillespie, Jr.; **International Journal of Solids and Structures**, Vol. 47, Issue 17, 2010, pp. 2300-2315.

~ Previously cited in the SciVerse ScienceDirect Top 25 Hottest Articles

2009

4. *Computational Assessment of Occupant Injury Caused by Mine Blasts Underneath Infantry Vehicles*, Gaurav Nilakantan; Ala Tabiei; **International Journal of Vehicle Structures and Systems**, Vol. 1, Issue 3, 2009, pp. 50-58.
3. *Axial Crushing of Tubes as an Energy Dissipating Mechanism for the Reduction of Acceleration Induced Injuries from Mine Blasts underneath Infantry Vehicles*, Ala Tabiei; Gaurav Nilakantan; **International Journal of Impact Engineering**, Vol. 36, Issue 5, 2009, pp. 729-736.
2. *Global/Local Modeling of Ballistic Impact onto Woven Fabrics*, M. Prabhakar Rao; Gaurav Nilakantan; Michael Keefe; Brian M. Powers; Travis A. Bogetti, **Journal of Composite Materials**, Vol. 43, Issue 5, 2009, pp. 445-467.

2008

1. *Ballistic Impact of Dry Woven Fabric Composites: A Review*, Ala Tabiei; Gaurav Nilakantan; **Applied Mechanics Reviews**, Vol. 61, Issue 1, 2008, pp. 10801-10813.
~ Previously cited as #1 in the Monthly Top 10 Most Downloaded Articles

Conference Proceedings

2011

12. A Numerical Study of the Effects of Yarn Strength and Projectile Characteristics on the Probabilistic Penetration Response of a Woven Fabric, Gaurav Nilakantan; Michael Keefe; Eric D. Wetzel; Travis A. Bogetti; John W. Gillespie, Jr.; *ASME Applied Mechanics and Materials McMAT2011 Conference, Chicago, IL, USA, May 31-June 2, 2011*

2010

11. Using LS-DYNA® to Computationally Assess the V_0 - V_{100} Impact Response of Flexible Fabrics Through Probabilistic Methods, Gaurav Nilakantan; Michael Keefe; Eric D. Wetzel; Travis A. Bogetti; Rob Adkinson; John W. Gillespie, Jr.; *11th International LS-DYNA Users Conference, Dearborn, MI, USA, June 6-8, 2010*
10. Experimental and Numerical Testing of the V_{50} Impact Response of Flexible Fabrics: Addressing the Effects of Fabric Boundary Slippage, Gaurav Nilakantan; Eric D. Wetzel; Richard Merrill; Travis A. Bogetti; Rob Adkinson; Michael Keefe; John W. Gillespie, Jr.; *11th International LS-DYNA Users Conference, Dearborn, MI, USA, June 6-8, 2010*

2009

9. An Experimental and Numerical Study of the Impact Response (V_{50}) of Flexible Plain Weave Fabrics: Accounting for Statistical Distributions of Yarn Strength, Gaurav Nilakantan; Michael Keefe; John W. Gillespie, Jr.; Eric D. Wetzel; Travis A. Bogetti; Rob Adkinson; *1st Joint US-Canada Conference on Composites, 24th Annual ASC Technical Conference, University of Delaware, Newark, DE, USA, September 15-17, 2009*
8. A Study of Material and Architectural Effects on the Impact Response of 2D and 3D Dry Textile Composites using LS-DYNA®, Gaurav Nilakantan; Michael Keefe; John W. Gillespie, Jr.; Travis A. Bogetti; Rob Adkinson; *7th European LS-DYNA Conference, Salzburg, Austria, May 14-15, 2009*
7. A Numerical Investigation into the Effects of 3D Architecture on the Impact Response of Flexible Fabrics, Gaurav Nilakantan; Michael Keefe; John W. Gillespie, Jr.; Travis A. Bogetti; Rob Adkinson; *Second World Conference on 3D Fabrics and their Applications, Greenville, South Carolina, USA, April 6-7, 2009*

2008

6. Simulating the Impact of Multi-layer Fabric Targets using a Multi-scale Model and the Finite Element Method, Gaurav Nilakantan; Michael Keefe; John W. Gillespie, Jr.; Travis A. Bogetti; *9th International Conference on Textile Composites, Newark, DE, USA, October 13-15, 2008*
5. Modeling the Material and Failure Response of Continuous Filament Fabrics for use in Impact Applications, Gaurav Nilakantan; Michael Keefe; John W. Gillespie, Jr.; Travis A. Bogetti; *9th International Conference on Textile Composites, Newark, DE, USA, October 13-15, 2008*

Dr. Gaurav Nilakantan – Curriculum Vitae

4. Novel Multi-scale Modeling of Woven Fabrics for use in Impact Studies, Gaurav Nilakantan; Michael Keefe; John W. Gillespie, Jr.; Travis A. Bogetti; *10th International LS-DYNA Users Conference, Dearborn, MI, USA, June 8-10, 2008*
3. Novel Multi-scale Modeling of the Ballistic Impact of Plain Weave Fabrics using a Finite Element Analysis, Gaurav Nilakantan; Michael Keefe; John W. Gillespie, Jr.; Travis A. Bogetti; *SAMPE '08 University Research Symposium, Long Beach, CA, USA, May 18-21, 2008*

2007

2. Reduction of Acceleration Induced Injuries from Mine Blasts under Infantry Vehicles, Ala Tabieci; Gaurav Nilakantan, *6th European LS-DYNA Users Conference, Gothenburg, Sweden, May 29-30, 2007*

2006

1. Dynamic Axial Crushing of Circular Tubes: A Novel Numerical Formulation, Gaurav Nilakantan, *ASME ISC, Istanbul, Turkey, May 26-28, 2006*

Thesis / Dissertation

2. Modeling the Impact of Flexible Textile Composites through Multiscale and Probabilistic Methods, Gaurav Nilakantan, Ph.D. Dissertation, Dept. of Materials Science and Engineering, University of Delaware, DE, USA, 2010.
~ Winner of the 2011 Allan P Colburn Best Doctoral Dissertation in Engineering and Mathematical Sciences at the University of Delaware
1. Design and Development of an Energy Absorbing Seat and Ballistic Fabric Material Model to Reduce Crew Injury Caused by Acceleration from Mine/IED Blast, Gaurav Nilakantan, M.S. Thesis, Dept. of Mechanical Engineering, University of Cincinnati, OH, USA, 2006.
~ Downloaded over 2900 times from the OhioLINK ETD repository as of Jan 2012

Featured in the Press (*full list available at www.drgaurav.org*)

5. Speed it up: CCM Acquires Lightning Fast Shared Memory Supercomputer, *UDaily*, June 14, 2011.
~ On the web at <http://www.udel.edu/udaily/2011/jun/ccm-supercomputer-061411.html>
4. Materials Science Student Honored, *UDaily*, June 1, 2011.
~ On the web at <http://www.udel.edu/udaily/2011/jun/nilakantan-colburn-prize-060111.html>
3. Lightweight materials enable a host of new protective functions: Multi-scale modeling, *University of Delaware - Research*, Volume 2, Number 2, 2011.
2. Predictive Modeling of Flexible Fabric Armor Impact using Multiscale and Probabilistic Computational Methods, *Periodic Bulletin - International Ballistics Society*, Issue 2, March 2011.
1. UD Center for Composite Materials: A First-Rate Graduate Research Experience for a Budding Entrepreneur, *Composites Update*, November 2008.
~ On the web at <http://www.ccm.udel.edu/News/newsletter/Oct08/current.html>

Manuals

1. Gaurav Nilakantan, DYNAFAB User Manual Version 1.0, Nilakantan Composites, May 2010. ISBN 978-81-910696-0-0.

Other

1. Reduction of Crew Injury Caused by Acceleration from IED/Mine Blast, Ala Tabiei; Gaurav Nilakantan; *Technical Paper Spotlight, FEA Information Engineering Journal*, November 2006.

Funding

Title: Materials in Extreme Dynamic Environments

Funding Agency: Army Research Laboratory

Funding Type: CRA (Collaborative Research Alliance)

Role: co-PI and team member (UDel PI - Gillespie, UDel is part of a consortium led by PI - KT Ramesh at Johns Hopkins)

Duration: 10 yr starting 2nd Qtr of FY2012

Amount: \$33.1M/5yr, \$73.1M/10yr (tentative)

Status: funded and in-progress

Title: Probabilistic Impact Modeling of Woven Fabrics: Bridging the Filament-Yarn Length Scales through Multiscale Modeling

Funding Agency: Army Research Laboratory

Funding Type: Research Project under CMR

Role: co-PI (CMR PI - Gillespie)

Duration: 06/11 – 05/12

Amount: \$51,544

Status: funded and completed

Title: Optimizing the Impact Performance of Flexible Textile Composites through Architectural and Material Functional Grading and Hybridization

Funding Agency: Army Research Laboratory

Funding Type: Research Project (CA37) under CART

Role: co-PI (CART PI - Gillespie)

Duration: 08/2010 – 09/2011

Amount: \$58,669

Status: funded and completed

Title: Relating the Sources of Variability to the Probabilistic Impact Performance of Flexible Fabrics through Experimental and Multi-scale Probabilistic Computational Methods

Funding Agency: Army Research Laboratory

Funding Type: Research Project (CA38) under CART

Role: co-PI (CART PI - Gillespie)

Duration: 08/2010 – 09/2011

Amount: \$44,500

Status: funded and completed

References

University

Prof. John W. Gillespie Jr.

Director, Center for Composite Materials
Donald C. Phillips Professor of Civil and Environmental
Engineering
Department of Materials Science and Engineering
Department of Civil and Environmental Engineering
University of Delaware, Newark, DE 19716

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Email: gillespi@udel.edu

Prof. Michael Keefe

Associate Professor
Department of Mechanical Engineering
Associate Chairman for Undergraduate Education
University of Delaware, Newark, DE 19716

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Email: keefe@udel.edu

Prof. Robert L. Opila

Professor
Department of Materials Science and Engineering
Department of Chemistry and Biochemistry
University of Delaware, Newark, DE 19716

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Email: opila@udel.edu

Prof. David C. Martin

Karl W. and Renate Boer Professor and Chair
Department of Materials Science and Engineering
University of Delaware, Newark, DE 19716

Phone: 1(302)831-2062

Email: milty@udel.edu

Government

Dr. Eric D. Wetzel

Chief (A)
Composite and Hybrid Materials Branch
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Aberdeen Proving Ground, MD 21005-5069

Phone: 1(410)306-0851

Email: eric.wetzel@us.army.mil

Dr. Travis A. Bogetti

Research Engineer
Technical Liaison, ARL and UD-CCM
Army Research Laboratory
Aberdeen Proving Ground, MD 21005-5069

Phone: 1(302)831-6324

Email: travis.bogetti@us.army.mil

Dr. James Zheng

Chief Scientist
Soldier Protection and Individual Equipment
Program Executive Office, US Army
10125 Gratiot Road, Fort Belvoir, VA, 22060

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Email: james.q.zheng2.civ@mail.mil

Mr. Michael Maher

Program Manager, Defense Science Office
DARPA

Chief, Army Research Laboratory
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