

Gaurav Nilakantan

Center for Composite Materials
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Education

PhD, Materials Science and Engineering

University of Delaware, DE, USA

Expected Aug 2010

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

MS, Mechanical Engineering

University of Cincinnati, OH, USA

2004-2006

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

BE, Mechanical Engineering

PES Institute of Technology, Bangalore, India

1999-2003

Equiv. GPA 4.0 / 4.0

Research Activities (for more information visit www.drgaurav.org)

- Material modeling of ballistic impact resistant fabrics and composite structures
- Simulating the ballistic impact of flexible textile composites using LS-DYNA
- Probabilistic techniques to computationally assess the V_0 - V_{100} response of fabrics
- Development of an energy absorbing seat for armored vehicles
- Development of an anti-whiplash seat for a passenger vehicle
- Occupant survivability during crash events and mine blast
- Impact and crashworthiness simulations using LS-DYNA

Awards and Scholarships

- 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
- University Graduate Scholar, University of Cincinnati, OH, USA, 2004-2007
- 4 Distinction Awards, Dept. of Mechanical Engineering, PESIT, VTU, India
- Gold Medalist, 10th rank, Visveswaraiiah Technological University, India, 2003

Patents

- Anti Whiplash Seat for Passenger Vehicle (Pub. No. 20090108645)
- Ballistic Resistant Fabric Armor (patent pending)

Prizes

- 2009 Baltimore-Washington SAMPE 14th Annual Student Symposium, Baltimore, MD, (2nd place)
- 2008 SAMPE University Research Symposium International Competition, PhD Category, Long Beach, CA (2nd place)
- Energy Absorbing Seat Device, NASA Tech Briefs "Create the Future" 2006 Design Contest (merit prize)

Research Experience

Graduate Research Assistant April 2007 till date
Center for Composite Materials, University of Delaware, DE, USA

Graduate Research Assistant Summer 2005, Dec 2005
Department of Mechanical Engineering, University of Cincinnati, OH, USA

Teaching Experience

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

Work Experience

Founder, Nilakantan Composites 2009 till date
Bangalore, India (on the web: www.nicomposites.com)

Skill Sets

Engineering: LSDYNA, LSPrePost, Hypermesh, Fluent, ANSYS, PRO/Engineer,
AutoCAD, OriginLab, Minitab, Reliasoft Weibull++, DYNAFAB

Programming: C, C++, Fortran, Matlab

Miscellaneous: MS-Office, MS-Windows, Unix, Web Designing

Professional Affiliations

SAMPE, ASC, ASME, AIAA, SAE, Textile Institute, ROTARACT
Golden Key International Honor Society

References

Prof. John W. Gillespie Jr.
University of Delaware
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Prof. Michael Keefe
University of Delaware
Email: keefe@udel.edu
Tel. +1(302)831-8009

Dr. Eric D. Wetzel
U.S. Army Research Laboratory
Email: ewetzel@arl.army.mil
Tel. +1(410)306-0851

Dr. Travis A. Bogetti
U.S. Army Research Laboratory
Email: ewetzel@arl.army.mil
Tel. +1(302)831-6324

Journal Publications

1. **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, August 2009, pp. 50-58.
2. **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, May 2009, pp. 729-736.
3. **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, March 2009, pp. 445-467.

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

Journal Publications (submissions)

1. **Novel Computational Modeling of the Probabilistic Impact Response ($V_0 - V_{100}$) of Flexible Fabrics**, Gaurav Nilakantan; Michael Keefe; Eric D. Wetzel; Travis A. Bogetti; John W. Gillespie, Jr.; *International Journal of Solids and Structures*, to be submitted March 2010
2. **Experimental Evaluation and Statistical Characterization of the Strength Distribution of Kevlar KM2 Yarns: Accounting for Length Scale and Weaving Effects**, Gaurav Nilakantan; Ahmad Abu-Obaid; Michael Keefe; John W. Gillespie, Jr.; *Polymer Testing*, submitted February 2010
3. **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*, submitted December 2009
4. **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*, submitted November 2008

Conference Proceedings

1. **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
2. **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 American-Canadian International Conference on Composites, 24th Annual ASC Technical Conference, University of Delaware, Newark, DE, USA*, September 15-17, 2009
3. **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
4. **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

5. **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; *TEXCOMP 9, University of Delaware, Newark, DE, USA*, October 13-15, 2008
6. **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; *TEXCOMP 9, University of Delaware, Newark, DE, USA*, October 13-15, 2008
7. **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
8. **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
9. **Reduction of Acceleration Induced Injuries from Mine Blasts under Infantry Vehicles**, Ala Tabiei; [Gaurav Nilakantan](#), *6th European LS-DYNA Users Conference, Gothenburg, Sweden*, May 29-30, 2007
10. **Dynamic Axial Crushing of Circular Tubes: A Novel Numerical Formulation**, [Gaurav Nilakantan](#), *ASME ISC, Istanbul, Turkey*, May 26-28, 2006

Featured In the Press

1. **UD Center for Composite Materials: A First-Rate Graduate Research Experience for a Budding Entrepreneur**, *Composites Update*, Center for Composite Materials, University of Delaware, November 2008
(On the web at <http://www.ccm.udel.edu/News/newsletter/Oct08/current.html>)

LinkedIn

Profile: www.linkedin.com/in/gauravnilakantan

Group Owner: *A2E – Armor, Ballistics, Composites, and Defense Experts*