LEYLA FARHANG

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EDUCATION

The University of British Columbia — Vancouver, BC
Ph.D., Materials Engineering — October 2014
- Dissertation: "Void Evolution during Processing of Out-of-Autoclave Prepreg laminates"

Sharif University of Technology — Tehran, Iran
M.Sc., Materials Engineering — October 2006
- Concentration: Characterization and Selection of Engineered Materials
- Dissertation: "Study of Fracture Toughness and Scratch Resistance in Rubber Modified Polypropylene"

Sharif University of Technology — Tehran, Iran
B.Sc., Materials Engineering — September 2004
- Concentration: Industrial Materials
- Dissertation: "Manufacturing of Al356/SiC composite foams Through Vortex Casting"
- Ranked 2nd among 2004 class B.Sc. graduates

Farzanegan High School – National Organization for Development of Exceptional Talents (NODET) — Tehran, Iran
Math-Physics Diploma — June 2000

PROFESSIONAL EXPERIENCE

Polymeric Materials Group, Sharif University of Technology — Tehran, Iran
Visiting Assistant Professor, Iranian National Elite Foundation Scholarship — April 2016

Research Topic: Manufacturing of Industrial Natural Fiber Bio-Composites

Composites Research Network (CRN), University of British Columbia — Vancouver, BC
Postdoctoral Research Fellow — Dec 2014 – Oct 2015

Working with local and international industries on composite manufacturing and performance related topics
- In-situ and ex-situ porosity characterization in OOA laminates using micro-computed tomography technique. A collaborative project between UBC, Boeing Seattle and CLS (Canadian Light Source).
- E-waste characterization and market assessment (Ronin 8)
- Prototyping and characterization of biodegradable and compostable single-serve beverage packages (G-Kup)
- Identification and use of local industrial by-products as cost reducers in injection molding (Plascon Plastics)

PROFESSIONAL EXPERIENCE (con't)

- Laminate toughness characterization for an international automotive company (Honda)

Project Supervisor
Supervised several undergraduate and graduate students in their respective projects

Composites Group, University of British Columbia — Vancouver, BC
Research Assistant/Ph.D. Candidate — 2009 – 2014

- Processing and characterization of carbon fiber – epoxy composite laminates
  - Developed a robust method for porosity characterization of prepreg laminates
  - Investigated gas transport in porous media and extrapolated the results from small lab scale samples to large parts
- Developed a simple manufacturing aid that relates porosity to vacuum debulk time and other process parameters in processing of prepreg laminates.
- Investigated the mechanisms of void evolution in out-of-autoclave processing of carbon epoxy prepreg under different processing conditions including temperature, pressure, and relative humidity.
- Presented the project results in quarterly meetings to
  - CRAIQ COMP-1 project partners including Bombardier, Bell Helicopter, Delastek and National Research Council Canada
  - CRN advisory board members including Boeing Seattle, Avcorp Industries, Formashape and Campion
- Participated in multidisciplinary collaborations with other research groups in McGill and Concordia universities, in the fields of processing and economics of out-of autoclave polymeric composites.

Project Supervisor

- Supervised the projects of co-op and summer students in composites group

Bloorintar Company (The first producer of glass fiber in Iran) — Tehran, Iran
Product Development Engineer — 2006 – 2008

- Developed sizing and coating for glass fibers (e.g., silane based sizing, Al coating) to improve their performance in composites.
- Made prototypes for demonstration of company products, e.g., grating, arthrometer and pulley.
- Prepared report and presentation on the application of different forms of glass fibers and composites in different industries including piping (oil and gas, water and sewage), storage tanks, coating, construction, utility poles and railway industry.
- Designed the quality control lab: equipment, safety regulations

PROFESSIONAL EXPERIENCE (con't)

Polymeric Materials Group, Sharif University of Technology — Tehran, Iran
Research Assistant/M.Sc. Candidate — 2004 – 2006

- Manufactured Polypropylene compounds using extrusion and injection molding methods
- Performed a variety of mechanical and physical tests and microscopy techniques on polymeric blends and composites
- Studied fracture toughness, scratch resistance and deformation mechanisms in different Polypropylene compounds (PP/EPDM, PP/MBS, PP/nano-clay)

Research Center for Nanostructure and Advanced Materials (RCNAM), Sharif University of Technology — Tehran, Iran
Research Assistant/B.Sc. Candidate — 2003 – 2004

- Manufactured Al356/SiC foam through vortex casting and optimized the processing parameters including casting temperature, foaming agent content, baking/temperature cycle and mixing parameters.
- Prepared report on industrial applications of metallic foams.

TEACHING EXPERIENCE

The University of British Columbia — Vancouver, BC
2010 – 2015

Teaching Assistant: Held lectures, tutorials, lab experiments and office hours for following courses

- Polymer and polymer matrix composites (MTRL394): included a snow board design project
- Composite materials (MTRL 494): participated in SAMPE international student bridge contest (design, build and test of a miniature composite bridge, ranked 2nd in 2013)
- Failure of materials (MTRL 485): included multiple case studies such as bungee jumping, corn silo, guitar strings and gas spray.
- Engineering Materials (APSC 278)

Sessional Lecturer: Held lectures and tutorials for Polymer and polymer matrix composites course (MTRL 394)

Certificates/Workshops

- Instructional Skills for International Teaching Assistants (1 month – 24 hours, held by University of British Columbia)
- Instructional Skills for Graduate Students (3 days – 24 hours, held by University of British Columbia)

Azad University – Science and Research Branch — Tehran, Iran
2005 – 2007

Lab Instructor: Held lectures, lab experiments and office hours for Mechanical property laboratory and Metallography laboratory

PUBLICATIONS

Journal Papers

- L. Farhang & G. Fernlund, "Void and Porosity Characterization of Uncured and Partially-Cured Prepregs", Journal of Composite Materials, 2015, 49(11), pp. 1–12.
- L. Farhang, R. Bagheri, "Investigation of Toughening Micro-Mechanisms in Polypropylene/Ethylene-Propylene-Diene Rubber Blends at Crack and Notch Tips", Materials Performance and Characterization, 2014, 3(3), pp. 1–20.
- L. Farhang and G. Fernlund, "Experimental Study of Void Evolution in Out-of-Autoclave Processing of MTM45-1/5HS Prepreg", 2015, under review.
- L. Farhang & G. Fernlund, "Time Scales for Gas Transport and Vacuum Debulk in Out of Autoclave Processing of Prepregs", 2015, under review.
- L. Farhang, J. Cuttler & G. Fernlund, "In-situ and Ex-situ Void Characterization during Out of Autoclave Processing of Prepregs using Micro-computed Tomography Technique", 2015, in progress.
- L. Farhang and R. Bagheri, "Study the Scratch Resistance in Rubber Modified Polypropylene/Ethylene-Propylene-Diene Rubber Compounds", in preparation.

Conference Papers

- L. Farhang and G. Fernlund, "Gas Permeability Measurements: Effect of Measurement Technique", 10th Canada-Japan workshop on composites, Vancouver, Canada, 19 - 21 August 2014.
- E. Quinlan, L. Farhang & et al., "Evaluation of Laminate Quality for Out of Autoclave Manufacturing for a Complex Shaped Crew Door", AHS 70th Annual Forum and Technology Display, Montreal, Canada, 20 – 22 May 2014.
- L. Farhang, G. Fernlund, "Void Morphology, Void Evolution and Gas Transport in Out-Of-Autoclave Prepregs", ASC 26th 2011, Montreal, Canada, 26 -28 September 2011.
- J. Kay, L. Farhang, K. Hsiao and G. Fernlund, "Effect of Process Conditions on Porosity in Out-Of-Autoclave Prepreg Laminates", ICCM 18th, Jeju Island, Korea, 21 – 26 August 2011.
- L. Farhang and G. Fernlund, "Void Evolution and Gas Transport during Cure in Out-Of-Autoclave Prepreg Laminates", SAMPE 2011, Long Beach, USA, 23 – 26 May 2011.
- L. Farhang and R. Bagheri, "Study of Scratch Resistance in Relation with other Mechanical Properties in PP/EPDM Blend", 8th International Seminar on Polymer Science and Technology (ISPST 2007), Tehran, 23-25 October 2007.
- L. Farhang and R. Bagheri, "Evaluation of Fracture Behavior in a Polypropylene Blend", 8th International Seminar on Polymer Science and Technology (ISPST 2007), Tehran, 23-25 October 2007
- L. Farhang and R. Bagheri, "Study the Scratch Resistance of Rubber Modified Polypropylene", ISME 2006, Mashad, Iran, 14–15 November 2006.

INTERNSHIPS

Delastek Company – Helicopter Crew door, Fabricated a helicopter crew door using Out of Autoclave prepreg manufacturing method, Joint industrial project between UBC, Bell Helicopter, Delastek Company, Mc Gill University and Concordia University. — Montreal, Canada, Summer 2013

Hamedansaz Company, Trained on manufacturing and assembly stages of precise weaving machinery parts based on Polyamide compositions. — Yazd, Iran, 2003

HONORS AND AWARDS

- Visiting Assistant Professor Scholarship from Iranian National Elite Foundation, Sharif University of Technology — 2016
- Faculty of Applied Science Graduate Award, UBC — 2009 - 2013
- International Partial Tuition Scholarship, UBC — 2009 - 2011
- Graduate studies admission from Stanford University — 2008
- Awarded by Sharif University Center of Exceptional Talents to enter Masters program without national entrance exam — 2004
- Ranked 2nd among 2004 class B.Sc. graduates of Materials Engineering in Sharif University of Technology (Top 3%) — 2000 - 2004

TECHNICAL SKILLS

Extensive experience with processing and performance evaluation of composites and polymers
Processing Methods: Polymeric matrix composites (thermoforming, prepreg lay-up, vacuum bagging, hand lay-up, oven and autoclave curing, extrusion, injection molding, casting, RTM, compression molding), Metal matrix composites (vortex casting, foaming/baking)
Mechanical and physical testing of materials: permeability, tensile, bending and fracture toughness (J_{IC}, K_{IC}), impact, DMA, TGA, TGA-FTIR, DSC, XRD, XRF, FTIR, rheometry, particle size analysis
Microscopic evaluation of materials: optical microscopy (OM), transmission optical microscopy (TOM), Scanning electron microscopy (SEM/EDX), transmission electron microscopy (TEM), micro-computed tomography (μCT)
Others: Worked with 3D laser scanner, water jet cutter, 3D printer, ultrasonic defect detector

Softwares
Advanced: Image Analysis (Image-J, Clemex), Lab-view (core 1 certificate), Raven, Auto Cad, Pascal, Microsoft Windows and Office, Photoshop.
Basic: Solidworks, PAM RTM, Autodesk Simulation Composite Analysis, Matlab, Ansys, Kermode, Anova, SPSS.

SELECTED WORKSHOPS AND CERTIFICATES

- Composite Materials Workshop: Introduction to composite materials, Manufacturing processes, Thermal management, Analysis and design – University of British Columbia, May2015
- Fillers in Thermoplastics: Essential Principles for Efficient Optimization, Chris DeArmitt, FRSC CChem, Specialchem, Feb 2015
- Foundations of Project Management I, Jim Brosseau, MITACs organization, Jan 2013
- Basics of Rheology, Thomas Mezger, Anton Paar Company, 2012
- Ultra High Vacuum Seminar, Walter S. Palmer, Agilent Technologies, TRIUMF, UBC, Sept 2011
- Out of Autoclave Composites Technology, Chris Ridgard, ACG, SAMPE conference, May 2010
- Professional Grant Development Workshop, Instructional skills, Time management, Basics of intellectual property, Professional and Business Effectiveness, Materials Science & Engineering Workshops on Commercializing Technology (held by MITACs or UBC), 2010 – 2015.

PROFESSIONAL AFFILIATIONS

- The Iranian Metallurgical Engineering Society
- American Society of Materials, ASM BC Chapter
- Society for the Advancement of Material and Process Engineering (SAMPE)
- Association of Professional Engineers and Geoscientists of BC (APEGBC)