

# RAMULU MAMIDALA

(“M. Ramulu”, Boeing Pennell Professor of Engineering)

## *Curriculum Vitae*

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## EDUCATION

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University of Washington, Seattle, WA  
PhD in Mechanical Engineering  
Date of Graduation: March 1982  
Dissertation: *Dynamic Crack Curving and Branching*

Indian Institute of Technology, New Delhi, India  
Master of Technology (MTech) in Production Engineering  
Date of Graduation: June 1976  
Thesis: *Identification and Optimization of Cutting Process*

Osmania University, Hyderabad, India  
Bachelor of Engineering (BE) in Mechanical Engineering with Distinction  
Date of Graduation: June 1974

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## EMPLOYMENT

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1994 Sept-present	Professor, Department of Mechanical Engineering, University of Washington, Seattle WA.
2013 April- present	Boeing Pennell Professor of Engineering, UW
2007 Dec –2008Feb	Visiting Scientist, Defense Metallurgical Research Laboratories, Kanchanbagh, Hyderabad, India.
2012-present	Adjunct Professor, Materials Science & Engineering, UW
2007 (July-August)	Visiting Professor, Gunma University, Japan
1998 Sept-present	Adjunct Professor, Industrial Engineering Program, UW
1997 June-1997Sept.	Boeing’s The Ed Wells Summer Faculty Fellow
1995 Sept-1996 March	Visiting Scientist, Defense Metallurgical Research Laboratories, Kanchanbagh, Hyderabad, India.
1990 Sept-1994 Aug	Associate Professor, Dept. of Mechanical Engineering, UW
1985 Sept-1990 Aug	Assistant Professor, Dept. of Mechanical Engineering, UW
1982 Sept-1985 Aug	Research Asst Professor, Dept. of Mechanical Engineering, UW
1982 March-1982 Aug	Post Doctoral Research Technologist II, Dept. of Mechanical Engineering, UW
1981 Jan-1982 March	Pre-Doctoral Research Associate II, Dept. of Mechanical Engineering, UW
1978 Sept-1980 June	Teaching Assistant, Dept. of Mechanical Engineering, UW
1976 Jan-1977 Dec	Research Scholar, Indian Institute of Technology, New Delhi
1972 Jan-1974 April	Part-Time Lecturer in Math and Physics, Rao's College, India

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## AWARDS AND HONORS

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- 2020 Keynote Speaker,” Powder Reuse in Electron Beam Melting Additive Manufacturing of Ti6Al4V: Process and Property characteristics”, 4th International Conference on Manufacturing Technologies (ICMT 2020). held in Seattle, WA, USA during January 17-20, 2020.
- 2018 Fatigue & Fracture of Engineering Materials & Structures (Wiley) **Most Cited Paper Award** for the article Effect of build direction on the fracture toughness and fatigue crack growth in selective laser melted Ti-6Al-4V (2015, Vol 38, Issue 10)
- 2018 Plenary Lecture “ Study of Surface Integrity in Aerospace Materials” The second International Conference on Structural Integrity Conference (SIC) jointly organized by SICE and Defence Metallurgical Research Laboratory held during July 25–27, 2018 at Hyderabad, India
- 2018 “**Distinguished Scientist in Aerospace**” Award and honored by by *Telangana State Government* , India, on June 2<sup>nd</sup>, 2018 , on the occasion of Telangana Formation Day at Ravindra Bharathi, Hyderabad, TS, India
- 2017 “Eminent Alumnus” Award from Osmania University at the Osmania Engineering Global Alumni Meet 24<sup>th</sup> Dec 2017 of Osmania Centennial Celebration, OUCE Hyderabad
- 2017 Plenary Lecture, “Surface Integrity Effects on the Strength Properties, Damage Evolution of Composite Laminates” International Conference on Composite Materials and Structures (ICCMS 2017) organized by IIT Hyderabad and held at HTCC Novel Hotel, Hyderabad, Dec 27-29, India
- 2017 Plenary Lecture, “ "Advancements in process development and mechanical properties of recycled glass building materials through experimentation and analytical modeling", 2nd International Conference On Innovations In Structural Engineering (IC-ISE-2017). 29 – 31 December 2017, Department of Civil Engineering, Osmania University, Hyderabad, India
- 2016 Keynote Address,” Thirty years of abrasive waterjet research at The University of Washington”, 23<sup>rd</sup> International Conference on Waterjetting 2016, held in Seattle Nov 16-18, 2016
- 2016 Panel Lecture” “Additive manufacturing (AM) of metallic structural parts by Electron Beam Melting Process” at the Joint Center for Deployment and Research in Earth Abundant Materials (JCDREAM) **Symposium** held in Everett Community College, Henry M. Jackson Center, Wilderness Auditorium (JKC 101), October 3-4, 2016
- 2016 Recognized and honored for contributions to the field of Applied Sciences, by National Federation of Indian Associations (NFIA), at its 19th National Biennial Convention held in Seattle WA , Sept 30-October 2, 2016
- 2015 Keynote Lecture, 1<sup>st</sup> International Workshop on Cavitation Peening and Related Phenomena, Tohoku University, Sendai International Center, Sendai, Japan 10/27-29, 2015
- 2015 Board of Directors of JCDREAM appointment by Washington State Governor J. Inslee
- 2015 Member, Washington State Academy of Sciences
- 2015 “Excellence in Education” award from the Telugu Association of North America (TANA)
- 2014 J.H “Jud” Hall Composites Manufacturing Award 2014, Society of Manufacturing Engineers (SME), April 2014,
- 2013 Isadore T. Davis Award for Excellence in Collaboration of Engineering Education and Industry from American Society for Engineering Education (ASEE) June 2013
- 2013 Boeing Pennel Endowed Professor in Engineering
- 2012 *Distinguished Contributions to Life Long Learning Award, University of Washington*
- 2011 “Friction Stir Welding of Ti-6Al-4V Sheet and Plate for Aerospace Structures”

- Dissertation of Paul Edwards was selected as *one of three finalists* in the 2010-2011 *WAGS/UMI Innovation in Technology Award*
- 2010 *Best Research Paper Award*, "Alpha Case Removal on SPFD Titanium Alloy by Waterjets" by A. Chillman, M. Hashish and M. Ramulu, at 20<sup>th</sup> International Conference on Water Jetting held at Graz, Austria, 20 - 22 October 2010
- 2010 *Honorable Mention of a Student (Alex Chillman) Research Paper Award*, "A Novel Approach To Energy Based Evaluations of Ultra High-Pressure Waterjets" ASME 2010 Pressure Vessel Conference, held at Bellevue, WA, July 18-22, 2010
- 2010 Nominee UW Distinguished Graduate Mentor Award (2001, 2004, 2006)
- 2010 Nominee for Community of Innovators *Award for Research and Teaching*, COE, University of Washington (2009)
- 2007 *Distinguished Alumina in Academics Award*, Osmania University Alumni Association (OUAA), Dec 29, 2007, India
- 2007 *Fellow*, Society of Manufacturing Engineers (SME)
- 2007 *Technology Award*, Waterjet Technology Association
- 2006 *Faculty of the Year Award*, Department of Mechanical Engineering, UW
- 2005 Nominee for the University Brotman Award for Instructional Excellence
- 2004 *R<sup>1</sup>edu Award*, which recognizes excellence in online teaching and innovation. R<sup>1</sup>edu is a consortium of 34 of the leading American universities coordinated by the University of Washington
- 2003 Nominee for the University Distinguished Teacher award (1986, 1990, 2000, 2001, 2006)
- 2001 *Honorable mention of a Research Paper Award*, American Waterjet Technology Association
- 2001 Ranked in the top Ten Nominees over 100 nominations for UW Distinguished Graduate Mentor Award in 2000 and also nominee in 2001
- 2000 *Professional Service Recognition*, Knowledge Management Group, Boeing Company
- 1999 *Professional Achievement Award*, Sheared Services Group, Boeing Company
- 1999 *Fellow*, ASM International
- 1999 *Best Research Paper Award*, American Waterjet Technology Association
- 1998 *Distinguished Lecture Honoree*, Department of Mechanical Engineering's *Distinguished Lecture Series*, Texas A&M University (October)
- 1998 *Fellow*, Society for Experimental Mechanics (SEM)
- 1997 *The Ed Wells Summer Faculty Fellow*, Boeing Company, Seattle
- 1997 *Honor's Lecture*, University of Rhode Island's *Honor's Committee Lecturer*, Rhode Island
- 1996 *ASME Manufacturing Engineering Division's Service Award* for contributions to "Machining and Finishing Processes of Advanced Materials: Current and Future," at the 1996 International Mechanical Engineering Congress and Exhibition
- 1996 *Chief Guest and Keynote Speaker*, "Workshop on Need Analysis in Mechanical Engineering" Organized by the All India Council for Technical Education, held in Osmania University, February 10, 1996
- 1995 *Fellow*, American Society of Mechanical Engineers (ASME)
- 1994 *Academic Engineer of the Year*, Puget Sound Engineering Council, Washington
- 1993 *Elected member* to North American Manufacturing Institute of SME
- 1991 *Faculty Excellence Award*, Minority Science and Engineering Program, University of Washington, Jan. 25, 1991
- 1989 *Presidential Young Investigator Award*, National Science Foundation
- 1989 *AT&T Foundation Award*, American Society for Engineering Education
- 1987 *Ralph R. Teetor Award*, Society of Automotive Engineers
- 1986 *Ranked in the Top Ten Professors at UW* by Graduating Students in all campus yearbook, *TYEE*
- 1986 *IIM-ASM Lectureship Award*

1985-1986 First recipient of "Outstanding Teacher Award," College of Engineering, UW  
1978-1981 Government of India National Merit Scholarship

*Listed in the "Who is who in America", "American Men & Women of Science" and "Who's Who Among the Asian Americans"*

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## AFFILIATIONS AND ADMINISTRATIVE APPOINTMENTS

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2012 Sept-present	<i>Adjunct Professor</i> of Materials Science and Engineering, UW
1998Sept-present	<i>Adjunct Professor</i> of Industrial & Systems Engineering, UW
1999 - 2009	<i>Director</i> , MSE Program in Manufacturing Engineering, UW
1997 March -1999	<i>Associate Director and Advisor</i> , MSE Program in Manufacturing Engineering, UW
1997 - 2005	<i>Co-Director</i> , Program in Engineering and Manufacturing Management (PEMM), UW
1996-2003	<i>Initiator, Fund Raiser</i> and Co-Administrator of Albert S. Kobayashi Endowed Fund in Mechanical Engineering, University of Washington
1986 -2001	<i>Founder</i> of Society of Manufacturing Engineers Student Chapter and <i>Advisor</i> at University of Washington
1984 -present	<i>Chief Advisor</i> , Tau Beta Pi an Engineering Honors Society Student Chapter, University of Washington

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## PUBLICATIONS

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### Refereed archival journal publications

- 1 Abdullah Aljami and M. Ramulu, "Experimental Solid Particle Erosion of Silicon Nitride: Optical Investigation" Submitted to Ceramics International (july 2020)
- 2 Salman Pervaiz, Sathish Kannan, Dehong Huo, M. Ramulu, " Ecofriendly Inclined Drilling Of Carbon Fiber Reinforced Polymers (CFRP). Submitted to JAMT (July 2020)
- 3 Bryan Ferguson and M. Ramulu, " Exploring the Limits of Conventional Ultrasonic Testing of Diffusion Bonding Using Microstructural FEM Simulations" submitted to ASME Journal of Nondestructive Evaluation, Diagnostics and Prognostics of Engineering Systems, May 2020
- 4 B.Ferguson and M. Ramulu., ""Investigation of the Complexities Inherent in Manufacturing Near-Unconstrained Superplastic Parts by Experiments and Simulation" submitted to International Journal of Materials Forming (May 2020)
- 5 S. Ghods, E. Schultz, C. Wisdom, R. Schur, R. Pahuja, A. Montelione, D. Arola and M. Ramulu, "Electron Beam Additive Manufacturing of Ti6Al4V:Importance of Powder Reuse on Metal Porosity, Pore Size and Spatial Distribution" Submitted to Additive Manufacturing Dec 2020 (under Review)
- 6 R. Schur, S. Ghods, E. Schultz, C. Wisdom, R. Pahuja, A. Montelione, D. Arola and Ramulu, "Electron Beam Melting Additive Manufacturing of Ti6Al4V: Contributions of Powder Reuse to Mechanical Properties and their Variability", Submitted to Materials Science and engineering A, March 2020

- 7 S. Ghods, E. Schultz, C. Wisdom, R. Schur, R. Pahuja, A. Montelione, D. Arola and M. Ramulu "Electron Beam Additive Manufacturing of Ti6Al4V: Evolution of Powder Morphology and Part Microstructure with Powder Reuse", **Materialia**, Volume 9, March 2020, 100631, <https://doi.org/10.1016/j.mtla.2020.100631>
- 8 A. Montelione<sup>1</sup>, S. Ghods<sup>1</sup>, R. Schur<sup>1</sup>, C. Wisdom<sup>1</sup>, D. Arola and M. Ramulu, "Powder Reuse in Electron Beam Melting Additive Manufacturing of Ti6Al4V: Particle Microstructure, Oxygen Content and Mechanical Properties" **Additive Manufacturing**, <https://doi.org/10.1016/j.addma.2020.101216>
- 9 R. Schur, S. Ghods, E. Schultz, C. Wisdom, R. Pahuja, A. Montelione, D. Arola, M. Ramulu, "Fractographic Analysis of Additively Manufactured Ti6Al4V by Electron Beam Melting: Effects of Powder Reuse" **Journal of Failure Analysis and Prevention**, Vol.20, 2020, pp.794-803. <https://doi.org/10.1007/s11668-020-00875-0>
- 10 N. Anandan and M. Ramulu, "Study of machining induced surface defects and its effect on fatigue performance of AZ91/15% SiCp metal matrix composite" , **Journal of Magnesium and Alloys**, Vol.8, 2020, pp.387-395
- 11 R. Pahuja, and M. Ramulu " Time and frequency analysis of Acoustic Emission Signals in Abrasive Water Jet machining of Ti6Al4V/CFRP stacks", Submitted to International Journal of Advanced Manufacturing Technology, August 19
- 12 R. Pahuja and M. Ramulu, "Surface quality monitoring in Abrasive Water Jet machining of Ti6Al4V-CFRP stacks through Wavelet Packet analysis of Acoustic Emission signals", International Journal of Advanced Manufacturing Technology, July 2019 (DOI: 10.1007/s00170-019-04177-0)
- 13 R. Pahuja and M. Ramulu, " Study of surface topography in Abrasive Water Jet machining of carbon foam and morphological characterization using Discrete Wavelet Transform" Journal of Materials processing Technology, Vol. 273, 2019, 116249, (DOI:10.1016/j.jmatprotec.2019.05.030)
- 14 Bryan Ferguson and M. Ramulu, " Surface Tracking of Diffusion Bonding Void Closure and its Application to Titanium Alloys" International Journal of Materials Forming, April 2018, (DOI: 10.1007/s12289-019-01489-0)
- 15 R. Pahuja and M. Ramulu, "Abrasive Water Jet Machining of Titanium (Ti6Al4V) - CFRP stacks - A semi-analytical modeling approach in the prediction of kerf geometry" Journal of Manufacturing Processes, Volume 39, March 2019, Pp. 327-337
- 16 R. Pahuja, M. Ramulu, and M. Hashish " Surface quality monitoring and kerf width prediction in abrasive water jet machining of metal-composite stacks", Composites Part B: Engineering, Vol.175, October 2019, [doi.org/10.1016/j.compositesb.2019.107134](https://doi.org/10.1016/j.compositesb.2019.107134)
- 17 Kapil Gangwar and M. Ramulu, "Friction Stir Welding of Titanium Alloys: A Review, Materials and Design, Vol.141, 2018, pp.230-255
- 18 Arola, Dwayne; Murcia, Sandra; Stossel, M; Pahuja, Rishi; Linley, T; Devaraj, Arun; Ramulu, M; Ossa, E.A. and Wang, J., "The Limiting Layer of Fish Scales: Structure and Properties", Acta Biomaterialia, Vol.67, Feb 2018, pp. 319-330
- 19 Kapil Gangwar, M. Ramulu and Daniel G. Sanders, " Friction stir welding of near  $\alpha$  and  $\alpha + \beta$  titanium alloys: Metallurgical and mechanical characterization", Metals 2017, 7, 565; pp.1-23, [doi:10.3390/met7120565](https://doi.org/10.3390/met7120565)
- 20 Kapil Gangwar, M. Ramulu, Andrew Cantrell and Daniel G. Sanders, "Microstructure and Mechanical Properties of Friction Stir Welded Dissimilar Titanium Alloys: TIMET-54M and ATI-425" Metals Vol.6, No. 10, 2016, pp. 252-266; [doi:10.3390/met6100252](https://doi.org/10.3390/met6100252)

- 21 N.Kulkarni, M. Ramulu and D.G. Sanders, "Modeling of Diffusion Bonding Time in Dissimilar Titanium Alloys: Preliminary Results", *Journal of Manufacturing Science and Engineering*, Vol.138, December, 2016,121010-1:121010-9
- 22 M. Ramulu, Mathew Spaulding, "Drilling of Hybrid Titanium Composite Laminate (HTCL) With Electrical Discharge Machining", *Materials* 2016, Vol.9, No. 6, pp.746-765; doi:10.3390/ma9090746
- 23 M. Ramulu, Anirudh K. Iyer, Jeffrey L. Miller, "Characterization of Composite Dust Generated During Milling of CFRP Composites" *International Journal of Automation Technology*, (accepted)
- 24 P. Edwards and M. Ramulu, "Comparative Study of Fatigue and Fracture in Friction Stir and Electron Beam Welds of 24 mm Thick Titanium Alloy Ti-6Al-4V" *Fatigue and Fracture of Engineering Materials and Structures*, 4 MAR 2016, DOI: 10.1111/ffe.12434
- 25 M. Ramulu, V. Isvilonanda, R. Pahuja and M. Hashish, "Experimental Investigation of Abrasive Waterjet Machining of Titanium Graphite Laminates" *International Journal of Automation Technology*, Vol.10 No.3, 2016, pp.392-400
- 26 P. Edwards and M. Ramulu, "Surface Residual Stresses in Ti-6Al-4V Friction Stir Welds: Pre- and Post Thermal Stress relief" *Journal of Materials Engineering and Performance* Vol.22, No.10, 2015, pp.3263-3270
- 27 D.G. Sanders, P. Edwards, A.M. Cantrell, K. Gangwar, M. Ramulu, "Friction Stir Welded Titanium Alloy Ti-6Al-4V: Microstructure, Mechanical and Fracture Properties", *JOM*, Vol.67, No.5, 2015, pp.1054-1063
- 28 P. Edwards and M. Ramulu, "Effect of Build Direction on the Fracture Toughness and Fatigue Crack Growth in Selective Laser Melted Ti-6Al-4V", *Fatigue & Fracture of Engineering Materials & Structures* Vol.38, No.10, 2015, pp.1228-1236
- 29 P. Edwards and M. Ramulu, "Fracture Toughness and Fatigue Crack Growth in Ti-6Al-4V Friction Stir Welds" *Fatigue & Fracture of Engineering Materials & Structures*, Vol.38, 2015, pp.970-982
- 30 P. D. Edwards and M. Ramulu, "Fatigue Performance of Friction Stir Welded Ti-6Al-4V Subjected to Various Post Weld Heat Treatment Temperatures", *International Journal of Fatigue*, Vol.75, 2015, pp.19-27
- 31 A.O'Connor and M. Ramulu, "A Mechanistic Model for End Milling Cutting Forces in Brittle Porous Material" *Advanced Materials Research*, Vol.1082, 2015, pp.143-151
- 32 P.D. Edwards and M. Ramulu, "Material Flow During Friction Stir Welding of Ti-6Al-4V" *Journal of Material Processing Technology*. Vol. 218, No.4, 2015, pp.107-115
- 33 P. Edwards and M. Ramulu, "Fatigue Performance of Friction Stir Welded Titanium Structural Joints" *International Journal of Fatigue*, Vol. 70, 2015, pp.171-177
- 34 J. Davis and M. Ramulu, "A Study of the Residual Stress Induced by Shot Peening for an Isotropic Material Based on Prager's Yield Criterion for Combined Stresses", *Meccanica*, Vol.50, 2015, pp.1593-1604
- 35 E.D. Eneyew and M. Ramulu, "Experimental Study of Surface Quality and Damage when Drilling Unidirectional CFRP Composites" *Journal of Materials Research & Technology*, Vol.3, No.4, 2014, pp. 354-362

- 36 M. Ramulu, P. Labossiere and T. Greenwell, "Full-Field Strain Behavior of Friction Stir Welded Titanium Alloy by Digital Image Correlation" *Applied Mechanics and Materials*, Vol. 692, 2014, pp. 490-496
- 37 E.D. Eneyew and M. Ramulu, "On-line Monitoring of Drill Wear using Air-coupled Audio Microphone When Drilling Composite Materials", *Applied Mechanics and Materials*, Vol. 590, 2014, pp 645-650
- 38 P. Edwards and M. Ramulu, "Fatigue Performance Evaluation of Selective Laser Melted Ti-6Al-4V" *Materials Science & Engineering A.*, Vol. 598, 2014, pp. 327-337
- 39 P. Edwards, A. O'Connor and M. Ramulu, "Electron Beam Additive Manufacturing of Titanium Components: Properties and Performance", *ASME Journal of Manufacturing Science and Engineering*, Vol. 135, Dec, 2013, pp. 061016-1-061016-7, doi:10.1115/1.4025773
- 40 J. Davis and M. Ramulu, "A Semi-Analytical Model of Time Dependent Plastic Strains Induced During Shot Peening" *International Journal of Applied Mechanics*, Vol. 5, No. 3 (September), 2013, DOI: 10.1142/S1758825113500270
- 41 E.D. Eneyew and M. Ramulu, "Effect of Surface Ply on the Quality of the Hole when Drilling Multi-Directional CFRP Composites", *Applied Mechanics and Materials*, Vol. 330, 2013, pp. 117-122
- 42 E.D. Eneyew and M. Ramulu, "Tool Wear Monitoring Using Microphone Signals and Recurrence Quantification Analysis when Drilling Composites", *Advanced Materials Research*, Vol. 711, 2013, pp. 239-244
- 43 J. Miller, Eshetu D. Eneyew, M. Ramulu, "Machining and Drilling of CFRP Composites", *SAMPE Journal*, Vol. 49, March/Apr 2013, pp. 36-46
- 44 A. O'Connor, J. Miller and M. Ramulu, "Evaluation of Substrates for Rapid Tooling Applications" *SAMPE Journal*, Vol. 49, Jan/Feb 2013, pp. 34-39
- 45 Daniel G. Sanders and M. Ramulu, "Friction Stir Welding Combined With Superplastic Forming For Monolithic Titanium Aircraft Structure: Influence Of Post Welding Thermal Treatments On Weld Nugget Residual Stress", *Materials Science Forum*, Vol. 735, 2013, pp. 395-402
- 46 S. Gururaja, M. Ramulu and W. Pedersen, "Machining of MMCs: A Review", *Machining Science and Technology*, Vol. 17, No. 1, 2013, pp 41-73
- 47 D. Kim, C. Sturtevant and M. Ramulu, "Usage of PCD Tool in Drilling of Titanium/Graphite Hybrid Composite Laminate" *International Journal of Machining and Machinability of Materials*, Vol. 13, No. 2/3, 2013, pp. 276-288
- 48 M. Ramulu, M. Spaulding, and P. Laxminarayana, "Cutting Characteristics of Titanium Graphite Composite by Wire Electrical Discharge Machining" *Advanced Materials Research*, Vol. 630, 2012, pp 114-120
- 49 A. Chillman, M. Hashish and M. Ramulu, "Energy Based Modeling Of Ultra High-Pressure Waterjet Surface Preparation Processes" *ASME Journal of Pressure Vessel Technology*, Vol. 133, No. 6, 2011, pp. 061205-1-6

- 50 M. Ramulu, and M. Beck, " Investigation of Wear Behavior of Laser Cladded Low Carbon Steel Using Inconel 625 Nanopowder", Journal of Materials Science and Engineering, Vol. 5, No.3, 2011, pp.323-331
- 51 D. Kim, Y.H.Kim, S. Gururaja, and M. Ramulu., " Processing and Fiber Content Effects on the Machinability of Compression Moulded Random Direction Short GFRP Composites", International Journal of Automotive Technology, Vol.11, No.6, 2010, pp. 849-855
- 52 S. Gururaja and M. Ramulu, "Analytical formulation of subsurface stresses during Orthogonal cutting of FRP", Composites: Part A, Vol.41, No.9, 2010, pp.1164-1173
- 53 P. Edwards and M. Ramulu., "Peak Temperatures during Friction Stir Welding of Ti-6Al-4V" Science and Technology of Welding & Joining, Vol.15, No.6, 2010, pp. 468-472
- 54 D. G. Sanders. M. Ramulu, P.D. Edwards, and A. Cantrell., "Effect on the Surface texture, Superplastic Forming and Fatigue Performance of Titanium 6Al-4V Friction Stir Welds", Journal of Materials Engineering and Performance, Vol.19, No. 4, 2010, pp.503-509
- 55 P. D. Edwards, D. G. Sanders, M. Ramulu, "Simulation of tensile behavior in Friction Stir Welded and Superplastically formed-titanium 6 Al-4V alloy"Journal of Materials Engineering and Performance, Vol.19, No. 4, 2010, pp.510-514
- 56 D. Sanders , P. Edwards, G. Grant, M. Ramulu , A. Reynolds, " Superplastically formed Friction Stir Welded Tailored Aluminum and Titanium Blanks for Aerospace Applications", Journal of Materials Engineering and Performance, Vol.19, No. 4, 2010, pp.515-520
- 57 P. D. Edwards, D.G. Sanders, M. Ramulu, G. Grant, T. Trapp and P. Comley, "Thinning Behavior Simulations In Superplastic Forming Of Friction Stir Processed Titanium 6Al-4V", Journal of Materials Engineering and Performance, Vol.19, No. 4, 2010, pp.481-487
- 58 P.Edwards and M. Ramulu, "Identification of Process Parameters for Ti-6Al-4V Alloy Friction Stir Welding" ASME Journal of Engineering Materials and Technology, Vol.132, No. 3, 2010, pp.031006-1to 031006-10
- 59 A. Chillman, M. Ramulu, and M. Hashish., " Waterjet and Water-Air Jet Surface Processing of a Titanium Alloy: A Parametric Evaluation" ASME Journal of Manufacturing Science and Engineering, Vol.132, No.1, 2010, pp. 011012
- 60 P.Edwards, M. Petersen, M. Ramulu, R. Boyer., " Mechanical Performance of Heat treated Ti-6Al-4V Friction Stir Welds" Key Engineering Materials, Vol. 436, 2010, pp. 213-221
- 61 M. Ramulu, P. Edwards, D.G. Sanders, A.P. Reynolds and T. Trapp," Tensile Properties of Friction Stir welded Ti-6AL-4V Butt Joints", Materials & Design, Vol. 30, 2010, pp.3056-306
- 62 M. Ramulu, P. Labossioure and T. Greenwell, "Elastic-Plastic Stress/Strain Response of Friction Stir-Welded Titanium Butt Joints Using Moire Interferometry, Optics and Lasers in Engineering, Vol.48, No.3, 2010, pp.385-392
- 63 D. Sanders, P. Edwards, M. Ramulu, and G. Grant, "Optimization of Friction Stir Welding Process for Superplastic Forming and Improved Surface Texture for Titanium Aerospace Structures" Key Engineering Materials, Vol. 433, 2010, pp. 153-167



- 64 A. Chillman, M. Ramulu, M. Hashish, and A. Cantrell, "High Pressure Waterjets "" An Innovative Means of Alpha Case Removal for Superplastically Formed Titanium Alloys" Key Engineering Materials, Vol. 433, 2010, pp. 103-111
- 65 P. Edwards, M. Ramulu and D. Sanders "Superplastic Behavior and Microstructure of Titanium (Ti-6Al-4V) Friction Stir Welds Made Under a Variety of Processing Conditions" Key Engineering Materials, Vol. 433, 2010, pp. 169-176
- 66 A. Terry, M. Ramulu, and P.N. Rao, "A Method for Determining Tool Group Flexibility with Uncertain Machine Availability - Applications in a Semiconductor Manufacturing Process" Journal of Mechanical Engineering, Vol. 6, No. 1, April 2009, pp 19 - 42
- 67 J. Hoksbergen, M. Ramulu, P. Reinhall, and T. Briggs, " Comparing the Vibration Characteristics of Carbon Fiber Reinforced Plate to Magnesium Plate", Journal of Applied Composites, Vol.16, No. 5, 2009, pp. 263-284
- 68 P. D. Edwards and M. Ramulu., "Effect of Process Conditions on Superplastic Forming Behavior in Titanium 6Al-4V Friction Stir Welds" Science and Technology of Welding & Joining.Vol. 14, No.7, 2009, pp. 669-680
- 69 P.D. Edwards and M. Ramulu., " Investigation of Microstructure, Surface and Subsurface Characteristics in Titanium Alloy Friction Stir Welds of Varied Thickness" Science and Technology of Welding & Joining.Vol. 14, No.5, 2009, pp.476-483
- 70 T. M. Briggs, and M. Ramulu, "Edge Finishing Effects on the Impact Behavior of Chopped GFRP Composites "Experimental Mechanics, Vol.50, No.3, 2010, pp. 321-331
- 71 S. Gururaja and M. Ramulu. Failure analysis of a fibrous composite half-space subjected to uniform surface line load. ASME Journal of EngineeringMaterials Technology, Vol. 131, No.2, 2009, pp.021013 (8 pages)
- 72 S. Gururaja and M. Ramulu, "Modified Exit-Ply Delamination Drill Model for FRPs " Journal of Composite Materials, Vol.43, No.5, 2009, pp.483-500
- 73 D.G. Sanders, M. Ramulu, E.J. Klock-McCook, P.D. Edwards, A.P. Reynolds, and T. Trapp, "Characterization of Superplastically Formed Friction StirWeld in Titanium 6AL-4V: Preliminary Results", Journal of Materials Engineering and Performance, Vo. 17, No.2, 2008, pp. 187-192
- 74 D. Sanders, M. Ramulu, P.Edwards, "Superplastic Forming of Friction Stir Welds in Titanium Alloy 6Al-4V: preliminary results", Mat.-wiss. u. Werkstofftech. Vol.39, No. 4, 2008, pp.1-5
- 75 S. Kunaporn, A. Chillman, M.Ramulu, and M. Hashish "Effect of Waterjet Formation on Surface Preparation and Profiling of Aluminum Alloy" Wear, Vol.265, 2008, pp.176-185.
- 76 M. Ramulu, D. Kim, H. Kao and P.N.Rao, "Experimental Modeling and Analysis of Drilling (Al2O3)p/6061 Metal Matrix Composites Using PCD Tool" International Journal of Materials and Product Technolog, Vol.32, No.1, 2008, pp.20-40
- 77 D. Kim and M. Ramulu, "Study On The Drilling Of Titanium/Graphite Hybrid Composites, ASME Journal of Engineering Materials and Technology, Vol.129, No. 2, 2007, pp. 390-396

- 78 Franna Pitt and M. Ramulu, "Post-Processing Effect on the Fatigue Behavior of Three Titanium Alloys under Simulated SPF Conditions", Journal of Materials Engineering and Performance, Vol. 16, No.2, 2007, pp.163-169
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- 2 M.Mojib , M. Ramulu. “High Cycle Fatigue Behavior of Additively Manufactured Electron Beam Melted Titanium Ti-6Al-4V”,Paper# IMECE2020-22733 to be published in Proceedings of IMECE2020, in November 15-19, 2020, Portland OR
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- S.P. Raju and M. Ramulu, "Prediction of the Geometry of an Abrasive Waterjet Kerf using a Hybrid Eulerian-Lagrangian Approach", Abstract, *12th US Congress of Applied Mechanics* held at Seattle, WA June 27-July 1, 1994, pp. 569.
- M. Ramulu, "Fracture Mechanics and Damage Tolerance" Abstract published in *International Winter School on Advances in Aeronautical Materials and Technology(AAMT) Souvenir*, held at Hyderabad, India December 15-21, 2010
- M. Ramulu, "Fatigue and Fracture Performance of Friction Stir Welded Titanium Aerospace Structures", Abstract of a Plenary lecture- *65TH Annual Technical Meeting of The Indian Institute of Metals Souvenir*, and *49TH National Metallurgist' Day*, 13—16 November 2011, Hyderabad India

#### **Books writing (in preparation)**

1. M. Ramulu, M.G.Jenkins and A.S. Kobayashi, "*Applied Fracture Mechanics*" a text book preparation
2. M. Ramulu and P.N.Rao. "*Principles and Modeling of Modern Machining Processes*" an advanced text book under preparation

3. M. Ramulu, “*Machining Science and Surface Integrity of advanced Composites*” an advanced text book under preparation

#### **Parts of books (chapters in edited books)**

1. M. Ramulu . “Cutting Edge wear in Machining Foborous Composite Materials” a *Chapter* in Machining of Ceramics and Composites,Eds., S. Jahanmir, M. Ramulu and P.Koshy , Mercel & Dekker Publ., New York 2000, pp.357-410
2. M. Ramulu . “Characterization of Surface Quality in Machining of Composites ” a *Chapter* in Machining of Ceramics and Composites, Eds, S. Jahanmir, M. Ramulu and P.Koshy , Mercel & Dekker Publ., New York, 2000, pp.575-648
3. M. Ramulu and A.S. Kobayashi., "Fatigue " *Chapter* in Encyclopedia of Vibration, Eds S.G. Braun, D.J. Ewins and S.S. Rao., Vol.2, Academic Press Ltd., London, UK. 2002, pp.505-513.
4. M. Ramulu and A.S. Kobayashi, "Analytical and Experimental Studies on Mixed Mode Fatigue Crack Propagation" *Chapter* in Handbook of Fatigue Crack Propagation in Metallic Structures, Vol.2, pp. 1073-1124, eds. A. Carpinteri, Elsevier Publ.1994.

#### **Books edited**

1. M. Taya and M. Ramulu, Eds., Machining Composites, PED Vol. 35, ASME Publ, New- York, NY 1988.
2. M. Ramulu and M. Hashish, Eds., Machining Characteristics of Advanced Engineering Materials, MD-Vol. 16, ASME Publ, New York, NY 1989.
3. M. Ramulu and R. Komanduri, Eds., Machining of Advanced Composites, MD Vol. 45, PED-Vol. 66, ASME Publ, New York, NY 1993.
4. T.S. Srivatsan, K. Ramani and M. Ramulu, Eds., Processing, Design and Performance of Composite Materials, MD-Vol. 52, ASME Publ, New York, NY 1994.
5. S. Jahanmir, M. Ramulu and P.Koshy., Eds., Machining of Ceramics and Composites, Mercel & Dekker Publ., New York 2000.
6. D. G. Sanders, L.D. Hefti, F. Abu-Farha, L. Hector,Jr., M. Ramulu, Eds., Superplasticity in Advanced Materials, (ICSAM 2009), Trans Tech Publ. Switzerland, 2010

#### **Journal issues edited**

1. D. G. Sanders, D. Dunand, F. Pitt, M. Ramulu, E.V. Kaay, Eds., *Journal of Materials Engineering and Performance* (Special Issue), , Vol. 13, No.6, 2004
2. D. G. Sanders, F. Pitt, M. Ramulu, M. Khraisheh, Eds., *Journal of Materials Engineering and Performance* (Special Issue), Vol. 16, No.2, 2007

3. D. G. Sanders, M. Ramulu, M. Khraisheh, Eds., *Journal of Materials Engineering and Performance* (Special Issue), Vo. 17, No.2, 2008
4. D. G. Sanders, L.D. Hefti, M. Ramulu, P. Edwards, and E. Taleff, Eds., *Journal of Materials Engineering and Performance* (Special Issue), **in print 2010**
5. P.N. Rao and M. Ramulu, Eds., Special Issue on: "Sustainable Manufacturing in Precision Technology" in [International Journal of Precision Technology](#) 2020 (in Press)

#### **Patents submitted and/or awarded**

1. M.G. Jenkins, M. Ramulu, and T.L. Stevens, "An Hybrid Nozzle for High Pressure Jet Applications" Patent Disclosure 1997.

#### **Abstracts, letters, non-refereed papers, technical reports** (*grouped by type*)

##### **Project Reports**

##### **Project Reports**

"Dynamic Stress Intensity Factors for Unsymmetric Dynamic Isochromatics," Office of Naval Research, Technical Report No. 36, University of Washington (Dec. 1979), with A.S. Kobayashi.

"Influence of Small-Scale Yielding on Dynamic Fracture," Office of Naval Research Technical Report No. 38, May 1980, University of Washington, with A.S. Kobayashi and B.S.-J. Kang.

"Dynamic Mixed Mode Fracture," Office of Naval Research, Technical Report No. 39, August 1980, University of Washington, with A.S. Kobayashi.

"Dynamic Crack Curving—A Photoelastic Investigation," Office of Naval Research, Technical Report No. 41, October 1981, University of Washington, with A.S. Kobayashi.

"Further Studies on Dynamic Crack Curving," Office of Naval Research, Technical Report No. 42, November 1981, University of Washington, with Y.J. Sun, A.S. Kobayashi, and B.S.-J. Kang.

"Dynamic Crack Branching —A Photoelastic Evaluation," Office of Naval Research, Technical Report No. UWA/DME/TR-82/43, May 1982, University of Washington, with A.S. Kobayashi and B.S.-J. Kang.

"Strain Energy Density Fracture Criterion in Elastodynamic Mixed Mode Crack Propagation," Office of Naval Research, Technical Report No. UWA/DME/TR-82/44, September 1982, University of Washington, with A.S. Kobayashi.

"Further Studies on Dynamic Crack Branching," Office of Naval Research, Technical Report No. UWA/DME/TR-82/46, March 1983, University of Washington, with A.S. Kobayashi, B.S.-J. Kang and D.B. Baker.

"Analysis of Dynamic Mixed Mode Crack Tip Stress Patterns," Office of Naval Research, Technical Report No. UWA/DME/TR-84/49, May 1984, University of Washington, with D.B. Barker and A.S. Kobayashi.

"Dynamic Crack Curving and Branching Under Biaxial Loading," Office of Naval Research, Technical Report No. UWA/DME/TR-85/50, February 1985, University of Washington, with J.S. Hawong, A.S. Kobayashi, M.S. Dadkhah, and B.S.-J. Kang.

"Dynamic Fracture Toughness," Office of Naval Research, Technical Report No. UWA/DME/TR-85/53, August 1985, University of Washington, with A.S. Kobayashi, M.S. Dadkhah, K.H. Yang, and K.S.-J. Kang.

"Production Processes," Washington Technology Center, Progress Report 891/87, University of Washington, April 1987.

"A Preliminary Investigation of Machinability of High Temperature Composites," Flow Industries, Technical Report, University of Washington, July 1987

"Machining of SiC-TiB<sub>2</sub>," Standard Oil Company, Progress Report, No. 1, University of Washington, December 1987.

"Weldability of Al-Li Alloys," Welding Research Council, Preliminary Report, University of Washington, March 1988.

"Machinability of Ceramic Composites," Society of Manufacturing Engineering Education Foundation, Technical Report, University of Washington, May 1988.

"Machining of Advanced Materials," Washington Technology Center, Progress Report No. 2/8, University of Washington, May 1988.

"Weldability of Al-Li Alloys," Welding Research Council, Final Report 88-5, University of Washington, August 1988.

"Detection of Cutting Tool Fracture in Turning by Acoustic Emission," Idaho National Labs, Technical Report, University of Washington, September 1988.

"Characterization of Polycrystalline Diamond Inserts for Use in Machining Graphite/Epoxy Materials," Technical Report to The Boeing Company, University of Washington, January 1989.

"Production Processes," Washington Technology Center, Annual Report, University of Washington, April 1989.

"Damage Accumulation in Advanced Metal Matrix Composites under Thermal Cycling," Air Force Office of Scientific Research, Annual Report, AFOSR-89-0059, October 1987-October 1990 with M. Taya, W. Armstrong, and M. Dunn.

"Production Processes," Washington Technology Center, Annual Report, University of Washington, March 1990.

"Polycrystalline Cutter Development," Interim Report to the Boeing Company, University of Washington, December 1990.

"Damage Accumulation in Advanced Metal Matrix Composites under Thermal Cycling," Air Force Office of Scientific Research, (Technical Report No. UW-ME-91-001, February 1991), Final Report, AFOSR-91-0234, with M. Taya, W. Armstrong, and M. Dunn.

"PCD Cutter Evaluation," Final Technical Report to the Boeing Defense and Space Group, University of Washington, May 1991.

"Chip Formation in Graphite/Epoxy," Final Technical Report to the Boeing Defense and Space Group, University of Washington, December 1991.

"Production Processes" Washington Technology Center, Annual Report, University of Washington, September 1992.

"Telescopic Manhole and Cover Design," Technical Report, June 14, 1993, Final Report to John Morina, Investor, Centralia, WA 98531

"Production Process," Washington Technology Center, Final Report, University of Washington, June 30, 1993

"Development of Cutting Tools for FRP Machining," a proprietary Research (1990-1993), Boeing Military, Seattle.

"Mechanics of Abrasive Waterjet Cutting" Final Technical Report, NSF, June 1995

"Advanced Ceramics for High Pressure Applications" Final Technical Report, Flow International, Seattle, WA, June 1997 with M.G.Jenkins

"Water Peening of Aluminum Alloys" Technical Report, Flow International, Seattle, WA, October 1999.

"Fatigue Performance of Water Peened 7075-T6 Aluminum Alloy" Technical Report, Flow International, Seattle, WA, October 2001.

"Engineering and Management Education: Ford Fellowships", April , 2002.

"Algorithm to Facilitate Lights-Out Operations for Remote and Unattended Abrasive-Waterjet Machining", February 2004

"Fatigue Crack Behavior of Superplastic Formed Titanium Alloys" The Boeing Company, December 2004

"FSW/SPF of Titanium Alloys; Phase-1, The Boeing Company, July 2005.

"Shot Peening of Metallic Materials: Manual Peening" Task-1, The Boeing Company, July 2006

“FSW/SPF of Titanium Alloys; Phase-2, The Boeing Company, July 2006.

“Shot Peening Almen Strip Characteristics: Experimental Results” Task-2, The Boeing Company, July 2007.

“FSW/SPF of Titanium Alloys : Fatigue Performance, The Boeing Company, July 2008 .

“Manual Shot Peening Study on Fatigue Performance of 7050-T74 Alloy” The Boeing Company, June 2009

“ Machinability of Tooling Materials for Composite Component Manufacturing-Phase-1” Report to The Boeing Company, June 2010

“Microstructure Characterization of FSW Titanium54M Materials”, The Boeing Company, March 2010

“ Machinability of Tooling Materials for Composite Manufacturing-Phase-1” The Boeing Company, March 2011

“Optimal Cutting Conditions for Finishing Operation on Potential Tooling Materials (CB1100, Carbon Foam, and AC for Repair of Composite Components-Phase-2” The Boeing Company, August 2011

“Diffusion Bonding of Dissimilar Titanium Alloys Joints- Initial Results on Microstructure and Quality “ The Boeing Company, November 2011

“Fatigue and Fracture Testing and Analysis of Rapid Prototyped Aerospace Titanium Component by Selective Laser Melting Process, Boeing Report, August 2012

Diffusion Bonding of Titanium Alloys for varied temperatures: Experimental Results, UW-ME-Final Technical Report-Diffusion Bonding June 2015-2016

Study of interdependence between microstructural and mechanical properties gradient in friction stir welded titanium alloys:Ti-6242 SG, Ti-6242 FG, Ti-64SG, Ti-64FG, Ti-54M, UW-ME-Technical Report-Friction Stir Welding 07/16, Manufacturing Science and Technology Laboratory, July 2016

Metallurgical and Mechanical Characterization of High Temperature Titanium Alloys Joined by Friction Stir Welding, ME-Technical Report-8-16-17 to Boeing, August 2017

“Powder Bed Electron Beam Melting (EBM) Additive Manufacturing Process: Experimental study of Ti6Al4V to develop a process-microstructure- property relationship” ARCAM 3D Metal Printing Laboratory, ME-Report-11-18, Boeing Advanced Research Center (BARC) Report, November 5, 2018



“Powder Bed Electron Beam Melting (EBM) Additive Manufacturing Process: Experimental study of Ti6Al4V to develop a process-microstructure- property relationship” ARCAM 3D Metal Printing Laboratory, ME-Final Report-12-15-19, Boeing Advanced Research Center (BARC) Report, December 19, 2019

**Other (web sites, software, Wiki, etc.)**

Soleheim Manufacturing Science and Technology Laboratory:

<http://depts.washington.edu/mstlab/>

ME Faculty page:

<http://www.me.washington.edu/research/faculty/ramulum/index.html>

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OTHER SCHOLARLY ACTIVITY

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**Invited lectures and seminars.**

- 1 "Dynamic Crack Propagation and Crack Branching," Carnegie Mellon University, Department of Mechanical Engineering, Dec. 10, 1981.
- 2 "Dynamic Crack Branching Criteria," University of Idaho, Department of Mechanical Engineering, Moscow, May 25, 1984.
- 3 "Controlled Fracturing in Manufacturing," University of Washington, Seattle, Washington, March, 1985.
- 4 "Dynamic Fracture in Brittle Materials," Osmania University, Hyderabad, India, July 1985.
- 5 "Dynamic Fracture Toughness," Defense Metallurgical Research Laboratories, Hyderabad, India, August 25, 1986.
- 6 "Fracture Toughness Testing of Ceramic Tool Materials," Indian Institute of Technology, New Delhi, Dec. 18, 1987.
- 7 "Abrasive Waterjet Cutting of Composites," Manufacturing Research and Development, Boeing Company, Auburn, September 25, 1987.
- 8 "Short Fatigue Crack Mechanics," Damage Tolerance Division, Boeing Company, Renton, November 18, 1987.
- 9 "Fracture and Fatigue in Aluminum Alloys," International Conference on Advances in Structural Testing, Analysis and Design, held in Bangalore, India, July 29-August 3, 1990.
- 10 "Fracture and Fatigue Crack Growth Analysis in Aluminum-Lithium Alloys," *Keynote Lecture, Sixth International Conference on Mechanical Behavior of Materials (ICM-6)*, held in Kyoto, Japan, 29th July - 2 August 1991.

- 11 "Surface and Subsurface damage in Drilling of FRP", Boeing Military, Seattle, August 19, 1992.
- 12 "Machining Process Effects on Surface Integrity of Advanced Ceramics" *Invited Lecture*, American Ceramic Society, *Conference on "Design for Manufacturability of Glass and Ceramics"* held in Detroit, MI, Sept 16-17, 1993.
- 13 "Traditional and Nontraditional Machining of Fiber-Reinforced-Composites" *Invited state of the art Lecture*, *SAMPE Conference*, Los Angeles, CA, April 1994.
- 14 "Waterjet and Abrasive Waterjet Machining- Research Issues" *Invited state of the art review Lecture ASME/STLE Conference*, Lahaina, Hawaii Oct. 16-20. 1994 also participated in Teaching and Research Issues of Tribology in Manufacturing.
- 15 "Machining Mechanics in Advanced Composites" *Invited Lecture*, A symposium on Machining of Advanced Materials, ASME Summer Meeting at University of California, Los Angeles, June 28-30, 1995
- 16 "Machining and Surface Integrity of Fiber Reinforced Plastic Composites" *Planery Lecture*, International Conference on ADVANCES IN MECHANICAL ENGINEERING, at Indian Institute of Science, Bangalore, Dec. 20-22, 1995, India
- 17 "Abrasive Waterjets: A Novel Tool in Machining advanced Materials" Defense Metallurgical Research Laboratories (DMRL), Hyderabad, India, January 3, 1996.
- 18 "Machining of Advanced Composites" Development of Advanced Composites, Defence Research and Development Laboratory (DRDL), Hyderabad, India, February 14, 1996.
- 19 "Developments in Waterjet Technology", Nuclear Fuel Complex (NFC), Hyderabad, India, February 15, 1996.
- 20 "Experimental Techniques in Dynamic Fracture Mechanics", Bharath Heavy Electricals Limited (BHEL), Research and Development (R&D), Balanagar, Hyderabad, India, February 22, 1996.
- 21 "Ultra-High Pressure Waterjet Cutting" College of Engineering, Osmania University, Hyderabad, India, February 23, 1996.
- 22 "Machining of Hard-to-Cut Materials with High Pressure Waterjets Research at University of Washington" Deccan College of Engineering & Technology, Hyderabad, India, February 24, 1996
- 23 "Material Issues in Machining of Composites" *Honors Lecture*, College of Engineering, University of Rhode Island, April 24, 1997
- 24 " Promise of Water Peening in Enhancing Fatigue Life in Aerospace Materials", Flow International, May 27, 1997
- 25 "Surface Integrity of Composites" *Distinguished Lecturer*, Texas A&M University, College Station, Texas, October 14, 1998.

- 26 “Water Peening” Society of Manufacturing Engineers, Chapter 39, Seattle WA , November 16, 1999.
- 27 “Fatigue Performance of High Pressure Waterjet Peened Aluminum Alloys”, Materials Science and Engineering, University of Washington, January 10, 2000
- 28 “ Physics of Abrasive Waterjet Machining” 11<sup>th</sup> American Waterjet Conference, Minneapolis MN, August 19, 2001
- 29 “Research Directions in Production Engineering”, Srinidhi College of Science and Technology, Jawaharlal Technological University (JNTU), Hyderabad, July 3, 2002
- 30 “Ultra-High Pressure Water Peening”, *Alumini Lecture*, University College of Engineering, Osmania University, Hyderabad, July 12, 2002
- 31 “Drilling Issues in Composite –Titanium Stacks” The Boeing Company, November 2004
- 32 “Web Based Control of AWJ Performance”, Omax Corporation, May 2004
- 33 “Academic Experience of an Undergraduate in US University” Srinidhi College of Science and Technology, Jawaharlal Technological University (JNTU), Hyderabad, October 23, 2007
- 34 “Fundamental Issues in Machining of Polymer Composites” *Plenary Lecture*, International Conference On Future Trends In Composite Materials And Processing, INCCOM -6, Indian Institute of Technology Kanpur, India , December 12-14, 2007
35. “Current Research in Friction Stir Welding Process: Research opportunities” Defense Metallurgical Research Laboratories, Kanchanbagh, Hyderabad, India, February 6, 2008
36. “Recent Advances in Friction Stir Welding of Titanium Alloys”, *Plenary Lecture*, XVII International Conference on Processing and Fabrication of Advanced Materials, held at New Delhi, India, Dec 15-17, 2008
37. “Comparative Study Of Cutting Forces, Exit Delamination And Surface Roughness In Drilling Two Structural Composites” Composites Manufacturing 2010, Society of Manufacturing Engineers, held at San Diego, April 20-22, 2010
38. "Recent Developments in Machining of Advanced Composite Materials" *Key-Note* presented in 3rd International and 24th All India Manufacturing Technology, Design and Research Conference (AIMTDR-2010), held at AU, Vishakapatnam, Dec 13-15, 2010
39. "Fracture Mechanics and Damage Tolerance" *Plenary Lecture* presented in International Winter School on Advances in Aeronautical Materials and Technology(AAMT), held at Hyderabad, India December 15-21, 2010
40. "Quality Issues Associated with Abrasive Waterjet Cutting and Drilling of Advanced Composites" Department of Mechanical Engineering, Texas A&M University, College Station TX 77845, March 21, 2011

41. "Fatigue and Fracture Performance of Friction Stir Welded Titanium Aerospace Structures", Plenary lecture- 65TH Annual Technical Meeting of The Indian Institute of Metals and 49TH National Metallurgist' Day, 13—16 November 2011, Hyderabad India
42. "Edge Machining Effects on the Surface Integrity of Advanced Composites" Symposium on "Performance of Materials and Structures Under Extreme Loading Conditions" honoring Prof Arun Shukla, University of Rhode Island, October 12-13, 2013
43. "Thirty years of abrasive waterjet research at The University of Washington", 23<sup>rd</sup> International Conference on Waterjetting 2016, held in Seattle Nov 16-18, 2016
44. "Additive manufacturing (AM) of metallic structural parts by Electron Beam Melting Process" "Panel Lecture" at the Joint Center for Deployment and Research in Earth Abundant Materials (JCDREAM) **Symposium** held in Everett Community College, Henry M. Jackson Center, Wilderness Auditorium (JKC 101), October 3-4, 2016
45. "Machined Surface Integrity Effects on the Strength Properties, Damage Evolution and Fatigue Strength of Composite Laminates" Plenary Lecture, International Conference on Composite Materials and Structures ICCMS 2017, ICCMS held at HTCC, Novatel Hotel, 27-29th December 2017
46. "Advancements in process development and mechanical properties of recycled glass building materials through experimentation and analytical modeling", 2nd International Conference On Innovations In Structural Engineering (IC-ISE-2017). 29 – 31 December 2017, Department of Civil Engineering, Osmania University, Hyderabad, India

#### **Presentations given at conferences.**

- 1 "Machined Surface Integrity Effects on the Strength Properties, Damage Evolution and Fatigue Strength of Composite Laminates", Plenary lecture, International Conference on Composite Materials and Structures ICCMS 2017, *ICCMS held at HTCC, Novatel Hotel, 27-29th December 2017, Hyderabad, INDIA*
- 2 "Advancements in process development and mechanical properties of recycled glass building materials through experimentation and analytical modeling" 2nd INTERNATIONAL CONFERENCE ON INNOVATIONS IN STRUCTURAL ENGINEERING (IC-ISE-2017). 29 – 31 December 2017, Department of Civil Engineering, Osmania University, Hyderabad
- 3 Rishi Pahuja and Ramulu Mamidala, "Abrasive Waterjet Machining of Hybrid Composites – Titanium/CFRP Laminates and stacks" Poster, MSEC: Manufacturing Science and Engineering Conference, June 4 – 8, 2017, University of Southern California, Los Angeles, CA
- 4 Stefan P. Hovik and Mamidala Ramulu, "Experimental and Numerical Methods for Characterization of Impact Damage in Titanium-Graphite Laminates", SE17-0837 SAMPE 2017, Conference: May 22-25, 2017, Seattle, Washington

- 5 Bryan Ferguson and M. Ramulu, "Preliminary Results for Dissimilar Titanium Alloy Diffusion Bonding Using a Surface Roughness Finite Element Model", AeroMat 2017, Charlotte SC , April 9-12, 2017
- 6 E.D. Eneyew and M. Ramulu, " Sensing the Tool Tip Position in Drilling of Composite-Titanium Stack Materials", AeroMat 2017, Charlotte SC , April 9-12, 2017
- 7 S.Hovik and M. Ramulu, "Experimental and Numerical Methods for Characterization of Impact Damage in Titanium-Graphite Laminates" AeroMat 2017, Charlotte SC , April 9-12, 2017
- 8 kapil Gangwar and M. Ramulu, " Interfacial characteristics of friction stir welded dissimilar titanium alloys: Timetal-54M and Ti-6242" AeroMat 2017, Charlotte SC , April 9-12, 2017
- 9 Analyzing The Effect Of Cutting Parameters On The Milling Forces Of CFRP And HexMC Composite Materials
- 10 Experimental Study on the Machinability and Surface Integrity of Tooling Materials for Composite Manufacturing
- 11 Parametric Influence of Abrasive Water Jet Machining (AWJ) on Cutting Quality and Kerf Characteristics in Thin Sheet Fiber Metal Laminate (Titanium/Graphite)
- 12 Electrical Discharge Machining of Hybrid Titanium Graphite Composite Laminate (TiGr)
- 13 Composite machining dust collection and its analysis
- 14 E.D. eneyew and M. Ramulu "Monitoring of drill wear through force and acoustic emission signals when drilling CFRP composites"
- 15 Jeff Miller, M. Ramulu "Quantification of Dust Emissions when Dry Machining Composite Laminate", Paper presented at Environmental conference 2015.
- 16 E.D. Eneyew and M. Ramulu, " Multi-Sensor Detection and Estimation of Gaps when Drilling CFRP Composite Stacks", Proceedings of the ASME2014 International Mechanical Engineering Congress & Exposition (IMECE2014), Montreal CA
- 17 Neha Kulkarni and M. Ramulu, "Experimental And Numerical Mechanical Behavior In Friction Stir Welded Different Titanium Alloys", Proceedings of the ASME2014 International Mechanical Engineering Congress & Exposition (IMECE2014), Montreal, Canada
- 18 A.O'Connor and M. Ramulu, "Experimental Investigation of Porosity Effects on Machinability and Residual Strength in Brittle Materials" Proceedings of the ASME2014 International Mechanical Engineering Congress & Exposition (IMECE2014), Montreal Canada
- 19 N.Kulkarni, M. Ramulu, D. Sanders and L. Hefty, "Experimental Investigation of Flexural Behaviour of Diffusion Bonded two Different Titanium alloys" AEROMAT 2014, June 16-19, Orlando, FL
- 20 D. Sanders, M. Ramulu, T. Morton, M. Petersen and N. Kulkarni, " Friction Stir Welding of Dis-similar Titanium Alloys" AEROMAT 2014, June 16-19, Orlando, FL
- 21 N. Kulkarni, H. Bae and M. Ramulu, "A three-dimensional single and multiple shot simulation of shot peening for Steel, Aluminum and Titanium alloys", ICSP 2014, Goslar, Germany September 15-18, 2014

- 22 H.Bae, H. Diep and M. Ramulu, "Influence of Shot Peening Coverage on Residual Stresses Induced in Aluminum Alloy 7050-T745" ICSP 2014, Goslar, Germany September 15-18, 2014
- 23 M. Van Sickle and M. Ramulu, " Assessment of Field Surface Treatments for Prolonging the Life of Steel Welded Joints Subjected to Fatigue Loading" ICSP 2014, Goslar, Germany September 15-18, 2014
- 24 "Shakedown Prediction of Fatigue Life Extension After Residual Stress Relaxation via the Recovery Strain", International Conference on Computational & Experimental Engineering and Sciences (ICCES'13), held in Bellevue, WA May 24-28, 2013
- 25 "Diffusion Bonding and Friction Stir Welding of Dissimilar Titanium Alloys", International Conference on Computational & Experimental Engineering and Sciences (ICCES'13), held in Bellevue, WA May 24-28, 2013
- 26 "Flexural Behavior of Diffusion Bonded Titanium Joints", International Conference on Computational & Experimental Engineering and Sciences (ICCES'13), held in Bellevue, WA May 24-28, 2013
- 27 "Modeling the Effect of the Shot Peening Residual Stress on the Vickers Hardness of Aluminum alloy 7050-T7451", International Conference on Computational & Experimental Engineering and Sciences (ICCES'13), held in Bellevue, WA May 24-28, 2013
- 28 "On-line Detection of Delamination when Drilling Composite Materials using Stereo Microphone Signal Processing", International Conference on Computational & Experimental Engineering and Sciences (ICCES'13), held in Bellevue, WA May 24-28, 2013
- 29 "Machinability of Brittle Cellular Materials for Composite Tooling", International Conference on Computational & Experimental Engineering and Sciences (ICCES'13), held in Bellevue, WA May 24-28, 2013
- 30 "Quality of the Hole When Drilling Multi-Directional CFRP Composites ", 24th Advanced Aerospace Materials (AeroMat 2013) Conference, held in Bellevue, WA, April 2-5, 2013
- 31 "Machinability of Brittle Substrate Tooling Materials" 24th Advanced Aerospace Materials (AeroMat 2013) Conference, held in Bellevue, WA, April 2-5, 2013
- 32 "Evolution of Microstructures in Ti-6Al-4V/Beta21S Diffusion Bonds", 24th Advanced Aerospace Materials (AeroMat 2013) Conference, held in Bellevue, WA, April 2-5, 2013
- 33 "Charpy Impact Testing of Friction Stir Welded Titanium Joints", 24th Advanced Aerospace Materials (AeroMat 2013) Conference, held in Bellevue, WA, April 2-5, 2013
- 34 "Effect of Surface plies on the Quality of Hole Produced When Drilling Carbon Fiber Reinforced Composites", SME Composite Manufacturing Conference 2013, March 19-21, Long Beach, CA
- 35 " AWJ Cutting and EDM Edge Finishing on Surface Morphology of Fiber-Metal Composite Laminates", 21st International Conference on Water Jetting, held in Ottawa, Canada, Sept 19-22, 2012

- 36 "Friction Stir Welding Combined With Superplastic Forming For Monolithic Titanium Aircraft Structure: Influence Of Post Welding Thermal Treatments On Weld Nugget Residual Stress" ICSAM 2012, July 3-5, 2012, Albi France
- 37 "Mechanical Properties of Titanium Alloy SP 700 After Superplastic Forming" ICSAM 2012, July 3-5, 2012, Albi France
- 38 "Fracture Properties of Friction Stir Welded Titanium Alloy, Ti-6Al-4V" AeroMat 2012, June 2012
- 39 "Quality Issues Associated with Abrasive Waterjet Cutting and Drilling of Advanced Composites" Department of Mechanical Engineering, Texas A&M University, College Station TX 77845, March 21, 2011
- 40 "Fracture Mechanics and Damage Tolerance" a lecture presented in International Winter School on Advances in Aeronautical Materials and Technology(AAMT), held at Hyderabad, India December 15-21, 2010
- 41 "Recent Developments in Machining of Advanced Composite Materials"presented in 3rd International and 24th All India Manufacturing Technology, Design and Research Conference (AIMTDR-2010),held at AU, Vishakapatnam, Dec 13-15, 2010
- 42 "Effect of Die Sinker EDM and AWJ Machining Processes on Flexural Properties of Hybrid Titanium Laminates" presented in SAMPE Conference, May 17-20, 2010, Seattle
- 43 "Stress Analysis in Cutting of Composites" presented in SAMPE Conference, May 17-20, 2010, Seattle
- 44 "Comparative Study Of Cutting Forces, Exit Delamination And Surface Roughness in Drilling Two Structural Composites" Composites Manufacturing 2010, Society of Manufacturing Engineers, held at San Diego, April 20-22, 2010
- 45 "Effects Of Manual Shot Peening Conditions On High Cycle Fatigue" 2008 SEM Spring Conference, New Mexico
- 46 "A General Overview of Waterjet Surface Treatment Modeling" 2009 American WJTA Conference , August 18-20, 2009 , Houston, Texas
- 47 "Quality Issues Associated With Abrasive Waterjet Cutting And Drilling Of Advanced Composites" 2009 American WJTA Conference, August 18-20, 2009 , Houston, Texas
- 48 "Recent Advances in Friction Stir Welding of Titanium Alloys", XVII International Conference on Processing and Fabrication of Advanced Materials, held at New Delhi, India, Dec 15-17, 2008
- 49 "Development of Advanced Titanium Welding Processes for Improved Material Utilization in Aerospace Manufacturing" PNW AIAA Tech Symposium at Boeing 2-22 Auditorium on October 25, 2008.
- 50 "A Coverage Model for the Verification of a Manually Peened Surface" PNW AIAA Tech Symposium at Boeing 2-22 Auditorium on October 25, 2008.
- 51 "Characterizing Machining of FRPs using Analytical techniques" PNW AIAA Tech Symposium at Boeing 2-22 Auditorium on October 25, 2008.

- 52 "An Experimental Observation into the Rate Dependence During Low Velocity Impact Loading in CFRP Composites" PNW AIAA Tech Symposium at Boeing 2-22 Auditorium on October 25, 2008.
- 53 "Experimental Investigation of Manual Shot Peening Process Characteristics" PNW AIAA Tech Symposium at Boeing 2-22 Auditorium on October 25, 2008.
- 54 "Mechanical and Microstructure Characterization of Friction Stir Welding in Ti-6Al-4V", PNW, AIAA Tech Symposium at Boeing 2-22 Auditorium on October 25, 2008
- 55 "Tension-tension fatigue behavior of GFRP composites" International Conference on Mechanics of Materials, Numerical Simulation and Modeling of Jan 2-5, 2008, Bangalore, India
- 56 "Advances in Machining of Composites" ICCOM-6, Dec 2007, India
- 57 "Water Peening Effect On Fatigue Performance" 2007 WJTA American Waterjet Conference held in Houston, Tx
- 58 "Investigation Of Surface Preparation In Superplastic Formed Metals" 2007 WJTA American Waterjet Conference held in Houston, Tx
- 59 "Tensile Behavior Simulation of Friction Stir Welded and Superplastically Formed - Friction Stir Welded Titanium Alloy" in 18th AeroMat Conference and Exposition, June 25-28, 2007, Baltimore Maryland
- 60 "Correlation of Alpha Case and Fatigue Results in Titanium after Simulated SPF Exposure" in 18th AeroMat Conference and Exposition, June 25-28, 2007, Baltimore Maryland
- 61 "Elasto-Plastic Mixed Mode Crack Analysis in Thin Sheets of Aluminum Alloys" in Symposium honoring Albert Kobayashi, ASME 2007, Mechanics and Materials Conference at University of Texas at Austin, June 7-10, 2007
- 62 "A New Approach to Focusing Virtual Manufacturing Efforts in a Product Development Environment" presented in 2006 SAE International Aerospace Manufacturing and Automated Fastening Conference and Exhibition, September 11-14, 2006 held at Centre De Congrès Pierre Baudis Toulouse, France
- 63 "Study On The Drilling Of Titanium/Graphite Hybrid Composites, Presented in 2005 ASME International Mechanical Engineering Congress & Exposition, November 5-11, 2005, Orlando, Florida
- 64 "Edge Finishing and Delamination Effects induced during Abrasive Waterjet Machining on the Compression Strength of a Graphite/Epoxy Composite" Presented in 2005 ASME International Mechanical Engineering Congress & Exposition, November 5-11, 2005, Orlando, Florida
- 65 "Low-Velocity Impact Response Characterization of a Hybrid Titanium Composite Laminate Presented in 2005 ASME International Mechanical Engineering Congress & Exposition, November 5-11, 2005, Orlando, Florida



- 66 "Waterjet Peening At 600mpa: A First Investigation" Presented in 2005 ASME International Mechanical Engineering Congress & Exposition, November 5-11, 2005, Orlando, Florida
- 67 "Effects of Edge Finishing on the Impact Behavior of a Hybrid Titanium Composite Laminate" presented in SAMPE Fall Conference 2005 held in Seattle Oct 31-Nov 3, 2005
- 68 "Cutting And Drilling Characteristics Of Hybrid Titanium Composite Laminate (Htcl) "presented in SAMPE Fall Conference 2005 held in Seattle Oct 31-Nov 3, 2005
- 69 "Influence of Manufacturing Process and Fiber Volume on Edge Finishing Characteristics and Surface Integrity of Glass Fiber Reinforced Plastic Composites" presented in SAMPE Fall Conference 2005 held in Seattle Oct 31-Nov 3, 2005
- 70 "Cost Analysis of Abrasive Waterjet Cutting: Thin Sheet Materials" presented in SAMPE Fall Conference 2005 held in Seattle Oct 31-Nov 3, 2005
- 71 "Estimation Of Abrasive Mass Flow Rate By Measuring Feed Line Vacuum During Jet On-Off Cycling" presented at the 2005 WJTA American Waterjet Conference, August 21-25, 2005 Houston, Texas
- 72 "Analysis Of The Abrasive Waterjet Drilling Process" presented at the 2005 WJTA American Waterjet Conference, August 21-25, 2005 Houston, Texas
- 73 "Effect of Severe shot Peening on the Fatigue Crack Propagation in SENB 7075 Aluminum Alloy" International Conference on Experimental Mechanics, June 7-10, 2004, Coasta Mesa, CA
- 74 " Effect of Almen strip characteristics variations in shot Peening Process" International Conference on Experimental Mechanics, June 7-10, 2004, Coasta Mesa, CA
- 75 "Examination of Superplastic Forming Combined with Diffusion Bonding for Titanium" AeroMat 2004Conference, June 7-10, 2004 held in Seattle
- 76 "Differences in Alpha Case and Microhardness Profiles in TwoLots of Superplastic Formed Titanium 6Al-4V alloy" AeroMat 2004Conference, June 7-10, 2004 held in Seattle
- 77 "Effect of Superplastic Forming Exposure and Post Processing on Flextural Testing in Titanium Allos" AeroMat 2004Conference, June 7-10, 2004 held in Seattle
- 78 "A Study Of Abrasive Waterjet Machining Of Kevlar Composite Material" presented at the 2003 WJTA American Waterjet Conference, August 17-19, 2003 in Houston, Texas
- 79 "Mathematical Modeling of Ultra High Pressure Waterjet Peening" presented at the 2003 WJTA American Waterjet Conference, August 17-19, 2003, Houston, Texas
- 80 "Abrasive Waterjet Machining Of Aerospace Structural Sheet And Thin Plate Materials" presented at the 2003 WJTA American Waterjet Conference, August 17-19, 2003 Houston, Texas

- 81 "Experimental Study of PCD Performance in Drilling ( $\text{Al}_2\text{O}_3$  p/6061) Metal Matrix composite" to be presented at 31st North American Manufacturing Research Conference, held at McMaster University, Hamilton, Ontario, Canada, May 20-23, 2003
- 82 "EDM Characteristics of 15 and 35 Vol% SiCp /Al Metal Matrix Composites" to be presented at 31st North American Manufacturing Research Conference, held at McMaster University, Hamilton, Ontario, Canada, May 20-23, 2003
- 83 "Turning Centrifugally Cast SiCp Aluminum Metal Matrix Composites with PCD and Thick Film Diamond Tools" to be presented at 31st North American Manufacturing Research Conference, held at McMaster University, Hamilton, Ontario, Canada, May 20-23, 2003
- 84 "Abrasive Waterjet Machining: A Cost Effective Process for Composites" presented at 7th Pacific Rim International Conference on Water Jetting Technology May 18 ~ 22, 2003, Jeju, Korea
- 85 "Abrasive Waterjet Machined Surface Characteristics of Titanium Alloy ( $\text{Ti6Al4V}$ )" presented at 7th Pacific Rim International Conference on Water Jetting Technology May 18 ~ 22, 2003, Jeju, Korea
- 86 "Damage Progression Analysis of Composite T-Joints with Transverse Reinforcement" presented at SEM 2002 Annual Conference held in June 10-12, 2002 at Milwaukee, Wisconsin USA
- 87 "Hole Quality in Drilling of Graphite/Bismaleimide-Titanium Stacks", 33rd Annual SAMPE Technical Conference held in Seattle , November 5-8 ,2001,
- 88 "Surface Texture Effects On Fatigue Performance Of SMC Composites Used In Heavy Truck Industry", 33rd Annual SAMPE Technical Conference held in Seattle , November 5-8 ,2001,
- 89 "Abrasive Waterjet Machining Of Aerospace Materials", 33rd Annual SAMPE Technical Conference held in Seattle , November 5-8 ,2001
- 90 "Abrasive Waterjet Piercing of Holes in Carbon Fiber Reinforced Plastic Laminate" 33rd Annual SAMPE Technical Conference held in Seattle , November 5-8 ,2001
- 91 "Investigation of T-300/PR520 Laminate Properties and Failure Analysis", 33rd Annual SAMPE Technical Conference held in Seattle , November 5-8 ,2001
- 92 "Ultra High Pressure Waterjet Peening: Part II: Fatigue Performance" in 11th American Waterjet Technology Conference held in Minniapolis, MN, August 18-21,2001
- 93 "Ultra High Pressure Waterjet Peening: Part I: Surface Characteristics" 11th American Waterjet Technology Conference held in Minniapolis, MN, August 18-21,2001
- 94 "Environmental And Health Effects In Machining Of Fiber Reinforced Composites" SEM 2001 Spring Conference in Portland, June 4-7,2001.
- 95 "Waterjet Machining and Peening of Advanced Materials" ASME Pressure Vessel Conference held in Boston, August 10-14, 1999

- 96 "Modeling and Simulation of Pressure Fluctuations in Waterjet Jets" 10th American Water Jet Conference 1999
- 97 "Modeling the Waterjet Contact/Impact on Target Material", 10th American Water Jet Conference 1999
- 98 "Simulation of Displacement Fields Associated with Abrasive Waterjet Drilled Hole" 10th American Water Jet Conference 1997
- 99 "Residual Stresses in Water Peening " 1999 SEM Spring Conference, Cincinnati, OH, June 7-10, 1999.
- 100 "Experimental and Numerical Analysis of Abrasive Waterjet Drilling Process" 1999 SEM Spring Conference, Cincinnati, OH, June 7-10, 1999.
- 101 "Elastic-Plastic Analysis of Mixed Mode Crack Propagation :Experiments and Numerical Models" 1999 SEM Spring Conference, Cincinnati, OH, June 7-10, 1999.
- 102 "Water Peening " presented in SAE Conference in June 1999, Seattle WA
- 103 "Component Fabrication Effects on the Surface Texture and Flexural Strength Distributions of a Structural Silicon Nitride" Proceedings of the 1998 SEM Spring Conference on Experimental and Applied Mechanics, Houston, TX, June 1 -4, 1998
- 104 "Effect of Temperature, Exposure Time and Material Removal Processes on the Mechanical Properties and Performance of Nicalon<sup>TM</sup> -and Nextel<sup>TM</sup> Reinforced Oxide-Matrix Ceramic Matrix Composites" 1998 SEM Spring Conference on Experimental and Applied Mechanics, Houston, TX, June 1 -4, 1998
- 105 "Wear Performance of Monolithic and Composite Mixing Tubes for Abrasive Waterjet Cutting of Advanced Ceramics" presented at the 22nd Annual Cocoa Beach Conference and Exposition, Jan 21-24, 1998.
- 106 "Abrasive Waterjet Process Dependent Performance of Polymer Composites under Static and Dynamic Loading,, " 9th American Water Jet Conference held in Detroit, MI, August 23 -26, 1997
- 107 "Abrasive waterjet Drilling and Cutting Mechanisms in Continuous-fiber Ceramic Composites, " 9th American Water Jet Conference held in Detroit, MI, August 23 -26, 1997.
- 108 "An Experimental and Numerical Study of Abrasive Waterjet Generated Stress Fields," 9th American Water Jet Conference held in Detroit, MI, August 23 -26, 1997
- 109 "Abrasive waterjet Machining Effects on the High Temperature Degradation and Mechanical Properties of a Ceramic Matrix Composite", 9th American Water Jet Conference held in Detroit, MI, August 23 -26, 1997
- 110 "Mixed-Mode (I/II) Fracture in Aluminum Sheet Alloys", IX International Congress on Experimental Mechanics, Seattle WA, June 9-11, 1997.
- 111 "Elastic-Plastic Mixed-Mode (I/II) Fracture in Aluminum Sheet Alloys", VIII International Congress on Experimental Mechanics, held in Nashville, TN, June 10-13, 1996
- 112 "Influence of Reinforcement Material on the Mechanics of machining", NAMRI Technical Conference, 1996 Society of Manufacturing Engineers

- 113 "Machining and Surface Integrity of Fiber Reinforced Plastic Composites", Proceedings of the International Conference on Advances in Mechanical Engineering, 1995
- 114 "Measurement of Strains Associated with Abrasive Waterjet Drilling of Ceramics," 8th American Waterjet Technology Conference, held in ---, August, 1995.
- 115 "Abrasive Waterjet Machining of Titanium Alloy," 8th American Waterjet Technology Conference, held in, August, -----1995,.
- 116 "Machining Stresses in Glass Fiber Reinforced Composites" 1995 SEM Spring Meeting, Grand Rapids, MI, June 6-13, 1995
- 117 "Prediction of Hydro-Abrasive Erosive Wear During Abrasive Waterjet Cutting- Part II: An Experimental Study and Model Verification," Symposium on Manufacturing Science and Engineering 1994, ASME Winter Annual Meeting, held in -----1994
- 118 "Prediction of Hydro-Abrasive Erosive Wear During Abrasive Waterjet Cutting- Part I: A Mechanistic Formulation & its Solution," Symposium on Manufacturing Science and Engineering 1994, ASME Winter Annual Meeting, held in -----1994
- 119 "Waterjet and Abrasive Waterjet Machining of Advanced Materials," Tribology in Manufacturing Processes, ASME Bound Volume, CRTD-Vol. 30, Trib-Vol. 5, PED-Vol. 69, ASME/STLE Proceedings (1994), pp. 195-207.
- 120 "Prediction of the Geometry of an Abrasive Waterjet Kerf using a Hybrid Eulerian-Lagrangian Approach", 12th US Congress of Applied Mechanics held at Seattle, WA June 27-July 1, 1994.
- 121 "Manufacturing Effects on the Mechanics of Fiber Reinforced Plastics under Static and Dynamic Loading," 12th US Congress of Applied Mechanics held at Seattle, WA June 27-July 1, 1994
- 122 "Preliminary Investigation of Stresses in the Orthogonal Cutting of Fiber Reinforced Plastics," 1994 SEM Spring Conference and Exhibits, 1994, pp. 184-192.
- 123 "Traditional and Non-traditional Machining of Fiber Reinforced Plastic Composites," Proceedings of the 39th SAMPE Symposium and Exhibition, held in Los Angeles, CA May ----
- 124 "Investigation of Edge Quality and Ply Delamination in Abrasive Waterjet Machining of Graphite/Epoxy," Symposium on Machining of Advanced Composite Materials, held at ASME Winter Annual Meeting, November 28-Dec 3, 1993.
- 125 "Mechanism of Material Removal in Abrasive Waterjet Machining in two Commonly used Aerospace Material," 7th American Water Jet Conference held in Seattle, WA, August 28 -31, 1993.
- 126 "An Optical Investigation on the Abrasive Waterjet Penetration Process," 7th American Water Jet Conference held in Seattle, WA, August 28 -31, 1993.

- 127 "A Transient Model for Material Removal in the Abrasive Waterjet Machining Process," 7th American Water Jet held in Seattle, WA, August 28 -31, 1993.
- 128 "An Experimental Investigation into Pitting of Hole Surfaces When Drilling Graphite/Epoxy," Processing Fabrication and Manufacturing of Composite Materials, ASME Bound Volume, MD-Vol. 35, 1992, pp. 11-25.
- 129 "Experimental Investigation of High Pressure Waterjet Piercing Process," Proceedings of the VII SEM International Congress on Experimental Mechanics, Las Vegas, June 8-11, 1992.
- 130 "EDM Surface Effects on the Fatigue Strength of a 15 Vol. % SiCp/Al Metal Matrix Composite Material," Proceedings of the VII SEM International Congress on Experimental Mechanics, Las Vegas, June 8-11, 1992
- 131 "Delamination in Surface Plies of Graphite/Epoxy caused by the Edge Trimming Process," Processing and Manufacturing of Composite Materials, ASME Bound Volume, PED-Vol. 49, 1991,
- 132 "Photoelastic Investigation of Jet Piercing Process," Proceedings of the 6th American Waterjet Conference, Houston, TX, August 24-27, 1991.
- 133 "Photoelastic Study of Abrasive Waterjet Drilling Process," 1991 SEM Spring Meeting, Wisconsin, June 6-13, 1991.
- 134 "J-R Curve Characterization of 2090 and 2091 Al-Li Alloy Sheet Materials," Proceedings of the 1991 SEM Spring Meeting, Wisconsin, June 6-13, 1991
- 135 "Application of Non-Linear Goal Programming Technique to Optimize the EDM Machining Process," 5th International conference on CAD/CAM, Robotics & Factories of the Future, '90, held in Norfolk, Virginia, Dec 2-5, 1990.
- 136 "Development of Time and Cost Estimation Algorithm for Part Design and Manufacturing Process," 5th International conference on CAD/CAM, Robotics & Factories of the Future, '90, held in Norfolk, Virginia, Dec 2-5, 1990.
- 137 "Photoelastic Investigation of Abrasive Waterjet Cutting," 1990 SEM Spring Conference on Experimental Mechanics, June 4-6, 1990, Albuquerque, New Mexico.
- 138 "EDM Machined Surface Characterization of a Ceramic Composite, TiB<sub>2</sub>/SiC," Machining of Advanced Engineering Materials, ASME Bound Volume, MD-Vol. 16, 1989, pp. 1-8.
- 139 "Machining of Graphite/Epoxy Composite Material with Polycrystalline Diamond (PCD) Tools," Symposium on "Machining Characteristics of Advanced Engineering Materials," ASME Winter Annual Meeting held in San Francisco, December 1989
- 140 "Machinability of High Temperature Composites by Abrasive Waterjet," Symposium on "Machinability of Composites," ASME Winter Annual Meeting held in Chicago, December 1988.

- 141 "Short and Long Fatigue Crack Propagation in Al-Li Alloys," Proceedings VI International Conference on Experimental Mechanics, June 5- 10, 1988, Portland, Oregon.
- 142 "Material Behavior Under Abrasive Waterjet Impact," Dynamic Failure, 1987 SEM Proceedings of Fall Meeting at Savana, Georgia, Oct. 25-28 1987.
- 143 "Characterization of Rivet Material Behavior under Fast Electromagnetic Riveting Process," Emerging Trends in Manufacturing, New Delhi, 1986, pp. 401-405.
- 144 "Numerical and Experimental Analysis of Electromagnetic Riveting Process," Conference on Emerging Trends in Manufacturing, held in IIT New Delhi, 1986,.
- 145 "Propagation of a Small Surface Crack in Aluminum and Steel Alloys," Optical Methods in Composites, SEM Fall Conference held in Keystone, Co , 1986
- 146 "Subcritical Growth of Small Fatigue Cracks," ASM International Conference on Fracture Fatigue and Corrosion Cracking, held at Salt Lake City, Utah, USA, December 2-6, 1985
- 147 "Dynamic Fracture Toughness of Photoelastic Polymers," ASM International Conference on Fracture Fatigue and Corrosion Cracking, held at Salt Lake City, Utah, USA, December 2-6, 1985
- 148 "Dynamic Crack Curving and Branching under Biaxial Loading," 1985 SEM Spring Conference on Experimental Mechanics, Las Vegas, NV, June 9-14, 1985.
- 149 "Influence of Higher Order Terms in the Dynamic Mixed Mode Crack Tip Stress Patterns," Fifth International Congress on Experimental Mechanics, SESA, held in -----1984,
- 150 "Further Studies on Dynamic Crack Branching," SESA Spring Meeting, Cleveland, Ohio, May 15-19, 1983.
- 151 "Dynamic Crack Curving and Branching in Line-Pipe," presented at ASME Winter Annual Meeting, Phoenix, AZ, Nov 14-19, 1982
- 152 "Dynamic Crack Curving - A Photoelastic Evaluation," SESA Spring Meeting, Oahu & Maui, HI, May 24-28, 1982
- 153 "Dynamic Stress Intensity Factors for Unsymmetric Dynamic Isochromatics," IV Interntl Congress on Experimental Mechanics, Boston, MA, May 25-29, 1980
- 154 "Identification and Optimization of Manufacturing Process," presented at Indo-British Conference on Engineering Production held in New Delhi, March 10-12, 1977

#### **Professional society memberships.**

American Society for Engineering Education (ASEE 1985-1998, 2011-)  
 American Society of Mechanical Engineers (ASME 1978 -)  
 American Society for Metals International (ASM 1983 -)  
 Society of Automotive Engineers (SAE 1984-1998)

Society for Experimental Mechanics (Life Member **SEM** 1978)  
Society for the Advancement of Material and Process Engineering (**SAMPE** 1992-)  
Society of Manufacturing Engineers (**CASA/SME** 1984- )  
North American Manufacturing Research Institute(**NAMRI/SME** 1993- )  
The Minerals, Metals & Materials Society (**TMS**)  
The American Institute of Aeronautics and Astronautics (**AIAA** 2014- )  
International Waterjet Technology Association (**IWJTA**)  
US Water Jet Technology Association (**WJTA** 1989)  
Tau Beta Pi, Engineering Honors Society (1982 - )

### **Peer Review Activities**

Journals ( a total of 8-12 papers/year review)

Applied Surface Science  
Applied Mechanics Reviews  
Composites, Part A: Applied Science and Manufacturing  
Composites Science and Technology  
Experiments in Fluids  
Experimental Mechanics  
Experimental Techniques  
ASME Journal of Engineering Education  
ASME Journal of Engineering Materials and Technology  
ASTM Symposiums and STP  
ASME Journal of Engineering for Industry  
ASME Journal of Manufacturing Science and Engineering  
ASME Journal of Heat Transfer  
ASME Journal of Pressure Vessel Technology  
ASME Journal of Tribology  
Journal of Composite Materials  
Journal of Material Science  
Journal of Materials Processing and Technology  
Journal of Materials Engineering and Performance  
International Journal of Advanced Manufacturing Technology  
International Journal of Machining and Machinability of materials  
International Journal of Engineering Sciences  
International Journal of Fracture  
International Journal of Solids and Structures  
International Journal of Mechanical Sciences  
International Journal of Machine Tools and Manufacture  
International Journal of Waterjet Technology  
International Journal of Manufacturing Research  
Manufacturing Review  
Microstructures and Materials Properties  
Modeling and Simulation  
Philosophical Magazine  
Science and Technology of Welding & Joining  
Scripta Materialia  
Tribology Transactions

Wear

ASME Symposium Papers & SEM Spring and Fall Meeting Papers

NSF proposal reviews

#### Conferences

- 1987-Present ASME Symposium Papers & SEM Spring and Fall Meeting Papers  
three to four papers per year in each society
- 2006-Present North American Manufacturing Conference (NAMRC) of SME.  
Two to four papers per year in each society
- 1989 Reviewer of technical papers to the VII International Conference on  
Fracture held in Houston, March 1989
- 1992 ASM, Reviewer of Conference papers on "Machining of Composite-I"
- 1985 International Conference on Fracture Fatigue and Corrosion Cracking,  
organized by ASM at Salt Lake City, Utah, USA, December 2-6, 1985

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### GRADUATE STUDENTS

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#### Chaired Doctoral Degrees

##### Chaired Doctoral Degrees

Student Name	Dissertation Title	Current Employer	Completed (Year)
<b>Current Doctoral Students</b>			
Melody Mojib	EBM Metal Additive Manufacturing	RA	TBD
Curtis Doyle	Metal Additive Manufacturing	Boeing Company, Seattle (Part Time)	Passed Qual Spring 2020
Ryatt, Jeremy Christopher	<i>Numerical modeling and simulation of damage in composite materials</i>	Simulia, Dassault Systems (Part Time)	Candidacy Fall 2019
Abdullah Alajmi	<i>Experimental and analytical Investigation of Sand Dust Impingement Erosion in Composite Turbine Blades</i>	RA/TA	Candidacy Spring 2019
Garrett Kelley	<i>Phase Field modeling in Titanium Material Processing by FSW and EBM</i>	TA/RA	Passed Qual Winter 2020
Sai Krovvidi	<i>Experimental and Numerical Modeling of Percussive Riveting Process</i>	RA	Candidacy Spring 19
Sean Ghods (Co-Advisor MS&E)	Electron Beam Additive Manufacturing of Ti6Al4V: The Importance of Powder Reuse and Inter-Build Variability on Damage Tolerance	RA	Candidacy Winter 2019
<b>PhD Graduates</b>			
Bryan J Ferguson	Modeling and Experimental Analysis of Superplastic Forming and Diffusion Bonding	Research Scientist Lawrence Livermore Laboratory, CA	PhD 2020



Stefan P. Hovik	<i>Low Velocity Impact Damage Modeling and Simulation of Titanium-Graphite Composite Laminate</i>	Principle Engineer, The Boeing Company, Seattle	2019
Nishita Anandan	<i>Characterization of Tribological Properties of Magnesium Metal Matrix Composites</i>	Post Doctoral Fellow, Dept ME, UW	2019
Harinder Obroei	<i>Machined Surface Integrity Effects on the Strength Properties, Damage Evolution and Fatigue Strength of Composite Laminates</i>	<b>Technical Fellow</b> The Boeing Company, Seattle	2019
Rishi Pahuja	<i>Mechanics of Abrasive Waterjet Cutting, De-painting and Surface preparation of Aerospace Materials</i>	Research scientist, Department of Physics, UW	2018
Kapil D. Gangwar	<i>Metallurgical and Mechanical Characterization of High Temperature Titanium Alloys Joined by Friction Stir Welding</i>	Assistant Professor, Oregon Institute Of Technology, OR	2017
Renuka Prabhakaran	<i>Modeling and analysis of Porous Building Material Created from Contaminated Waste Glass</i>	Asst Professor, Everett Community College, WA	2017
Todd Morton	<i>Solid State Joining of Dissimilar Titanium Alloys</i>	<i>Research Engineer</i> , Blue Origin, 21218 76th Ave S, Kent, WA 98032	2015
Neha Kulakarni	<i>Study of the Mechanical Performance of Similar and Dissimilar Titanium Alloy Joints formed By Diffusion bonding and Friction Stir Welding Processes</i>	Process Engineer, Honeywell Aerospace, Redmond	2015
Jeff Miller	<i>Investigation of Machinability and Dust Emissions in Edge Trimming of Laminated Carbon Fiber Composites</i>	<b>Senior Technical Fellow</b> , The Boeing Company, Seattle	2014
Eshetu Eneyew	<i>Experimental Study of Damage and Defect Detection during Drilling of CFRP Composites</i>	Manufacturing Engineer, The Boeing Company, Everett, WA	2014
Alex O'Connor	<i>Machinability of Aerospace Tooling Materials For Composite Repair</i>	Manufacturing Engineer, Tesla Motors, San Francisco, CA	2013
Julio Davis	<i>Analytical Modeling of Residual Stresses Induced in Near Net Shape Manufacturing</i>	Current: Principle Engineer, The Boeing Company, Seattle	2012
Heechang Bae	<i>Experimental and Numerical</i>	Assistant	2011

	<i>Investigation of Shot Peening Effect on Fatigue Performance in Aerospace Materials</i>	Professor, Mech Eng Department, Eastern Washington University, WA	
Alex Chillman	<i>Ultra High Pressure Waterjet Applications in Manufacturing</i>	<i>Director Product Development, Fluke Manufacturing, Seattle WA</i>	2010
Timothy M. Briggs	<i>Rate Dependent &amp; Low Velocity Impact of Composites</i>	Research Scientist Sandia National Laboratories, CA	2010
Paul D. Edwards	<i>Friction Stir Welding of Titanium Alloy Ti-6Al-4V, Sheet and Plate for Aerospace Structures</i>	<i>Director, Tesla Motors, CA</i>	2010
Daniel G. Sanders	<i>Development of Superplastic Forming Process to Friction Stir welded Titanium alloys</i>	<i>Senior Technical Fellow, The Boeing Company, Seattle</i>	2008
Suhasini Gururaja	<i>Analytical Studies Addressing the Issues in Machining of Fiber Reinforced Composites</i>	Associate Professor, Department of Aerospace Engineering, Indian Institute of Science, Bangalore, India,	2008
Franna Pitt	<i>Effect of Simulated Superplastic Forming Processing on the Mechanical Properties of Three Titanium Alloys</i>	<i>Associate Technical Fellow (retired), The Boeing Company, Seattle</i>	2005
William P. Pedersen	<i>Machinability of Functionally Gradient Al/SiC Metal Matrix Composite</i>	Associate Professor, University of Minnesota, Duluth	2003
Dave Wook Kim	<i>Machining And Drilling Of Hybrid Composites</i>	Associate Professor, Washington State University, Vancouver, WA	2002
Sawalee Kunaporn (late)	<i>An Experimental and Numerical Analysis of Waterjet Peening Of 7075-T6 Aluminum Alloy</i>	Associate Professor, Walailuk University, Thailand	2002
Patrick Stickler	<i>Experimental and Numerical Investigation of Transversely</i>	<i>Technical Fellow, The Boeing</i>	2001

	<i>Stitched T-joint</i>	Company, Seattle	
Zihong Guo	<i>Experimental and Numerical Investigation of Machining Damage in Structural Ceramics</i>	Director of Alliance Management at Intellectual Ventures, Seattle, WA	1998
Farzad Zafari	<i>Experimental and Numerical Investigation of Elastic-Plastic Mixed Mode Fracture in High Strength Aluminum Alloys</i>	Technical Fellow Damage Tolerance of Composites, The Boeing Company, Seattle	1997
Dwayne D. Arola	<i>Abrasive Waterjet Manufacturing Effects on the Structural Integrity of Fiber-Reinforced Plastics</i>	Professor, University of Maryland, Baltimore County	1996
Chien W. Wern	<i>Fiber and Fiber-Matrix Interface Effects on the Orthogonal Cutting of Fiber Reinforced Plastics</i>	Associate Professor, Portland State University, OR	1995
Srinivasa P. Raju	<i>Theoretical and Experimental Investigations into the Material Removal Process During Abrasive Waterjet Cutting</i>	Projects Manager, Bash	1994
Hon Yeh,	<i>Dynamic Photoelastic Study of High Pressure Waterjet Penetration Process in Brittle Polymer(not submitted)</i>	CEO and Entrepreneur Computer systems, Thaiwan	1993
D.H. Wang	<i>Machining Characteristics of Graphite/Epoxy Composites</i>	Professor, Kyungnam University, Korea	1991
<b>DISCONTNUED/ON LEAVE OF ABSENCE</b>			
Shanti N. Ravali	<i>Machining of Composites</i>	TA	Quit 2017
Melissa Johnson	<i>Experimental and Numerical Study of Residual stress in Machining and Surface Integrity of Titanium based Alloys</i>	Current: The Boeing Company, Seattle (Part Time)	(On leave)
Girum Gebremariam	<i>Numerical Modeling and Simulation of Delamination Free Hole Production in Composite Materials</i>	The Boeing Company, Seattle (lost job)	Qualifying Exam Passed, Spring 18(on-leave)
David Houser	<i>Multiaxial Fatigue life prediction in Tubular Weld Steel Structures</i>	Current: Genie (Part Time)	Passed Qual Fall 2015 (On-leave)

## **Chaired Masters Degrees**

### **Thesis Students**

#### **MS Thesis 2020**

Eric Bol

**Thesis Title:** Manufacturing Repeatability Study of a Titanium Electron Beam Melting Additively Manufactured Topology Optimized Tapered Box Beam Structure  
**Current:** Admitted to PhD Program in ME Department

Alexander Montelione MS&E (Co-Adviser)

**Thesis Title:** Powder Reuse in Electron Beam Melting Additive Manufacturing of Ti6Al4V: Particle Microstructure, Oxygen Content and Mechanical Properties  
**Current:** PhD student MS&E Department

#### **MS Thesis 2019**

Mark Hedreen

**Thesis Title:** Simulation of Additive Manufacturing Process Physics and Properties in Powder Bed Electron-Beam Melting of Ti-6Al-4V  
**Current:** Startup Company in Electric Vehicles

Reid Schur, MS&E (Co-Adviser)

**Thesis Title:** Effects of Powder Reuse on The Mechanical Properties of Electron Beam Additively Manufactured Ti-6Al-4V  
**Current:** PhD student MS&E Department

#### **MS Thesis 2018**

Eric Schultz, MS&E (Co-Adviser)

**Thesis Title:** Effect of Recycling Powder and Geometry on Microstructure of Ti6Al4V Using Electron Beam Additive Manufacturing

#### **MS Thesis 2017**

Shanti R. Namburi

Graduate Student Researcher, MSTL

**Thesis Title:** Characterization of Cutting Forces in Milling of Unidirectional and Random Fiber Composites  
**Current:** PhD Student

#### **MS Thesis 2016**

Jeremy Ryatt

**Thesis Title:** Prediction Of The Onset Of Damage In Uni-Directional Laminates Under Transverse Impact Loading Using Finite Element Analysis  
**Current:** The Boeing Company (MSTL PhD student)

### **MS Thesis 2015**

Rishi Pahuja

Thesis Title: Abrasive Waterjet contour cutting of thick Titanium/Graphite Laminates

Current: Graduate Student Researcher, MSTL PhD student

V.V.H Aditya

Thesis Title: Ultrasonic Inspection of Joined Aerospace Materials

Current: Mechanical Engineer ,India

Anirudh Krishnan Iyer

Thesis Title: Characterization of Composite Dust Generated During Milling of Uni-Directional and Random Fiber Composites

Current: Graduate Internship, Mechanical Engineer Genie

### **MS Thesis 2014**

Arrian Forbush

Thesis Title: Mechanical and Fatigue Testing and Evaluation of Rapid Prototyped Aerospace Titanium Component by Electron Beam Melting Process

Current: Arcca Inc, Philadelphia

### **MS Thesis 2013**

Mark S. Van Sickle

Thesis Title: Assessment of Field Surface Treatments for Prolonging the Life of Steel Welded Joints Subjected to Fatigue Loading

Current: Manager, The Paccar, Mount Vernon, WA

### **MS Thesis 2012**

Renuka Prabhakaran

Thesis Title: Compressive and Flexural Properties of Porous Building Material Created from Contaminated Waste Glass

Current: PhD Student

Bryan Ross

Thesis Title: Experimental and Numerical Study of Fatigue Life in Aluminum 6061-T6 Under Stochastic Loading

Current: Paccar, WA

### **MS Thesis 2011**

Amarjit Singh

Thesis Title: Numerical Evaluation of Non-Singular T-Stresses for Fracture Mechanics Test Specimen Geometries and their Influence on Plastic Zone Shape and Size

Current: Boeing Company

### **MS Thesis 2010**

Eshetu Eneyew

Thesis Title: Effect of Loading Rate on Carbon Fiber Reinforced Plastic (CFRP) Properties

Brayan Mandou

Thesis Title: FEM Analysis of Effects of Manufacturing Defects in Composites

### **MS Thesis 2009**

Alexander P. O'Connor

Graduate Student, UW

Thesis Title: Feasibility Study of Friction Stir Tooling for Joining a Polymer

Julio Davis

Thesis Title: Analytical Modeling of Shot Peening Coverage and Predictions of Manually Peened Surfaces

Vara Isvilanonda

Thesis Title: Comparative Study of Abrasive Waterjet Machining and Electrical Discharge Machining of Hybrid Titanium Composite Laminates.

Andrew Mark Cantrell

Thesis Title: Fracture Properties of Friction-Stir Welded Titanium Alloy, Ti-6Al-4V

Christopher Fay

The Boeing Company

Thesis Title: Systems Engineering Approach to Large-Scale Implementation of Laser Projection Technology-A Case Study

### **MS Thesis 2008**

Inkwon Hwang

Dewook Corp., Korea

Thesis Title: A Study of Damage Characteristics in AWJ Cutting and Drilling of Composites

Matthew Beck

US Coast Guard, Washington DC

Thesis Title: Investigation of Wear behavior in Laser clad Low Carbon Steel Using Inconel 625 Nano Powder

Trent Greenwell

United States Air Force Academy, CO

Thesis Title: Full-Field Strain Behavior of Friction Stir-Welded Titanium Alloy

### **MS Thesis 2007**

Jeremy M. Stewart

The Boeing Company, Seattle. Currently at MIT Leadership Program

Thesis Title: Study of the Causes of Interface Burr Height in Carbon Fiber Reinforced Plastic and

Titanium Stacks.

Juan V. Esteve Balducci

Microsoft Corporation, Redmond WA, <http://www.microsoft.com>

Thesis Title: A proposal for a Search Approach to Optimizing Mechanical Assemblies

Nda-Agyima Addae-Mensah

Graduate Student, Purdue University

Thesis Title: Characterization of Surface Morphology and Roughness Generated by Friction Stir Welding (FSW) Process in Titanium Alloy.

### **MS Thesis 2006**

Temitope R. Adekola

Schlumberger, <http://www.slb.com/>

Thesis Title: Characterization of the Effects of different Peening Techniques on the Fatigue Crack Propagation in Aluminum Alloy 7075-T6.

Joel Hoksbergen

Team Corporation, <http://www.teamcorporation.com>

Thesis Title: A Comparison Study on the Vibration Characteristics of Magnesium Plate versus Carbon Fiber Reinforced Plastic Plate.

Timothy Briggs

Graduate Student, University of Washington

Thesis Title: Low Velocity Impact Response Characterization of Glass Fiber Reinforced Plastics (GFRP).

Alex Chillman

Flow International Corporation, <http://www.flowcorp.com>

Graduate Student, University of Washington

Thesis Title: Surface Preparation and Textures by Ultra High Pressure Waterjet Cleaning Processes.

Paul Edwards

The Boeing Company, [www.boeing.com](http://www.boeing.com)

Graduate Student, University of Washington

Thesis Title: Experimental and Numerical Characterization of Friction Stir Welded and Superplastically Formed Friction Stir Welded Titanium.

Eric Winter

The Boeing Company, [www.boeing.com](http://www.boeing.com)

Thesis Title: A New Approach to Focusing Virtual Manufacturing Efforts in a Product Development Environment.

### **MS Thesis 2005**

Edward J. Klock-McCook

Westing House

Thesis Title: Characterization of Friction Stir Welded and Superplastic Formed Titanium Joints.

Sandeep D Abhyankar

Microsoft Corporation, <http://www.microsoft.com>

Thesis Title: Modeling and Simulation of Tensile behavior of Titanium Alloy under Simulated SPF Conditions.

Curtis D.Doyle

General Dynamics, Redmond WA

Thesis Title: Experimental studies on the Propellant Burn-Rate Testing Techniques.

Jennifer L. McCormick

General Dynamics, Redmond WA

Thesis Title: Product Development Methodology for Use During Development of Specialized Defense Products.

Brian Carver

Amazon.com, Seattle WA

Thesis Title: Operational Forecasting Models, Case Study: Amazon.Com.

Scott E. Bernhardt

Takata Corporation, Moses Lake WA

Thesis Title: Impact Response Characterization of a Hybrid Titanium Composite Laminate.

#### **MS Thesis 2004**

Jacob P. Civitts

Paccar, Mount Vernon WA

Thesis Title: Lean Manufacturing Implementation: A Case Study of the Omax Corporation.

Christopher T. Hughes

Naval Ship Yard, Bremerton WA

Thesis title: Investigation of Surface modification and Laser Cladding of Low carbon Steel using Inconel 625 Nano-powder.

Ian M.Conner

The Boeing Company, Seattle WA

Thesis title: Development of a Windows-Based Program for Remote and Unattended Operation of an Abrasive Waterjet System.

M.Spaulding

Jet Propulsion Laboratory, Pasadena CA

Thesis title: - Electrical Discharge Machining of Hybrid Titanium Composite (HTCL) Material.

Edward .M. West

Western Washington University, Bellingham WA

Thesis title: Development of a Two-Speed Automated Manual Transaxle for a Parallel Hybrid Electric Vehicle.



Y.Seo

Korea

Thesis title: Fatigue Crack Growth Rate in Super Plastic Formed Titanium Alloys.

T. Munson

Aerospace Integrator, WA

Thesis title: The Effect of Shot Peening on Fatigue Crack Propagation in 7075-T7351 Aluminum Alloy, SENB Specimens.

### **MS Thesis 2003**

J.Bennett

The Boeing Company, Seattle WA

Thesis title: Test Analysis and Reduction of Brake System Air Leaks in Class 8 Trucks.

P.Posinasetti

Infosys, Hyderabad, India

Thesis title: Modeling and analysis of Abrasive Waterjet Drilling.

H.Wu

China

Thesis title: A Comprehensive Review of Application of Competitive Technical Intelligence in New Product Development Lifecycle.

J. Arnold

The Boeing Company, Seattle WA

Thesis title: Evaluation of Assembly Simulation as a Process Planning Development Aid.

### **MS Thesis 2002**

Samuel V. Alworth

Microvision, Seattle WA

Thesis title: Analysis of Market Segments, Customer Requirements and Technical Specification for a Processor Based, Home Ultrasound Medical Imaging Device.

Arlene R. Martin

Microsoft, Reno,NV

Thesis title: Microsoft Xbox Program Equipment Allocation: A Case Study in using Six Sigma Methodology.

### **MS Thesis 2001**

Scott Krajca

The Boeing Company, Seattle WA

Thesis title: Abrasive Waterjet Drilling of Composites.

X.T. Doan

Structural Integrity Technology, WA  
Thesis title: Drilling Study of Thermoplastic Composite.

Adam Terry  
Intel, Portland OR  
Thesis title: A method for determining Tool Group flexibility with Uncertain Machine Variability: Application in a Semiconductor Manufacturing Process.

Bekki S. Leu  
Senior Analyst, Solectron, CA  
Thesis title: Finished goods distribution strategy : a case study of Solectron.

L.Kaegabien  
Amazon.com, Seattle WA  
Thesis title: Models for Optimization of the Integration of Parts: Application in the Aerospace Industry.

Larry Parafitt  
Paccar, WA  
Thesis title: Tension-Tension Fatigue Behavior of Heavy Truck Industry Utilized Composite Materials.

Matt Lau  
The Boeing Company, Seattle WA  
Thesis title: A Strategy on Bill of Material for High Volume High Variability Product Release.

### **MS Thesis 2000**

Craig Hall  
Manufacturing Engineer, The Boeing Company, <http://www.boeing.com>  
Thesis title: Six Sigma Application in 777 Assembly Process

Sean Weathers  
Manufacturing Engineer, Ford Motor Company, Detroit  
Thesis title: Surface Roughness Model to Predict the Flexural Strength of Ceramics and Composites.

Indresh P. Datar  
Design Engineer, The Boeing Company, <http://www.boeing.com>  
Thesis title: Influence of Manufacturing Processes on Mechanical Properties of Advanced Polymer Composites

Troy C. Harris  
Intel Corporation  
Thesis title: A Comparative Simulation of Advanced Re-entrant Scheduling Policies in a Semiconductor Application.

Long K. Nguyen  
Delloitte, CA

Thesis title: A decision support model for quality implementation.

Touya A. Harris

Leaders Program, Ford Motor Company

Thesis title: Standard Interior Configuration: A Process for developing A standard Selection Interior and reducing Engineering design time.

Welly Sugiarto

Microsoft, Redmond WA

Thesis title: A framework for developing and managing network security system.

John R. Mason

R&D, Microsoft Corporation

Thesis title: Software Packaging Process Improvements: A Case Study in the Application of Modern Quality Concepts at Microsoft.

William E. Pederson

Thesis title: Preliminary Study on the Oblique Facing of Magnesium Metal Matrix Composite.

Thomas D. Hall

Manufacturing Engineer, The Boeing Company, <http://www.boeing.com>

Thesis title: Optimization of the Manufacturing Engineer's Organization Role.

Franna Pitt

Associate Technical Fellow, The Boeing Company, <http://www.boeing.com>

Thesis title: Effect of Alloy Composition and Superplastic Forming Conditions on Oxygen Absorption in Titanium

### **MS Thesis 1999**

Adam Biggs

Manufacturing Engineer, The Boeing Company, <http://www.boeing.com>

Thesis title: Analysis of Factors Affecting Almen Strip Arc Height After Shot Peening.

Nicole McDevitte

Process Engineer, The Boeing Company, <http://www.boeing.com>

Thesis title: Effects of Processing Methods on the Flexural Properties of High Temperature Composites.

Christopher Dawson

The Boeing Company, <http://www.boeing.com>

Thesis title: Fatigue Crack Propagation in Bolt Materials.

Sharon M. Hayes

Instructor, Highline Community College

Thesis title: Machinability of Titanium Composite.

Terry H. Branson

Thesis title: Drilling of Graphite/Bismaleimide and Titanium stacks.

Garry M. Hieke  
Senior Analyst, Price Waterhouse Cooper, Seattle, WA  
Thesis title: Modeling of Alternatives for Mixed Model Assembly in the Aerospace Industry.

Kirk R. Neumann  
Senior Manager, Greatergood.com  
Thesis title: Developing a Business Strategy and Cost Model for Evaluating a New Telecom Laser Design.

Elizabeth W. Kent  
The Boeing Company, <http://www.boeing.com>  
Thesis title: Reducing Cycle Time in an Assembly and Test Area Using Simulation Modeling.

### **MS Thesis 1998**

Martin Trimble  
IBM, San Jose, CA  
Thesis title: Modeling and Simulation of Waterjet Cutting Forces.

Kunaporn Sawalee  
Institute of Engineering and Resources Technology Walailuk, Thailand  
Expired in August 2005  
Thesis title: Waterjet Peening of 7075-T6 Aluminum Alloy.

Timothy E. Hansen  
Manager, Environmental Consultancy, Alaska  
Thesis title: Resource Allocation in the Communication Industry.

Christopher D. Hance  
Ernst & Young, Seattle, WA  
Thesis title: Production Policies for Multiple Products and Multiple Product Families.

Robert V. Dwyer  
Manager, Harris Group Industries, FL  
Thesis title: Process Optimization in Steel Platform Fabrication and Painting.

Geoffrey J. Bissell  
Manager, Paccar, TX  
Thesis title: Controlling Supplier Variability – An analysis of Frame Mismatches in the 41 Section of an Aerospace Aircraft.

John Campbell  
Manager, InfoSpace.com, Seattle, WA  
Thesis title: Process Defect Analysis and Re-work Reduction in Final Assembly of Aircraft Structures.

Christopher Brem  
Product Manager, Inter Corporation, OR

Thesis title: Titanium Castings in Primary Aircraft Structures- Status Quo and Implementation Proposal.

**MS Thesis 1997**

S. Kao  
Manager, Manufacturing Company, Taiwan  
Thesis title: Drilling of Aluminum-Based Metal Matrix Composites.

W. McClenahan  
Manager, The Boeing Company, <http://www.boeing.com>  
Thesis title: Application of Statistical Analysis & Parameter Design to Structural Assembly Process.

**MS Thesis 1995**

Peter Young  
Mantech, San Francisco, CA  
Thesis title: Experimental Investigation on Drilling of Graphite/Epoxy.

**MS Thesis 1994**

Michael Allen  
M+IND, Seattle, WA  
Thesis title: Fractographic Investigation of Fracture and Fatigue in Aluminum Alloys.

S. Miguel  
Kyosara Corporation, Vancouver, WA  
Thesis title: Ultrasonic Machining of Si<sub>3</sub>N<sub>4</sub>.

Ben Hu  
The Boeing Company, <http://www.boeing.com>  
Thesis title: Erosion of Silicon Nitride Material by Abrasive Air Jets.

Cathylyn Durand  
Data I/O, Redmond, WA  
Thesis title: Machining silicon nitride with a Nd:YAG laser.

**MS Thesis 1993**

Kevin Colligan  
Boeing Defense and Space, Seattle, WA  
Thesis title: Machined Edge Effects on The Compressive Strength of Graphite/Epoxy.

Frank W. Ng  
Indonesia  
Thesis title: Ultrasonic Drilling of Ceramics.

Lt. Chris Carlsson

Wright Patterson Air Force Base, Dayton, OH

Thesis title: Experimental and Numerical Investigation of Mixed-Mode Fatigue.

Shon Harker

Research Engineer, GE, Schenectady, NY

Thesis title: Experimental Modeling of Abrasive Jet Drilling and Cutting of Glass.

### **MS Thesis 1992**

Greg C. Paul

Veteran's Administration, Chicago, IL

Thesis title: Effect of Electrical Discharge Machining on Surface Integrity and Fatigue Properties of 15 Vol% SiCp/A356 Metal Matrix Composite.

### **MS Thesis 1991**

Karen L. Sakai

The Boeing Company, <http://www.boeing.com>

Thesis title: Ultrasonic Machining Effects on the Surface Integrity of Advanced Ceramics.

Dwayne Arola

Associate Professor, University of Maryland, Baltimore County

<http://www.umbc.edu/engineering/me/lamp/>

Thesis title: Surface and Subsurface Topography of an Abrasive Waterjet Machined Graphite/Epoxy

C.W. Wern

Associate Professor, Portland State University, OR <http://www.me.pdx.edu/~wernc/>

Thesis title: Machined Surface Characterization of Graphite/Epoxy.

Jamil Zarrah

Design Engineer, Royal Buildings, Morocco

Thesis title: Plane Stress Fracture Toughness Evaluation of Aluminum Alloys.

Jinse Park

Product Engineer, International Paper, Oregon

Thesis title: A Study on the Effect of PCD Tool Geometry on the Machining of Graphite/Epoxy Composite Material.

John Diagnault

Manufacturing Engineer, Immunex Corporation, Seattle, WA

Thesis title: EDM Process Effects on Surface Finish and Strength of TiB<sub>2</sub>/SiC.

Kwok-Pew Wong

Manufacturing Engineer, Hydrojet Company, Singapore

Thesis title: Photoelastic Investigation of Abrasive Waterjet Machining.

### **MS Thesis 1990**

Gene C. Anderson  
Consultant, Advanced Technologies, Everett, WA  
Thesis title: Fracture Toughness Testing of Aluminum-Lithium Alloys under Predominantly Plane Stress Conditions.

Eric Rogers  
The Boeing Company, <http://www.boeing.com>  
Thesis title: An Experimental Study on the Performance of PCD and Carbide Tooling in the Interrupted Cutting of Graphite-Epoxy.

Faridnia Mohammed-Reza  
Design Engineer, Control Components Inc., CA  
Thesis title: Preliminary Study on the performance of Polycrystalline Diamond (PCD) Cutters in Machining of Graphite/Epoxy.

D. H. Wang (1993)  
Professor, Kyungnam University, Korea  
<http://mecha.kyungnam.ac.kr/prof/dhwang/>  
Thesis title: Simulation of Cutting Forces in End Milling.

### **MS Thesis 1988**

Gary Hamatani  
The Boeing Company, <http://www.boeing.com>  
Thesis title: Machinability of High Temperature Composites.

Allen Gilliams  
Industrial Products, San Francisco, CA  
Thesis title: Economics of Waterjet Cutting.  
(Withdrawn from Univ, Dec 1988)

Richard Jefferson  
Lecturer, Community College, Bellingham, WA  
Thesis title: Small Fatigue Crack Propagation Under Mixed-Mode Loading.  
(First Native American to get MS in the history of the Mechanical Engineering Department)

Mark C. Rubbert  
Sales Engineer, GE, San Francisco, CA  
Thesis title: Weldability of Aluminum-Lithium Alloys.

Jiou Zeng  
Research Engineer, Omax Corporation, Seattle, WA  
Thesis title: Erosion of Ductile Material Under Angular Impact of Waterjets.

Hung-Wah See  
Product Supervisor, HP, Singapore  
Thesis title: Electrical Discharge Machining of Ceramic Composites.

Farzad Zafari

Principal Engineer, Damage Tolerance, The Boeing Company, <http://www.boeing.com>  
Thesis title: Long and Short Fatigue Crack Growth Behavior in Aluminum-Lithium Sheet Material.

Kenneth Wing-Ning Lu  
Software Engineer, Manufg Software, CA  
Thesis title: PC-Based CAD/CAM Integration for Computer Numerical Control Machine Tools.

John H. Koh  
Consulting Engineer, Rotodyne, Seattle, WA  
Thesis title: Investigation of Acoustic Emission During Oblique Metal Cutting.

### **MS Thesis 1987**

Ram Hatangadi  
Siemens, Seattle  
Thesis title: Modeling of Material Removal Using Abrasive Waterjet Machining.

### Current Students:

#### **Thesis**

Ms. Melody Mojib Thesis on Powder bed AM Process  
Mr. Eric VanWerven, Sensor Development in-situ monitoring of defects while drilling  
Mr. Peter Address, Effect of Reuse Ti64 powder in SEBM: Fatigue crack propagation

### **Chaired MSME/MSE (non-thesis/project) Graduates:**

Mr. Conall Wisdom (Winter 2020, MS&E)  
Mr. Micah Wilson (Fall 2019), Design Engineer, Wagstaff, Inc. Spokane WA  
Mr. Ruchit Patel (Summer 2019), PhD student at Univ of Michigan  
Mr. Mr. James Finlay, Dept of A&A (2019 Spring), PhD student at Univ of Michigan  
Mr. Alex Davies (Summer 2019), The Boeing Commercial Airplane Co., Seattle, WA  
Mr. Andrew Wysocki (2019 Sp, The Boeing Commercial Airplane Co., Seattle, WA  
Mr. Colin Krieger, (2019 W)  
Mr. Trent Hanson, (2019 Sp), Structural Engineer, Sierra Nevada Corporation, NV  
Mr. Kiet Garrett, (2017 Sp), Janecki Industries, WA  
Mr. Noel Borden (2016 Sp), The Boeing Commercial Airplane Co., Seattle, WA  
Mr. Jorge Arriaga, (2016 Sp), The Boeing Commercial Airplane Co., Seattle, WA  
Ms. Genao Butler (2016Sp), The Boeing Commercial Airplane Co., Seattle, WA  
Mr. Arjit S Heer, (2016 W), Associate Structures Systems Operations Engineer, Virgin Galactic in Mojave, California  
Mr. Qi Zhang (2016 W), Returned to China  
Mr. James Thompson, (2015 Sp), Air Force



Mr. Walter Peterson, (2015 W), Mechanical Engineer at Valve, Bellevue WA  
Mr. David Houser, (2015 W), Genie Industries, WA  
Mr. Shane A. Possinger (2014 F), The Boeing Commercial Airplane Co., Seattle, WA  
Ms. Samantha J. Williams (2014 F), The Boeing Commercial Airplane Co., Seattle, WA  
Mr. Chad C. Beck (2014 F), Installation Energy Manager, 718 Civil Engineering Squadron,  
United States Air Force Base, 7-8-13 Oyama, Ginowan-City, Okinawa, Japan 901-2223  
Mr. Eric K. Mueller (2014 Sp), The Boeing Commercial Airplane Co., Seattle, WA  
Mr. John P Dally (2014 W), Mechanical Design Engineer, Philips, Seattle WA  
Mr. Ben Grogan (2013 F), The Boeing Commercial Airplane Co., Seattle, WA  
Mr. Hardik Dalal (2013 F), The Boeing Commercial Airplane Co., Seattle, WA  
Mr. Brian Vo (2013 Sp), The Boeing Commercial Airplane Co., Seattle, WA  
Mr. Robert McCarville (2013 W), The Boeing Commercial Airplane Co., Seattle, WA  
Mr. Marc J. Petersen (2012 F), The Boeing Commercial Airplane Co., Seattle, WA  
Mr. William N Scheurich (2012 S),  
Ms. Nicole Vickers (2012 S), The Boeing Commercial Airplane Co., Seattle, WA  
Mr. Daniel Scott Davidson (2012 Sp), SonoSite, Bothell, WA  
Mr. Eric L. Paul (2012 Sp), The Boeing Commercial Airplane Co., Seattle, WA  
Mr. Sean Dittrich (2012 Sp), The Boeing Commercial Airplane Co., Seattle, WA  
Ms. Sarah E. Nichols (2012 W),  
Mr. Timothy R. Johnson (2012 W), The Boeing Commercial Airplane Co., Seattle, WA  
Ms. Lisa Rosenthal (2012 W), The Boeing Commercial Airplane Co., Seattle, WA  
Mr. Sukhwant S. Sohi (2012 W), The Boeing Commercial Airplane Co., Seattle, WA  
Mr. Jonathan Fender (2011 F), The Boeing Commercial Airplane Co., Seattle, WA  
Ms. Nadia M. Gomez (2011 Su), The Boeing Commercial Airplane Co., Seattle, WA  
Mr. Nathan Andrew Fabro (2011 S), The Boeing Commercial Airplane Co., Seattle, WA  
Mr. Brian R. Blakeman (2011 S), The Boeing Commercial Airplane Co., Seattle, WA  
Mr. Nicholas J. Foti (2011 S), The Boeing Commercial Airplane Co., Seattle, WA  
Mr. Tony T Vo (2010), The Boeing Commercial Airplane Co., Seattle, WA  
Ms. Danielle N Vardaro (2010), The Boeing Commercial Airplane Co., Seattle, WA  
Mr. Soi Lan Lu (2009), The Boeing Commercial Airplane Co., Seattle, WA  
Mr. Chuck Chan (2009), The Boeing Commercial Airplane Co., Seattle, WA  
Ms. Kelly I. O'Boyle (2009), The Boeing Commercial Airplane Co., Seattle, WA  
Ms. Danielle Hood (2009), The Boeing Commercial Airplane Co., Seattle, WA  
Ms. Nancy E. Adcock (2009), The Boeing Commercial Airplane Co., Seattle, WA

Mr. Tesfaye.T.Ejigu (2009), The Boeing Commercial Airplane Co.,Seattle, WA  
Mr. Douglas Backhus (2009), The Boeing Commercial Airplane Co.,Seattle, WA  
Mr. Josh Little (2009), The Boeing Commercial Airplane Co.,Seattle, WA  
Mr. Sudhindra Singh (2008), GE, India  
Mr. Daniel Fowler(2008), Northwest Composites  
Mr. D. Alcazar(2008), The Boeing Commercial Airplane Co.,Seattle, WA  
Ms. Maria G Berschauer(2008), Spokane, WA  
Mr. Bryson Sprangler(2008),US Coast Guard, Washington D.C  
Mr. Steve Schwark(2007),Boeing Commercial Airplane Co.,Seattle, WA  
Mr. Stephen McLaughlin (2006), Adams Aircraft, Denver, Colorado  
Ms. Jessica A Quam (2005),The Boeing Commercial Airplane Co.,Seattle, WA  
Mr. Frank Ashert(2005), The Boeing Commercial Airplane Co.,Seattle, WA  
Mr. Terry Pitch (2005), National Instruments  
Mr. Alex Transwosk(2004),The Boeing Commercial Airplane Co.,Seattle, WA  
Mr. Jay Patel(2004),The Boeing Commercial Airplane Co.,Seattle, WA  
Ms. Tammy Pessig(2004),The Boeing Commercial Airplane Co.,Seattle, WA  
Mr. C.L.Faar(2003) Wood Manufacturing  
Mr. S.Y.Kuo (2003) Bearing Manufacturing, Taiwan  
Mr. Y.M. Chen (2003) Taiwan  
Mr. Ernesto Aldaba (2001 Sp), The Boeing Commercial Airplane Co.,Seattle, WA  
Mr. Kyle Louangrath (2001 Sp), The Boeing Commercial Airplane Co.,Seattle, WA  
Mr. S. Ralhan (2001), The Boeing Commercial Airplane Co.,Seattle, WA  
Ms. L. Ginter(2002), The Boeing Commercial Airplane Co.,Seattle, WA  
Mr. Adrian Enriquez (2000 S), The Boeing Commercial Airplane Co.,Seattle, WA  
Mr. Joshua Scott (2000 Sp), The Boeing Commercial Airplane Co.,Seattle, WA  
Mr. Bruce Weinzierl (2000 Sp), The Boeing Commercial Airplane Co.,Seattle, WA  
Mr. M. Foster(2000),The Boeing Commercial Airplane Co.,Seattle, WA  
Mr. S.Chon (2000),The Boeing Commercial Airplane Co.,Seattle, WA  
Mr. Andrew Clegg (2000 W), The Boeing Commercial Airplane Co.,Seattle, WA  
Mr. Michael Yamamoto (2000 W), The Boeing Commercial Airplane Co.,Seattle, WA  
Mr. Kenneth C. Young (2000 W), The Boeing Commercial Airplane Co.,Seattle, WA  
Ms. Heather Moeller (2000 F), The Boeing Commercial Airplane Co.,Seattle, WA  
Mr. M.Graves (1999), The Boeing Commercial Airplane Co.,Seattle, WA  
Mr. J. Philips(1999),The Boeing Commercial Airplane Co.,Seattle, WA

Mr. G. Miller(1999), The Boeing Commercial Airplane Co.,Seattle, WA  
Ms. Cristen Baca (1999 F), The Boeing Commercial Airplane Co.,Seattle, WA  
Mr. Jeffery Wirrick (1999 F), The Boeing Commercial Airplane Co.,Seattle, WA  
Ms. Jill Ritchie (1999 S ), The Boeing Commercial Airplane Co.,Seattle, WA  
Mr. Manhan Choi (1999Su), The Boeing Commercial Airplane Co.,Seattle, WA  
Mr. A. Patch (1998),The Boeing Commercial Airplane Co.,Seattle, WA  
Mr. D. Anwar (1998), Boston Scientific , Seattle, WA  
Mr. M. Graves (1998),The Boeing Commercial Airplane Co.,Seattle, WA  
Mr. P. Stickler (1998), The Boeing Commercial Airplane Co.,Seattle, WA  
Mr. M. Danish (1998), Started his own Software co., Kent, WA  
Mr. T. Reed (1997), The Boeing Commercial Airplane Co.,Seattle, WA  
Mr. J. Kim (1996), The Boeing Commercial Airplane Co.,Seattle, WA  
Mr. H. Sharma (1995), The Boeing Commercial Airplane Co.,Seattle, WA  
â€”Mr. F. Farahnakain (1995), Air Canada  
Mr. J. Hennings (1995), The Boeing Commercial Airplane Co.,Seattle, WA  
Mr. C. Randall(1995), The Boeing Commercial Airplane Co.,Seattle, WA  
Mr. S. Michael, T(1995), The Boeing Commercial Airplane Co.,Seattle, WA  
Mr. D. Sandquist(1994), The Boeing Commercial Airplane Co.,Seattle, WA  
Mr. C. Klemechick(1993),The Boeing Commercial Airplane Co.,Seattle, WA  
Mr. R. Marshall(1992), The Boeing Commercial Airplane Co.,Seattle, WA  
Mr. M. Yuen (1992), The Boeing Commercial Airplane Co.,Seattle, WA  
Mr. J. Shoji(1991), The Boeing Commercial Airplane Co.,Seattle, WA  
Mr. A. Fixman (1990), The Boeing Commercial Airplane Co.,Seattle, WA  
Mr. Robert DeCarlo (1990), Not available

#### **MBA/MSE Grads**

Mr. Chris Hance  
Mr. Eric Moe  
Mr. Matthew R. Kaegebein  
Mr. Michael Miksis  
Mr. David Harris  
Mr. Bob Jacques

Mr. John Lubishi

Mr. Mansik Min

## **Other significant student supervision**

### MS Thesis Committee

- 1 Hans Boysen (Professor P.G. Reinhall, ME), Dec 1986
- 2 William E. Cox (Professor A.F. Emery, ME), June 1987
- 3 Doung C. Tran (Professor A.S. Kobayashi, ME), Dec 1986
- 4 Kirk Girds (Professor M. Tuttle, ME), June 1988
- 5 Laura Lonn Tuss (Professor Ganter, ME), June 1989
- 6 Richard Saunders (Professor Garbini, ME), Aug 1988
- 7 Richard Gaevart (Professor D. Calkins, ME), Dec 1988
- 8 Marty Dunn (Professor M. Taya, ME), Aug. 1989
- 9 Robin Wong (Professor M. Tuttle, ME), March 1990
- 10 Robert H. Brinnon, Jr. (Professor A.S. Kobayashi, ME), March 1990
- 11 Scott Tomchick (Professor Garbini, ME), June 1990
- 12 David A. Brock (Professor Reinhall, ME), July 1991
- 13 Karl Y. Park (Professor Tuttle, ME), July 1991
- 14 M. Kenji (Professor Kauffman, MSE), July 1989
- 15 M.A. Semeliss, March 1990
- 16 Darrin. Hatcher (Professor Tuttle, ME) June 1991
- 17 Jan Kordel (Professor Tuttle, ME) 1992
- 18 Mike Vanderwel (Professor Kumar, ME) March 1991
- 19 Edward Akucewich (Professor Emery, ME)
- 20 John Weller (Professor Kumar, ME) March 1992
- 21 John Barry (Professor Tuttle, ME) June 1992
- 22 Zhiguang Li (Professor Taya, ME) Dec 1992
- 23 Peter Rupp (Professor Tuttle, ME)
- 24 S. Walker (Professor Kobayashi, ME)
- 25 Richard Koehler (Professor Tuttle, ME)
- 26 Woojin Kim (Professor Taya, ME) June 1993
- 27 Rajeev Sareen (Professor Storch, IE) June 1993
- 28 L.P. Santana (Prof. Kobayashi, ME) 1996
- 29 T.L. Stevens (Prof. Jenkins, ME), 1996
- 30 J.Wood (Prof. Jenkins, ME), June 1998
- 31 Ms.B.Woldmichael (Prof. Kobayashi) June 1998
- 32 M. Sole (Prof. Jenkins, ME), March 1998
- 33 J.H. Jackson (Prof. Kobayashi, ME) March 1998
- 34 M. L. Halverson (Prof. Tuttle, ME), June 1998
- 35 C.Connors (Prof. Malte,ME), June 2000
- 36 Amy Avitabile (Prof. Fabien, ME), Dec 2000
- 37 Long Ngquen, (Professor, R.Starch, IE), August 2000
- 38 Shawn Williams (Professor A. Mescher, ME) August 2000
- 39 Brice Johnson ( Prof. Tuttle, ME), August 2001
- 40 Kristen Rounds (Prof. Joyce, ME) December 2001
- 41 Lafond (Prof Ganter, ME) June 2002

- 42 P.Stegawski (Prof. Kobayashi, ME) August 2004
- 43 T.Khosla (Prof. W. Li), June 2005
- 44 V. Chapman, (Prof Fabien), 2007
- 45 Amy van Velthuyzen (Prof Fabien), 2010
- 46 Tory Shifman (Prof Tuttle,ME), 2011
- 47 Brian Head (Prof Tuttle,ME), 2013
- 48 Michael Arce ( Prof Tuttle ME), W2015
- 49 Taru Singhal (Prof Jinkyu Yang), Sp2015
- 50 Daniel Sassar (Prof Tuttle) Su 2015
- 51 Karen Harbarn (Prof Tuttle) Autumn 2015

PhD Students Advising Committee:

- 1 K. Govindavaju (*Professor M. Ramulu, ME*), June 1987
- 2 Shyh-Pin Kow (Professor B. Adee, ME), March 1987
- 3 James Forte (Professor J. Riley, ME), April 1988
- 4 Kenneth E. Lulay (Professor M. Tuttle, ME) July 1988
- 5 G. Mason (Professor, M. Berg, ME), June 1989
- 6 F. Zafari (*Professor M. Ramulu, ME*) Feb 1989
- 7 M. Dunn (*Professor M. Ramulu, ME*) Dec 1989
- 8 L. Barber (Professor J. Jorgensen, ME) Feb 1989
- 9 A. Pasricha (Professor J. Garbini, ME) June 1990
- 10 D.H. Wang (*Professor M. Ramulu, ME*) June 1990
- 11 M. Dunn (*Professor M. Ramulu, ME*) Feb 1990
- 12 R. DeCarlo (*Professor M. Ramulu, ME*) Withdrawn 1991
- 13 S.P. Raju (*Professor M. Ramulu, ME*) Nov 1991
- 14 H. Yeh (*Professor M. Ramulu, ME*) June 1991
- 15 C.W. Wern (*Professor M. Ramulu, ME*) March 1992
- 16 D. Arola (*Professor M. Ramulu, ME*) June 1992
- 17 X. Zhang ( Professor M. Tuttle, ME)
- 18 J. Allen ( Professor N. McCormick)
- 19 Z. Guo (*Professor M. Ramulu, ME* ) June 1993
- 20 Mathieu Fregeau (Prof J. Hermanson, AA), May 2005

Doctor of Philosophy Student Supervisory Committees:

- 1 Yousry S. Aboelnaga (Professor D. Storti, ME), Aug 1988
- 2 Yu Hsing Chao (Professor A. Emery, ME), Dec 1987
- 3 Richard Allen Downs (Professor J. Garbini, ME)
- 4 Shyh Pin Kow (Professor J. Garbini, ME) Dec 1989
- 5 David Jiro Mukai (Professor G.R. Miller, CE) **Graduate Faculty Representative**
- 6 Kenneth E. Lulay (Professor M. Taya, ME) Aug 1990
- 7 William Armstrong (Professor M. Taya, ME) Jan 1991
- 8 John Robert Rogacki (Professor M. Tuttle, ME)
- 9 Ding Fwu Lii ( Professor W. Scott, MSE ) **Graduate Faculty Representative**
- 10 Lyle Ray Deobald (Professor Kobayashi, ME) June 1991
- 11 Chang-Te Yu (Professor A. Kobayashi, ME) Dec 1992
- 12 B.K. Jones (Professor A. Emery) June 1992
- 13 E.W. Hare (Professor R. Stang, MSE) **Graduate Faculty Representative**
- 14 Zhi Kai Guo (Professor A. Kobayashi, ME)

- 15 Makoto Kosai ( Professor A. Kobayashi, ME)
- 16 R.M. Tanaka (Professor J. Garbini, ME)
- 17 D. Haskel (Professor E.A. Stern, PHysics), **Graduate Faculty Representative**
- 18 C.A. Barwell (Professor Fyfe, A&A)
- 19 R. Li (Professor K.Y. Lin, A&A) **Graduate Faculty Representative**
- 20 S.M. Chern (Professor M. Tuttle, ME)
- 21 J.A. Salem (Professor M.G. Jenkins, ME)
- 22 L. Ma (Professor Kobayashi, ME)
- 23 P.W. Lam (Professor Kobayashi, ME)
- 24 D.K. Tran (Professor Kobayashi, ME)
- 25 D.Haskel (Professor E.Stern, Physics)March 1998, **Grad.School Representative**
- 26 L T Ng Boyle (Professor F.Mannering, CE) Aug 1998, **Grad.School Representative**
- 27 O.E. Zamir (Professor O.Etzioni, CSE) Dec 1999, **Grad.School Representative**
- 28 Salvador R. Correa (Professor Shapiro, EE) June 2004, **Grad.School Representative**
29. R.J.Dunn (Professor Steven Gribble, CSE), Nov 2006, **Grad.School Representative**
- 30 Eric Hofbeck
- 31 Liangjun Li (Prof. J.Y. Li, ME)
- 32 Jie Lian (Junlang Wang, ME)
- 33 Nikolas W. Hrabe ( Prof. R. Bordia, MSE) **2011,Grad.Faculty Representative**
- 34 Cheng-Ling Chang (Prof W.Wang, ME)
- 35 Juan Carlos Gonzalez-Pons (Prof James C. Hermanson,AA)
- 36 Feng-Ju Hsieh (Prof W.Wang, ME)**2012**
- 37 David Webster ( Prof Berman, CEE), **2013,Grad.Faculty Representative**
- 38 Yang Yang (Prof. J.Y. Li, ME)2014
- 39 Bonnie Wade (Prof Feraboli, AA), **2012,Grad.Faculty Representative**
- 40 Phillip Miller (prof Junlan Wong, ME)
- 41 Molly, Kathryn M (Prof Flinn, MS&E), **2013,Grad.Faculty Representative**
- 42 Kuowen Chen, (Prof Starch, ISE), **2014,Grad.Faculty Representative**
- 42 Zhou Yang (Prof Junlan Wong, ME)
  
- 43 Viktoria V. Pakhnyuk (Christine K. Luscombe, MS&E) GSR
- 44 Carli Marsico (Prof Arola, MS&E)

#### **Doctor of Philosophy Student's Dissertation Reading Committee**

Yu Hsing Chao (Professor A. Emery, ME) Dec 1987  
 S.P. Kow (Professor J. Garbini, ME) Dec 1989  
 William Armstrong (Professor M. Taya, ME) Jan 1991  
 J.R. Rogaki (Professor M. Tuttle, ME)  
 D. J. Mukai (Professor G. Miller, CE ) Dec 1991  
 D-F. Lii (Professor W. Scott, MSE ) Dec 1992  
 M.L. Dunn (Professor M. Taya, ME) June 1992  
 B.K. Jones (Professor A. Emery)June 1992  
 R.A. Downs (Professor J. Garbini, ME) March 1993  
 M. Kosai (Professor Kobayashi, ME) June 1995  
 R. Tanaka (Professor Garbini, ME) August 1995  
 J. Lee (Professor Kobayashi, ME) June 1996  
 J.K. Lee (Professor M. Taya, ME) June 1996  
 B. Russell ( Professor Kapur, IE ) March 1998  
 S.M. Chern (Professor M. Tuttle, ME) Dec 1998  
 L. Ma (Professor Kobayashi, ME) June1998

D.K. Tran (Professor Kobayashi, ME), March 1999  
P.W. Lam (Professor Kobayashi, ME), Dec 2000  
P. Singhatanadgid (Prof Tuttle, ME), Dec 2000  
Peder Fitch (J.Cooper, ME), June 2004  
E.Daniels (Prof Berg, ChE), June 2006  
Liangjun Li (Prof. Li, ME), June 2010  
Yang Yang ( Prof Li, ME), May 2014  
Robert Albers (Prof Tuttle, ME), August 2014

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## RESEARCH ACTIVITIES

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### Visiting Professors, Scholars, and Scientists

**Mr. Atsushi YAMAGUCHI**

Visiting Scholar Feb 2017- Present

National Institute of Occupational Safety and Health, Japan

**Dr. Atsushi Hosoi**

Assistant Professor

Department of Applied Mechanics and Aerospace Engineering

Waseda University

3-4-1, Okubo, Shinjuku-ku, Tokyo 169-8555, Japan

March 2015 ( UW International Program - Waseda Faculty Development Program)

Professor Hiroshi Morikawa, Visiting Scholar

Associate Professor, Department of Mechanical Engineering, Sasebo National College of Technology, Japan

2010 April – 2011 March

Ms. Neha Kulakarni, Visiting Scientist

Lousian University, USA

2010 April- 2010 September

Professor P. Lakshminarayana, Visiting Scholar,

Professor, University College of Technology, Osmania University, India.

March 2009

Professor D. H. Bae

School of mechanical engineering, Sungkyunkwan University, Seoul, Korea.

2007-2008

Professor M.K. Han

Visiting Scholar, Kojé College, Korea.

2003-2006

Mr. Takashi Honda

Visiting Scientist, Government Industrial Laboratory, Japan.

2003-2004

Professor Yong.Wie. Seo

Visiting scholar, Mechanical and Automotive Engineering, Inje University, Korea.

2002-2003

Mr.S. Takemura

Visiting Scientist, Japan

1999-2001

Professor Choi

Visiting Associate Professor, Hansung University, Seoul, Korea

1999 Summer

Professor Alfenso F. Cantelli

Visiting Scientist, University of Oviedo, Spain

1998-1999

Mr. T. Nissau

Visiting Scholar, Universitat-Gh-Duisburg, Germany

1996-1997

Professor T. Yamaboliev

Associate Dean, Technical University, Bulgaria.

1992-1993

Professor T. Sakai

Faculty of Science and Engineering, Ritsumeikan University, Japan.

1989-1990

Professor H. Inoue

University of Osaka Prefecture, Sakai, Osaka Japan.

1987-1988



**Current Funded Research (listed from last 5 years)**

<b>Funding Agency</b>	<b>Title</b>	<b>Total Amount (Subcontracts)</b>	<b>Your Amount</b>	<b>Your role, Other Pi's co-Pi's</b>	<b>Dates (start, finish)</b>
National Institute of Standards and Technology (NIST)	Development of a Measurement Engineering Toolbox for Adaptive Learning (METAL): A Team Approach to Industrializing Metal AM and Quality Control			Co-Investigator	To be submitted
Federal Aviation Administration (FAA)	Characterizing Mechanical Property Variability in Ti6Al4V produced by Laser Powder Bed Fusion (LPBF) Additive Manufacturing	\$753,440	\$100,00	Multiple PIs	1/1/21 -12/31/23
Office of Naval Research (ONR)	Multi-laser open-configuration metal additive manufacturing testbed for multidisciplinary research and research training			Other	Approved
The Boeing Company	ARCAM Powder bed added to manufacturing of titanium components by EBM process PHASE-2	\$473,438	\$410,000	PI	12/16/19-11/30/21
The Boeing Company	Titanium Powder Reconditioning	\$92,000	\$65,000	PI	12/16/19-11/30/20
The Boeing Company A150001	Round Robin Assessment of Statistical Variability in Ti6Al4V by Powder Metal SLM Additive	<b>\$350,000</b>	\$100,000	Co-PI	9/1/19 – 7/30/22

	Manufacturing				
The Boeing Company	Semi-Automation Sanding Assist Device 2019	\$100,000	\$1,000	Co-PI	
NSF	MRI: Acquisition of an advanced nanoindentation system for multidisciplinary research and training	\$454,179		Co-I	9/1/17-8/30/21(36 months)
The Boeing Company	ARCAM Powder bed added to manufacturing of titanium components by EBM process	\$447,765	\$313,435	PI	10/1/17-9/30/19
JCDREAM	Arcam EBM 3D printing equipment	\$800,000 +411,00	\$1,211,000	PI	8/16-8/21
The Boeing Company	Characterize SPF/DB Titanium Alloy Joints	\$396,126	\$396,126	PI	1/1/16-12/31/18
The Boeing Company	Ergo Test Bench Development	\$201,898	\$96,110	Co-PI	1/1/17 – 12/31/17
The Boeing Company	Inside Fuselage development (percussive riveting)	\$467,496	\$240,000	Co-PI	9/15/14-2/12/17
The Boeing Company/ AFOSR	Material Affordability-III TIMETAL-FSW	\$212,000	\$212,000	PI	5/1/14 -6/30/16
The Boeing Company	In-Process Detection of Drilling Damage	\$90,000	\$90,000	PI	1/13-3/15
<b>Pending Grants</b>					
NSF	Planning Grant: Engineering Research	\$99,730		Co-PI	1/1/19-1/1/20

	Center for Innovations for the Circular Economy (ICE)				
JAMS-AMTAS	Developing Design Allowables for Certification of Metal Additive Manufactured (AM) Components	\$300,000	100,000	Co-PI	June19-July 22

**Unfunded Proposals (Optional)**

Funding Agency	Title	Amount (Subcontracts)	Involvement, Pi's co-Pi's	Date Submitted
NSF STEM	Developing Pathways to Diversify the Future Professionals in Engineering Materials	\$998,219	Co-PI	5/13/16
NSF	Fracture-Induced Tunable Mechano-Electrical Properties of Paper-based Nanocomposite	\$398,280	Co-PI	3/17-3/20
DOE	REMADE FOA	\$5M	Univ of Kentucky	
JCATI	Optimizing Tool and Process Design for Durability of Friction Stir Welding of Dissimilar High Temperature Titanium Alloys	\$85,226	45,000	3/2/16
JCATI	Waterjet depainting and Surface Preparation of Aerospace Materials	\$84,490	\$84,490	4/3/16
Boeing Company	Rate Dependent & Low Velocity Impact Damage of Composites	\$120,00	PI	6/14-10/15
Office of global Affairs, UW	International Partnership to Develop A New Course on "Advanced Metallurgy" at UW	\$10,250	Co_PI	10/30/2015
Lightweight Metal Institute USA	Mfg of Titanium Monolithic Structures	\$5.5M	Co-PI , \$2.8M	1/14-12/20

**Un-sponsored research.**

Surface Integrity of Aerospace Metallic Materials

Development of Innovative Surface Treatment by using High Pressure Waterjets

Machining Composite Dust : Measurement, analysis and modeling to address Health Hazards Issues

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## TEACHING ACTIVITIES

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### **Supervision of independent study (design projects and research).**

*More than 100 undergraduate (ME498, ME499) and 120 Graduate students (ME599, ME600) did independent research/projects in the past 30 years.*

### **List of other teaching contributions**

#### TEACHING- Subjects Taught (1982-Present):

##### **Undergraduate Courses:**

ENGR 210	Engineering Statics
ENGR 220	Introduction to Mechanics of Materials
ENGR 498	Special Topics in Engineering
MEIE 315	Statistical Analysis of Engineering Measurements
ME 304/355	Manufacturing Processes
ME 352	Mechanics of Solids
ME343	Mechanical Behavior of Materials
ME 353	Machine Design
ME 403	Material Removal Processes
ME 409	Introduction to Numerical Control and Computer-aided Manufacturing
ME 434	Advanced Mechanical Engineering Laboratory
ME440	Advanced Strength of Materials
ME 445/459	Fracture of Engineering Materials
ME450	Introduction to Composites and Design
ME 469	Applications of Dynamics in Engineering
ME 499	Senior Research Projects

##### **Graduate Courses:**

ME 501	Modern Manufacturing Processes
ME 502	Plastic Metal Forming
ME 518	Advances in Manufacturing and Management Seminars
ME 541	Advanced Engineering Materials
ME 542	Topics in Engineering Materials (New Title: Durability/Damage Tolerant Design)
ME 551	Applied Elasticity
ME 559	Applied Fracture Mechanics
ME 560	Advanced Theory of Fracture
ME599D	Nontraditional Machining Processes
ME 599	Special Projects
ME 599MR	Machining Science and Surface Integrity of Advanced Composites
ME 599P/518	Seminars in manufacturing and Management

##### **Modernized and Updated Mechanics, Materials & Manufacturing Courses:**

ME 304	Manufacturing Processes
ME 355	Introduction to Manufacturing Processes

ME 343	Mechanical Behavior of Materials
ME 403	Material Removal Processes
ME 459	Introduction to Fracture Mechanics
ME 502	Plasticity and Metal Forming
ME 541	Fatigue of Materials

#### **New Courses Originated and Taught**

ME 409	Introduction to Numerical Control and Computer-aided Manufacturing
ME 501	Modern Manufacturing Processes
ME 518	Advances in Manufacturing and Management Seminars
ME 599E	Nontraditional Machining Processes
ME 599MR	Machining Science and Surface Integrity of Advanced Composites
ME 599	Tooling for Composite Manufacturing

#### **Laboratory Development**

ME 304	Manufacturing processes
ME 343	Mechanical Behavior of Materials
ME 409	Numerical Control machining and CAM

#### **Televised / ( Web Streaming Videos ) Graduate Courses( Since 1983):**

ME403	Material Removal Processes (Also broadcasted on the Web)
ME 445/459	Introduction to Fracture Mechanics
ME450	Introduction to Composites and Design
ME 501	Modern Manufacturing Processes
ME 502	Plasticity and Metal Forming
ME 518	Advances in Manufacturing and Management Seminars(Broadcasted on the Web)
ME 541	Advanced Engineering Materials
ME 559	Fracture Mechanics-I
ME 560	Advanced Theory of Fracture-II
ME 599MR	Machining Science and Surface Integrity of Advanced Composites

NEW COURSE DEVELOPMENT and Offered **Spring 2019**

**MSE/ME 599 and ME/MSE498 :Additive Manufacturing: Materials, Processing and Applications**

#### **Senior Design Projects**

1. *Additive manufacturing of metal lattice structures for energy absorption* (S&W 2018)  
Credit: 4,  
Team: Jagbir Singh, Simar Bassi, Marwin Tarusna, Son Q. Luong, Samuel Sexton, Sameer Meshram  
Sponsor: The Boeing Company
2. *Service hatch structural design* (S&W 2018)  
Credit: 4  
Team: Melanie Wullaert, Collin Berg, Surafel Abeel, Adrian Camacho, Trevor Palmer  
Sponsor: The Boeing Company
3. *Powder Bed Fusion Seed Build*, (S&W 2019)  
Credits: 4

Team: Lyubomir V. Sukhoparov <sukhop96@uw.edu>; Jullio Tchouta <jullio.tchouta@go.shoreline.edu>; Hannah Lee <hannahsylee@gmail.com>; Ryan M. Chin <rmchin@uw.edu>; Hayrullah K. Fero <kaanfero@uw.edu>; Alexander Montelione [alex.montelione@gmail.com](mailto:alex.montelione@gmail.com)

**Certification Program** ( Curriculum development and teach one course)

**ACMM CP** Tooling for Aircraft Composite Component Manufacturing

**Certification Program** in Production Engineering Theory and Practice

Curriculum Developed and is under Boeing Company Consideration

**Continuing Education Courses:**

EIT Refresher Course on Engineering Dynamics (Winter 1983)

**Short Courses**

- 1 *Introduction to Finite Element Methods* a course was given to Fatigue and Fracture Mechanics Group at Defence Metallurgical Research Laboratory (DMRL), India, Nov-December 1995  
( Host: Dr. Malakondaiah, DMRL; Dr. P. Rama Rao, DRDO)
- 2 *Advanced Composites- Challenge in Machining:* a course was given at, Defence Research and Development Laboratory (DRDL), Hyderabad, India, February 1996.  
(Host: Rohini Devi, DRDL: Dr. Abdul Kalam DRDO)
- 3 *Fracture Mechanics : Basics and Applications in Process Industries* a Course was given at Indian Institute of Chemical Technology (IICT), India, March 5, 1996  
(Host: Deputy Director, IICT)
- 4 *Physics of Abrasive Waterjets* a Course lecture was given in the High Pressure Waterjets Short course held in Hilton Hotel, Minneapolis, MN August 19, 2001  
(Host: Dr. M. Hashish , American Waterjet Technology Association)
- 5 *Fracture and Failure Analysis* a Course lecture was given to ASM International Puget Sound Chapter Short course held in Fatigue Technology, Inc, 401 Andover Park East, Tukwila, WA , March 16, 2002  
(Host: Dr J. Cotton, ASM Int, Puget Sound)
6. *Machining of Composites*, a Short Course was given to Boeing EdWells professional Event 7391 on 8/11-8/12 2015. 4:00-7:00PM Everett WA.
7. *Introduction to Fracture Mechanics*, a Short Course was given at *Blue Origin*, 21218 76<sup>th</sup> Ave S, Kent WA 98032 on *June 21, 2019, 11am-4:00pm*

**Pedagogical Meetings& Activities Related With Education:**

- *Manufacturing Technology Seminars*, organized by Washington Technology Center, Seattle, November 1985
- *Modern Manufacturing Processes Seminars*, organized by Bellevue Community College, Bellevue, Winter 1986.
- *Numerical Control Machining*, Shoreline Community College Spring and Summer 1986
- *Workshop on Artificial Intelligence in Manufacturing*, and *Computer Applications in Jig and Fixture Design*, WESTECH '86, Machine Tool Conference, Organized by the Society of Manufacturing Engineering and American Society for Metals, Los Angeles, March 1986.

- National Science Foundation *Workshop on Material Processing and Modern Manufacturing Processes*, Minneapolis, Minnesota, May 1986.
- 81st National Congress of Tau Beta Pi, Engineering Honors Society, Iowa State University, Ames, Iowa, October 13-17, 1988
- *Emerging Trends in NDE*, WESTECH '90, Los Angeles, March 22-26, 1990.
- *Smart Structures* a Tutorial class at 1992 International Congress on Experimental Mechanics, held in Las Vegas, NV, June 3-8, 1992
- *A Workshop on Faculty Mentoring*, Organized by Women in Engineering (WIE), University of Washington, Seattle, April 16, 1997
- *Annual Conference of Women in Engineering*, Organized by Women in Engineering (WIE), University of Washington, Seattle, January, 24 1998

#### **Education Related Workshops:**

- 1998 Invited participant 4th Boeing/University Workshop, Seattle WA, Feb. 15-16, 1998. All the participants were Deans/Associate Deans from 83 Key Universities.
- 1996 Chief Guest and Keynoter, "Workshop on Need Analysis in Mechanical Engineering" Organized by the All India Council for Technical Education, held in Osmania University, February 10, 1996.
- 1995 "Undergraduate Education National Action Convocation" Organized by National Research Council and NSF, held in Washington DC, April 9 - 11, 1995
- 1993 Invited panelist, PYI's Workshop on "Future Research Directions in Mechanics of Materials" hosted by NSF, IMM and IBM at IBM Research Center, San Jose, CA, July 6 - 9
- 1992 Invited panel member, NSF Workshop, "Minority Engineering Education", Rosemead, Los Angeles, CA. April 21-24, 1992
- 1990 Invited panel member, NSF Workshop, "Higher Education in US in Year 2010 and Beyond" Washington D.C, Nov. 4-6, 1990

#### **Teaching Awards, Nominations for Teaching Awards**

##### Teaching Awards

- 2006 *Faculty of the Year Award*, Department of Mechanical Engineering, UW
- 2004 *R1edu Award*, which recognizes excellence in online teaching and innovation. R1edu is a consortium of 34 of the leading American universities coordinated by the University of Washington
- 1985-1986 First recipient of "*Outstanding Teacher Award*," College of Engineering, UW
- 1986 *Ranked in the Top Ten Professors at UW* by Graduating Students in all campus yearbook, *TYEE*, for influencing their academic life.

##### Nominee

- 2009 Nominee for Community of Innovators Award for Research and Teaching, COE, University of Washington
- 2008 Nominee, Faculty of the Year Award, Department of Mechanical Engineering, UW
- 2006 Nominee UW Distinguished Graduate Mentor Award
- 2005 Nominee for the University Brotman Award for Instructional Excellence
- 2006 Nominee for the University Distinguished Teacher award (1986, 1990, 2000, 2001, 2003, 2005)

2001 Ranked in the top Ten Nominees over 100 nominations for UW Distinguished Graduate Mentor Award in 2000 and also nominee in 2001

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## SERVICE

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### Departmental service

2018-present	ME Dept. Faculty Advisory Committee
2015-present	ME Dept. Promotion Advisory Committee
2014- present	Full Professors Merit Review Committee
2013-2015	Chair, ME Dept. Promotion Advisory Committee
2013-2015	Faculty Search Committee
2008-Present	Faculty Awards Committee
2004-2007	MMM Group Co-ordinator
2005-2007	Faculty Affairs Committee
2006-2007	Sub Committee (FAC)-Faculty Awards
2000-2005	Graduate Education Committee
1998-1999	Faculty Search Committee
1998-2003	Departmental Promotion Advisory Committee
1998-2007	Co-administer of Fellowships from the A.S.K. Endowed Fund
1996-2003	Collegial Evaluation of Teaching Effectiveness Committee
1996-1998	<b>Group leader</b> , Mechanics, Materials & Manufacturing
1997-2000	<b>Chairman</b> , Committee on Albert S. Kobayashi Endowed Scholarship
1997-1998	Graduate Students Admission Committee
1997-1999	<b>ME Advisor</b> , Boeing MS program in Manufacturing
1996-2001	<b>Chairman</b> , Collegial Evaluation of Teaching Effectiveness Committee
1996-1997	Search Committee, Instructional Technician
1993 -1995	Undergraduate Education Committee
1991-1994	Collegial Evaluation of Teaching Effectiveness Committee
1989-1993	Faculty Affairs Committee ( <b>Chairman</b> )
1991-992	Subcommittee on Merit Review of Full Professors
1990-1991	Faculty Search Committee (Energy and Fluids)
1988-1990	Undergraduate Student Admissions Committee
1987-1988	Secretary to Mechanics and Materials Group
1987-1988	Secretary to Research & Resource Committee
1986-1989	Research and Resource Space Distribution Subcommittee
1985-1989	Research and Resource Committee
1986-1989	Faculty Search Committees (Manufacturing Processes and Design)
1985-1987	MS/MSE, Manufacturing Systems Engineering Degree Program Committee

### College service

2012-2013	Industrial Engineering Faculty Search Committee
2011-2012	<b>Chairman</b> , College Promotion and Tenure Committee
2010-2011	<b>Vice Chairman</b> , College Promotion and Tenure Committee
2003-2012	College Promotion and Tenure Committee
2000-2002	BS/MBA Program Committee
2000-2007	<b>EDGE (Distance Education) Advisory Board</b>
2000-2003	Electron Microscopy Center Committee
1999-2000	John Fluke Manufacturing Chair, Review Committee



1998-2002	<b>Faculty Advisory Board</b> on Women in Engineering
1997-2005	College of Engineering Steering Committee on Boeing MS program in Manufacturing
1988-2002	<b>Industrial Advisory Board</b> of the Minority Science and Engineering Program
1997-1998	Search Committee, Industrial Engineering Student Advisor
1987-1995	Minority Students Scholarship Committee, College of Engineering
1987-1988	<b>Chairman</b> , College of Engineering Student and Faculty Achievement Awards Committee
1986-1987	College of Engineering "Outstanding Teachers Awards" Committee

### University service

2007-Present	College Marshal, UW Commencement
1999-2006	Faculty participant, UW Commencement
1998-2004	Senate Committee on Minority Faculty Affairs
1996-1997	Senate Faculty Committee on Educational Outreach
1990-1992	Faculty Senate
1988-1989	College of Engineering UW Branch Campus Planning Committee
1986-present	Graduate Faculty
1980-1981	Student Residences Advisory Committee
1980-1981	Elected Senator to Graduate and Professional Student Senate (GPSS), University of Washington, Seattle, WA 98195, USA

### Professional society and other service

#### *Society Committees*

#### **ASEE**

**Active Member of** Mechanical Engineering Division, Mechanics & Manufacturing Divisions

#### **ASM**

2006-Symposium Organizing Committee on The International Symposium on Superplasticity and Superplastic Forming (SPF) Technology, 17<sup>th</sup> AeroMat 2006, May 15-18, 2006, Seattle, Washington

2005- Symposium Organizing Committee on The International Symposium on Superplasticity and Superplastic Forming (SPF) Technology, AeroMat 2005, June 6-9, 2005, Orlando, Florida

2004- Symposium Organizing Committee on The International Symposium on Superplasticity and Superplastic Forming (SPF) Technology, AeroMat 2004, June 7-10, 2004, Seattle

1999-present Fellows Council

1995 Review papers Committee on "Maching of Composites-II"

1984,2002 Puget Sound chapter's short course on fracture mechanics, one of the lecturer

1985 International Scientific Papers Review Committee, ASM Fracture Fatigue and Corrosion Cracking International conference

#### **ASME**

1993- 1996, *Executive Member*, Western Washington Section  
1992-1995 *Chairman*, ASME Materials Processing Committee  
1989-1991 *Vice Chairman*, ASME Materials Processing Committee, Materials Division.  
1989-1992 ASME Materials Division *Liaison* to Production Engineering Division  
1986-present *Member* Manufacturing Engineering & Materials Divisions

**ICCES: International Conference on Computational & Experimental Engineering and Sciences, ICCES 2013, Seattle USA, May 24-28, 2013**

2012-2013 Local Organizing Committee

**ASME McMat Conference**

**2014-2015** Local Organizing Committee

**ISCSP :International Scientific Committee for Shot Peening**

2011 Present Member, International Scientific Committee on Shot Peening  
2011- Elected to International Scientific Committee (ISCSP)  
2010 – 2011 Local Organizing Committee on 11<sup>th</sup> International Conference on Shot Peening, September 12-15, 2011, in South Bend, Indiana, USA

**SAMPE**

2010- Organizer of Manufacturing Sessions, SAMPE 2010, May 17-20, Seattle WA  
2008- Present, *Chairman*, Education Committee, Seattle SAMPE Chapter

**SEM**

Life Member  
Fellows Committee 1998-2004  
Fracture and Fatigue Technical Division  
1995-1997 *Chairman*  
1993-1995 *Vice Chairman*  
1990-1995 *Chairman*, Fracture Technical Papers Review Committee  
1986-present *Member*, Fracture Technical Activity Committee  
Research Committee  
1992-1994 *Chairman*  
1990-1992 *Vice Chairman*  
1986-Present Research Papers Review Committee  
1986-1994 *Chairman*, Research Papers Review Committee  
Technical Program Planning Committee  
1990- 1994 *Executive Member*  
1990- 1995, Technical Scope Council  
Fatigue Technical Division  
1988-1992 *Chairman*  
SEM Editorial Council  
1992-1994 *Committee member*

**SES (Society of Engineering Science)**

2000 International Scientific Committee member, 37<sup>th</sup> Annual Technical Meeting, University of South Carolina, October 23-25, 2000

**SME**

2012- SMEEF Scholarship committee  
2004-2009, Manufacturing Technology Advisory Group (MTAG), Board of Directors

2003-2010, AFFT/SME Cutting technologies for Forming and fabrication Technical Group committee  
1993-present, *Member*, North American Manufacturing Research Institute of SME  
1987-1998 CASA, Manufacturing Engineering Education Scholarship Committee  
1987-2002 Founding member, Faculty Advisor, SME Student Chapter #S175, University of Washington

#### **WJTA**

1991-1993, Co-Chairman, The 7th American Water Jet Conference, August 28-31, 1993, Seattle, WA

2015-2016, Technical Planning Committee, 23<sup>rd</sup> International Conference on Waterjetting to be held in Seattle Nov 15-18, 2016

#### ***Professional Meetings, Conferences Organization and Technical Sessions***

##### Organizer of Conferences or Symposiums

1. "Fracture and Hybrid Experimental and Numerical Methods," SEM 1987 Spring Conference held in Houston, June 14-20, 1987.
2. "Symposium on Short Cracks," VI International Congress on Experimental Mechanics held in Portland, June 5-10, 1988.
3. Symposium on "Machinability of Composites," ASME Winter Annual Meeting held in Chicago, December 1988.
4. Symposium on "Machining Characteristics of Advanced Engineering Materials," ASME Winter Annual Meeting held in San Francisco, December 1989.
5. "Fatigue of Non-Metallic Materials," 1992 International Congress on Experimental Mechanics, held in Las Vegas, NV, June 3-8, 1992.
6. "Federal Perspective on Experimental Mechanics Research," 1993 SEM Spring Conference held in Dearborn, MI, June 7-10, 1993.
7. The 7th American Water jet Conference held in Seattle, WA, August 28-31, 1993 (Co-Chairman).
8. "Future Research Needs in Jet Cutting Technology" The 7th American Water Jet Conference held in Seattle, WA, August 28-31, 1993.
9. Symposium on "Advances in Machining of Composite Materials," 1993 ASME Winter Annual Meeting held in New Orleans, Nov. 28 -Dec. 3.
10. Symposium on " Mechanics in Manufacturing", 12th US Congress on Applied Mechanics held in June 28-July 2, 1994.
11. Symposium on " Design, Processing and Manufacturing of Composite Materials", 1994 ASME International Mechanical Engineering Conference and Exposition (IMEC&E) held in Chicago, Nov. 6 - 11, 1994.
12. A Tributing "Symposium honoring Albert S. Kobayashi", 1997 SEM Spring Conference held in Bellevue, WA , June 2-4, 1997
13. "Modeling of Manufacturing Processes ", 1999 SEM Spring Conference held in Cincinnati, OH, June 7-10, 1999.

14. "Research in Progress" IX International Congress on Experimental Mechanics, June 5-8, 2000, Orlando, Florida.
15. "Composite Materials: Issues in Machining", 2000, Society of Engineering Science annual Conference, South Carolina
16. Organizing Committee Member, 2000, Society of Engineering Science annual Conference, South Carolina
17. Symposium Organizing Committee Member on "Recent Advancements in Superplastic Material Science and Related Technology Transfer to New Industrial Applications for SPF" Aero MaT 2004, June 7-10, Seattle
18. Symposium Organizing Committee Member on "Superplastic Forming Science and Technology SPF" Aero MaT 2006, June 7-10, Florida
19. Technical Planning Committee Member, 2007, 22nd Annual Technical Conference of the American Society for Composites, to be held in September 17–19, 2007 , at University of Washington Campus, Seattle, Washington
20. International Advisory Committee, 17<sup>th</sup> International Symposium on Processing and Fabrication of Advanced Materials, Dec. 15 - 17, 2008, India Habitat Centre, New Delhi, India
21. International Advisory Committee, International Conference on Computational Methods in Engineering and Sciences, during Jan.8-10,2009 India
22. Organizing Committee Member, 2009 International Conference on Superplasticity in Advanced Materials (ICSAM 2009) Bell Harbor International Conference Center Seattle, Washington June 29-July 2, 2009
23. Organizing Committee Member, SAMPE 2010, May 17-20, Washington Convention Center, Seattle, WA
24. Scientific Committee Member, 3<sup>rd</sup> International Conference on Manufacturing Technology and 23<sup>rd</sup> All India Machine Tool Design and Research Conference, Andhra University, Vishakapatnam, December 12-15, 2010, India
25. Organizing Committee Member, 11<sup>th</sup> International Conference on Shot Peening(ICSP-11), Sept 12-16, 2011,South Bend, Indiana, USA
26. Organizing Committee Member, NanoEngineering for Energy and Sustainability (NEES), sessions, ASME IMEC, 2011, Denver, Co, November 13-18, 2011
27. International Scientific Committee member, Fourth International Conference on Structural Stability and Dynamics (ICSSD-2012), 4-6<sup>th</sup> January 2012 Malaviya National Institute of Technology, J.L.N. Marg, Jaipur, Rajasthan, 302 017, India
28. International Scientific Committee member, Twenty-First International Symposium on Processing and Fabrication of Advanced Materials (PFAM XXI) to be held in Guwahati, India, Dec 10-13, 2012
29. Organized a symposium on "*Machining of Advanced composites and Surface Integrity*" as part of The ASME McMAT 2015, Applied Mechanics and Materials Conference, was held in Seattle at the Motif Hotel near Seattle Downtown Waterfront from June 29-July 1, 2015
30. International Technical advisory committee Member, 23<sup>rd</sup> International Water Jetting Conference 2016 held in Seattle Nov 16-18.

31. Advisory Committee Member, International Conference on Advances in Materials & Manufacturing (ICAMM-2016), Dec 8-10, Hyderabad India
32. International advisor Council Member, [IVth International Conference on Production & Industrial Engineering](#) Dr B R Ambedkar National Institute of Technology Jalandhar-144011, Punjab, INDIA

Session Chairman of Professional Meetings:

"Fracture" and "Fatigue" Technical Sessions (2) at *International Conference on Fatigue, Fracture Mechanics, Corrosion Cracking, and Failure Analysis*, held in Salt Lake City, Utah, December 2-6, 1985.

"Fracture" and "Stress Analysis" Sessions (2) at *SEM 1987 Spring Conference* held in Houston, June 14-20, 1987.

"Short Crack Growth" Session (1) at *VI International Congress on Experimental Mechanics* held in Portland, June 5-10, 1988.

"Machining of Composites-I" session (1)," ASME Winter Annual Meeting held in Chicago, December 1988.

"Machining Characteristics" session (1) ASME Winter Annual Meeting held in San Francisco, December 1989.

"Fracture -II" session (1) at 1991 *SEM Spring Meeting*, Milwaukee, WI, June 6-13, 1991.

"Machining Processes" session VI (1) at *NAMRI/SME Conference* held at Washington State University, Pullman, WA, May 19-22, 1992.

"Fracture-III" session (1) at *1992 International Congress on Experimental Mechanics*, held in Las Vegas, NV, June 3-8, 1992

"Machining" session (1) at *Symposium on Processing and Manufacturing of Composite Materials*," held at ASME Winter Annual Meeting, November 8-13, 1992, Anaheim, CA.

"Research Needs" session (1), "Fatigue" (1) and "Research-in- Progress-I" (1) at *1993 SEM Spring Conference* held in Dearborn, MI, June 7-10, 1993.

"Manufacturing Applications" session (1) and " Future Research Needs in Jet Cutting Technology" (1) at *The 7th American Water jet Conference* held in Seattle, WA, August 28 -31, 1993.

"Machining of Advanced Composites- I" session (1) at *Symposium on Machining of Advanced Composite Materials*, held at ASME Winter Annual Meeting, November 28- Dec 3, 1993.

"Problems in Manufacturing with Experimental Mechanics Solutions and New Manufacturing Methods", "Fatigue" and "Research-in-Progress" technical sessions (3) at *1994 SEM Spring Conference* held in Baltimore, MD June 6-8, 1994.

"Manufacturing Processes", "Micromechanics V" and "Manufacturing Process Effects on Surface Integrity-I" technical sessions (3) at *The Twelfth U.S. National Congress of Applied Mechanics* held in Seattle, WA June 27- July 1, 1994.

"Nontraditional Machining Processes" technical session (1) at *1994 ASME International Mechanical Engineering Conference and Exposition (IMEC&E)* held in Chicago, Nov 6 - 11, 1994

"Fracture -I" session (1) and "Fatigue " session (1) at *1995 SEM Spring Meeting*, Grand Rapids, MI, June 6-13, 1995

"Fracture -I" session (1), "High Temperature Behavior of Ceramic Composites" Session (1), and "Fatigue " session (1) at *VIII International Congress on Experimental Mechanics*, held in Nashville, TN, June 10-13, 1996

" Fracture & Fatigue " session (1), "Fracture -Albert Symposium" session (1) *1997 SEM Spring Conference* held in Bellevue, WA , June 2-4, 1997

"Manufacturing Applications" session (1) at *The 9 th American Water jet Conference* held in Detroit, MI, August 23 -26, 1997.

"Applications of Photoelasticity and Photoplasticity" session, *1998 SEM Spring Conference on Experimental and Applied Mechanics* held in Houston, TX, June 1 -4, 1998.

"Modeling of Manufacturing Processes ", Session (2), "Fracture-II" Session (1), *1999 SEM Spring Conference* held in Cincinnati, OH, June 7-10, 1999.

"Fracture – II Technical Session, *2001 SEM Spring Conference* held in in Portland, June 4-7,2001

"Abrasive Waterjets : Manufacturing", Research Session, at *The 12th American Water jet Conference* held in Houston, TX, August 17-19, 2003.

"Albert Kobayashi Honoring Symposium, McMat 2007, Session (2), at ASME Applied Mechanics and Materials Conference, June 3-7, 2007 ~ University of Texas at Austin

"Abrasive Waterjets : Manufacturing", Research Session, at *The 13th American Water jet Conference* held in Houston, TX, August 17-19, 2007.

" Fracture of Composites", *17<sup>th</sup> International Symposium on Processing and Fabrication of Advanced Materials*, Dec. 15 - 17, 2008, India Habitat Centre, New Delhi, India

“Shot Peening Process “ International Conference on Shot Peening, held September 15-18, 2014, in Goslar, Germany

“Metallic and Fiber Composites-Processing and synthesis”, ASME 2014 IMECE Conference held in November 14-20, Montreal CA

“ 2D and 3D machining-Part 2” 23<sup>rd</sup> International Water Jetting Conference held in November 16-18, Seattle WA

### Editorships

Editorial Board, *Journal ISRN Tribology*, 2012-present

Editorial Board, *Journal of Advances in Automobile Engineering*, 2011-present

Editorial Board, *Journal of Ocean University of China*, 2011-present

Editorial Board Member, *International Journal of Mechanical Engineering and Materials Science*, 2008-present

Editorial Board, *Mechanics of Advanced Materials and Structures*, 2007-Present

Editorial Board Member, *International Journal of Machining and Machinability of Materials*, 2006-present

International Editorial Advisory Board, *Machining Science and Technology Journal* 2005-present

Founding Member and Associate Editor: *Machining Science and Technology Journal* 1996-2004

Associate Editor: *ASME Journal of Engineering Materials and Technology*, 1992-1995

Editor: *Machining Composites*, ASME Bound Volume 1988 (with M. Taya)

Editor: *Machining Characteristics of Advanced Engineering Materials*, ASME Bound Volume, 1989 (with M . Hashish)

Editor: *Machining of Advanced Composites*, ASME Bound Volume 1993 (with R. Komanduri)

Editor: *Processing, Design and Fabrication of Composites*, ASME Bound Volume (in press) 1994 (with T.S. Srivatsan and K. Ramani)

Editor: *Machining of Ceramics & Composites*, Mercer & Dekkar Publ, New York, 1999 (with J.S. Jahanmir, P.Koshy).

Editor: *Superplasticity in Advanced Materials*, (ICSAM 2009), Trans Tech Publ. Switzerland, 2010 (with D. G. Sanders, L.D. Hefti, F. Abu-Farha, L. Hector,Jr)

### **Community service**

2006-Present Advisor, Osmania University Alumni Association of North America

#### Seattle/King County Coalition on Homelessness

Volunteer, 2016 One Night Count of people who are homeless and without shelter

Volunteer, 2015 One Night Count of people who are homeless and without shelter

Volunteer, 2014 One Night Count of people who are homeless and without shelter

Volunteer, 2013 One Night Count of people who are homeless and without shelter

Volunteer, 2012 One Night Count of people who are homeless and without shelter

Volunteer, 2010 One Night Count of people who are homeless and without shelter

Volunteer, 2009 One Night Count of people who are homeless and without shelter

Volunteer, 2008 One Night Count of people who are homeless and without shelter

### Consulting

2015-present	Boeing Company, BR&T, Seattle
2004-2005	Magnuson Lowell PS, Redmond WA
1998-2005	Boeing (Commercial ) Company, Business Knowledge Bank
1997 Winter	InControl, Redmond, Washington
1993 Fall	Saunders College Publishing Company, Philadelphia
1993 Summer	John Morino, Centralia, Washington
1992 Summer	Keytech Corporation, Bothel, Washington
1991 Autumn	Expert Witness, Seattle, Washington

### **International, national or governmental service**

#### Reviews of Proposal and Panels

Office of Naval Research	Metallic Structures Program Review, 2011
National Science Foundation	Once in every two years as proposal and panel reviewer
The Boeing Commercial Company	Member, External reviewer of New Airplane Technology (2002-2009)

### **All other service**

<b>Google Scholar Citations</b>	<b>All</b>	<b>Since 2014</b>
<u>Citations</u>	8724	4311
<u>h-index</u>	50	34
<u>i10-index</u>	149	92