Resume: Dr. Priyadarshan (Priya) Manohar

***Education:***

**Ph. D. (Materials Engineering)**: 1994 – 1997, University of Wollongong, Australia. Thesis Title: *Grain Growth and Continuous Cooling Transformation Behavior of Microalloyed Steels Containing Ti, Nb, Mn and Mo*. Advisors: Prof. Druce Dunne and Prof. T. Chandra

**Graduate Diploma (MS) in Computer Science**: 1998 – 1999, University of Wollongong, Australia. C++ Programming, UNIX, Oracle Database, and Computer Architecture and Operating Systems. *First Class with Distinction*.

**Bachelor of Engineering (Metallurgy)**: 1980 – 1985, College of Engineering, Pune University, India. *First Class with Distinction*, *Awarded University Gold Medal*.

***Professional Memberships:***

* The Institution of Engineers, Australia - Member and ***Registered*** ***Chartered Professional Engineer***, Member of the Chemical College of IEAust.
* American Society for Materials (ASM) International, USA. Chair of ASM Pittsburgh Chapter, 2013-14 and 2014-15, Current Co-Chair 2022 - 23
* Association for Iron and Steel Technology (AIST), USA
* The Minerals, Metals and Materials Society (TMS), USA
* American Ceramic Society (ACerS)

## Teaching Experience:

**Jan. 2005 to Current:** Former Co-Director of Research and Outreach Center (ROC, 2012 - 2018), and Professor of Industrial and Manufacturing Engineering, School of Engineering, Mathematics and Science (SEMS), at Robert Morris University (RMU), Moon Township, PA 15108. My job responsibilities as Director (Research and Grants) included the following:

* Create and maintain intellectual assets and interests of SEMS faculty, staff and students in various endeavors including research, industrial and educational outreach, proposal development, consulting and training
* Identify local, state and federal funding opportunities and manage and support grant writing activities
* Provide project management and administrative support to SEMS researchers and maintain cost accounting records including income statements, cash flow reports, and inventories, develop projects and contractual understanding between SEMS and outside organizations and funding agencies
* Conduct critical review of successes and concerns and recommend operational improvements for future growth
* Position research activities as interdisciplinary research across departments, schools and entire university community.
* Build, motivate and lead faculty teams to solve diverse, technical problems,
* Develop and execute strategic initiatives in support of RMU’s strategic plan.

My teaching experience includes the teaching of several core courses in undergraduate engineering curriculum as well as core courses within manufacturing engineering major including:

* ENGR 1610: Statics and Strength of Materials
* ENGR 2180: Engineering Materials
* ENGR 3200: Value Design
* ENGR 3500: Plant Layout and Material Handling
* ENGR 3600: Production Engineering
* ENGR 3610: Fundamentals of Manufacturing Engineering
* ENGR 3650: Product and Tool Design (Interdisciplinary course with Marketing and Media Arts)
* ENGR 3680: Introduction to Quality Engineering
* ENGR 3700: Manufacturing Planning and Control
* ENGR 4180: Ceramic and Polymeric Materials

I also teach graduate courses within MS in Engineering Management program on ground on Moon Campus and CTC Johnstown campus and also online as follows:

* ENGR 5010: Engineering Cost Estimation and Financial Analysis
* ENGR 5020: Systems Engineering: Design and Analysis
* ENGR 6193: Product and Service Design

Student feedback on my teaching shows continuous improvement in student satisfaction. My overall student-determined rating currently stands at 4.20 compared to the national average of 4.01.

Some of my service activities include active memberships in the following RMU committees:

* ABET Accreditation Coordinator, ABET Certified Auditor
* Member of Teaching Effectiveness Work Group – part of negotiation process between Faculty Federation – RMU Administration.
* University Graduate Curriculum Committee (UGCC)
* RMU Institutional Review Board (IRB) - Chair
* Presidential Transformational Award Committee
* SEMS Graduate Curriculum Committee (SEMS - GCC)

# *Previous Teaching Experience:*

1. Taught part of a senior year undergraduate course (MATE 431 – Sheet Metal Processing) in Materials Engineering at University of Wollongong (1999, 2000).
2. Developed and delivered a short course at masters level entitled “Thermomechanical Processing of Steel: Experimental Techniques and Industrial Perspectives”, University of Wollongong, 2001.
3. Tutored a core-engineering subject (ENGG 153 – Engineering Materials) at undergraduate freshman level at UOW (1998 – 2001).
4. Demonstrated sophomore undergraduate laboratory work for courses such as “Optical Metallography (MATL 291)”, “Heat Treatment of Steels (MATL 292)” and “Mechanical Testing of Materials (MATL 206)” at the Dept. of Materials Engg., University of Wollongong for two years (1995 and 1996).
5. Taught several junior and senior level undergraduate topics such as “Failure Analysis”, “Materials Selection and Specifications”, and “Heat Treatment of Steels” at the Department of Metallurgical Engineering, Pune University, India (1986 – 1990).
6. Private tutoring for Grades 11 and 12 Physics course, 2000 – 2001, Australia.

***Post-doctoral Research Experience:***

**2001 – 2003:** Research Associate, Carnegie Mellon University (CMU), Pittsburgh. Project Title: *High Performance Computer Simulation of Annealing Phenomena*. I worked with Prof. Tony Rollett to develop high performance computer simulation programs to study several aspects of annealing phenomena in metals such as recovery, recrystallization, normal and abnormal grain growth, texture development, diffusional phase transformations and structure – property relationships. I utilized Pittsburgh Supercomputer Center and NERSC, California supercomputing facilities to develop parallel programs using MPI technology. Also developed constitutive models for high T mechanical properties of medium C steels and wrote an expert system for computational modeling of rod rolling of medium C-Mn steels.

**1999 – 2001:** Research Fellow, BHP Institute for Steel Processing and Products, Australia. Project Title: *High Temperature Mechanical Properties, The Peritectic Reaction and The Quality of Continuously Cast Steel.* The projects involved investigation of peritectic reaction in carbon and low alloy steels and its influence on the surface quality of continuously cast slabs. Mechanical behavior of Fe – C alloys at high temperatures (close to the solidus) was determined using a modern thermomechanical simulator (Gleeble 3500). The mechanism of peritectic reaction was studied using Confocal Laser Scanning Microscopy. This work has generated important mechanical property data at high temperatures in single-phase δ, δ+γ and single-phase γ fields in low carbon steels. In addition, Young’s modulus at high temperature was also determined. Wrote an expert system for predicting suitable steel composition that meets customer’s property requirements.

**1998 – 1999:** University of Wollongong, Australia. Project Title: *Direct Hot Processing of Microalloyed Steel Strip from Thin Cast Slabs*. The major aim of this project was to simulate near-net-shape casting process (strip casting) in the laboratory using a modern thermomechanical simulator (Gleeble 3500). Developed a novel technique to estimate the hot strength and ductility of *in-situ* melted and cast tensile test specimens and investigated the influence of microalloying elements (Nb and Ti addition) on hot ductility of steels. I was also involved in the research of appropriate secondary processing strategies for strip cast steels.

## Student Supervision:

1. Co-supervised one M.S. student at Carnegie Mellon University, 2002 – 2003.
2. Co-supervised two Ph.D. students at the University of Wollongong (UOW).
3. Co-supervised four final year undergraduate thesis projects at UOW (1996 - 2000).
4. Industrial supervisor of a Master’s thesis student at Pune University, India.
5. Co-supervised over fifteen final year undergraduate thesis projects at Pune University, India (1986 – 1993).

***Research Grants Awarded:***

1. S. Acharya, P. A. Manohar and P. Wu: “Collaborative Education: Building a Skilled Software Verification and Validation Community”, under Transforming Undergraduate Education in Science, Technology, Engineering and Mathematics (TUES) Program within NSF Division of Undergraduate Education (DUE), awarded $186,167 over three years 2013 – 2016.
2. Prof. A. K. Tieu, Dr. P. Manohar and Prof. X. H. Liu: “Contact mechanics in hot strip rolling”, SPIRT / LINKAGE grant supported by Australia Research Council (ARC) at the University of Wollongong (UoW), Australia, awarded $294,000 over three years 2004 – 2006.
3. Prof. R. Dippenaar, Dr. P. Manohar, and Dr. C. R. Killmore: “Dynamic recrystallization and preferred orientation in ultra-thin strip under conditions of fluctuating temperature and stress”, SPIRT / LINKAGE grant supported by Australia Research Council (ARC) at the University of Wollongong (UoW), Australia, awarded $180,000 over three years 2003 – 2005.
4. Prof. M. Ferry, P. A. Manohar and Prof. B. Parkar: “Microstructural evolution of steel during deformation in the solid state: a physical simulation of near-net-shape casting”, SPIRT / LINKAGE grant supported by Australia Research Council (ARC) at the University of Wollongong (UoW), Australia, awarded $765,000 over three years 2000 - 2003.
5. P. A. Manohar: “Electron Energy Loss Spectroscopy (EELS) analysis of precipitates in microalloyed steels”, Australian Nuclear Science and Technology Organization (ANSTO) Graduate Research Grant, $10,000 for one year 2001.

***Professional Work Experience:***

**2003 - 2004:** Lead Materials Scientist, Modern Industries, Inc, Pittsburgh. The main job responsibilities include management of a commercial materials laboratory that includes materials planning and purchase, staff training, equipment calibration and maintenance, and writing test procedures; business development, quote preparation, negotiation and obtaining approval, project planning, execution and preparing final reports. Examples of some of the projects handled by me are:

* Creep damage analysis of low carbon, low alloy steel pipes in a fossil-fuel power plant at Homer City using replication metallography.
* Stress corrosion cracking failure analysis of jack bolts where the failure was related to residual tensile stresses due to heat treatment, degradation of chlorine-bearing mold coolant and MoS2 lubricant around the bolt area.
* Failure analysis of striking bar in a percussion hammer assembly. The root cause analysis indicated that the failure occurred in torsional fatigue mode due a combination of dynamic operating stresses
* Corrosion resistance of stainless steels in various environments

I made use of extensive failure investigation tools including data collection and analysis, visual observation, a range of mechanical and non-destructive tests, fractography, optical microscopy, and SEM / EDS analysis.

**1985 - 1993:** I held various positionsin quality assurance and engineering research departments in Tata Engineering and Locomotive Company (*TELCO*), Pune, India (the company is now called Tata Motors). *Telco* is the largest automobile manufacturing company in India and produces over 500,000 vehicles per year. The types of vehicles manufactured include passenger vehicles (cars) based on diesel engine, pick-up trucks, utility vans, light commercial vehicles (4-6 ton diesel vehicles) and heavy commercial vehicles (10-20 ton trucks). Some of my main responsibilities are described below.

* *Failure Analysis:* Conducted failure analysis ofautomotive components such as leaf springs, suspension coil springs, transmission gears, crankshafts, engine valves, steering worm, propeller shaft tube, piston rings etc. Prepared failure analysis reports outlining reasons for failure and suggested corrective actions that could be taken to prevent such failures in future.
* *Metallurgical Development Projects:* planning and execution of themetallurgical development projects that had a variety of objectives such as quality improvement, cost reduction, product development, vendor development, and writing of company specifications for materials property standards and preparing quality assessment manuals.
* *Metallurgical Trouble Shooting:*Problems occurring on the machining transfer lines or in assembly lines were referred to my lab for investigation. The nature of problems referred could be very diverse indeed: low tool life, inferior surface finish, breakage during assembly, breakage of components some time after assembly that was discovered only at the final inspection point, parts are difficult to assemble, suspected crack or defect in the component and so on. Trouble shooting procedure involved visiting the work station where the problem was faced, getting acquainted with the component, machine, manufacturing/assembly process, and people involved in manufacturing, determining gravity of the problem, locating supplier of the component (manufactured in-house or supplied by a vendor), metallurgical testing of the component to find out if the component met with the relevant quality specifications and to determine the reason for the problem. The next step involved determining the short term and long term solution of the problem. Next - implementing the solution to solve the problem on the line. Final step involved the documentation of the findings and discussing them in the production and quality meetings to avoid recurrence in future.

I was awarded three *suggestion awards* for improving the quality and reducing the manufacturing cost of some automotive components.

### *Hands-on Experience of Laboratory Equipment:*

*Mechanical Testing:* including room and high temperature tensile tests (*Instron)*, impact test, room and high temperature compression tests, various types of macro and micro hardness tests, rotating bending fatigue test, formability tests (flat bend test, hole expansion test, cupping test);

*Optical Microscopy:* microstructure characterization, grain size measurement, inclusion rating, image analysis, quantitative metallography and statistical analysis of data, replication metallography.

*Electron Microscopy*: SEM for microstructures, fractography and failure analysis, EDS and WDS microanalysis for segregation effects, TEM observations of morphology and composition of nano-scale microalloy precipitates using several techniques such as thin foil, carbon replica, and metal replica with Electron Energy Loss Spectroscopy (EELS) analysis;

*Specialized Analytical, Processing, Testing Equipment:* Quench and Deformation Dilatometry; Gleeble thermomechanical simulator for the determination of high temperature mechanical behavior and property data; instrumented laboratory hot rolling mill; high temperature compression testing; Working knowledge of Confocal Scanning Laser Microscopy; Room and High Temperature XRD; Orientation Imaging Microscopy for texture determination and a variety of non-destructive testing equipment.

***Publications:***

***Book:***

1. S. Acharya and P. A. Manohar: *Case Studies in Software Verification & Validation*, Alexander Street Press, expected publication date: March 2016

***Book Chapters:***

1. P. A. Manohar: “Steel Rolling System Design for Advanced High Strength Steels”, Chapter 9, in the book “*Rolling of Advanced High Strength Steels – Theory, Simulation and Practice*” – editors Jingwei Zhao and Zhengyi Jiang, CRC Press, published June 2017, pp. 357 - 414
2. P. A. Manohar, M. Ferry and T. Chandra: “Recrystallization of Ferrite and Austenite”, ‘*Reference Module in Materials Science and Materials Engineering*’, Oxford, Elsevier Science, ISBN 978-0-12-803581-8, Saleem Hashmi (editor-in-chief), 2016, pp. 1 – 7
3. P. A. Manohar and M. Ferry: “Thermomechanical Processing of Ferrous Alloys”, Chapter 3 in the book entitled *Deformation and Processing of Structural Materials*, ed. Z. X. Guo, Woodhead Publishing, UK, 2005, pp. 76 - 116.
4. A. D. Rollett and P. A. Manohar: “The Monte Carlo Method”, Chapter 4 in the book ‘*Continuum Scale Simulation of Engineering Materials*’, D. Raabe, F. Roters, F. Barlat and L-Q Chen (eds.), Wiley – VCH, Germany, 2004, pp. 77 - 114.
5. P. A. Manohar, M. Ferry and T. Chandra: “Recrystallization of Ferrite and Austenite”, published in the *Encyclopedia of Materials: Science and Technology*, Elsevier Science, UK, 2001, Vol. 4, pp. 3019 - 3024.

***Review Papers:***

1. P. A. Manohar, M. Ferry and A. Hunter: “Direct Strip Casting of Steels – Historical Perspective and Future Direction”, *Materials Forum*, Vol. 24, 2000, pp. 15 – 32.
2. P. A. Manohar, M. Ferry and T. Chandra: “Review: Five Decades of the Zener Equation”, *ISIJ International*, Vol. 38, No. 9, 1998, pp. 913 - 924.

# *Invited Lectures:*

1. P. A. Manohar, S. S. Shivathaya and R. J. Dippenaar: “A Hybrid System for the Design and Processing of C – Mn and Microalloyed Steels”, proc. international conference ‘Mathematical Modelling of Metal Technologies (MMT 2000)’, Ariel, Israel, Nov. 12 - 15, 2000, Ed. by M. Zinigrad, pp. 57 - 66.
2. P. A. Manohar, S. S. Shivathaya, M. Ferry and T. Chandra: “Development of an Integrated System for Designing Steelmaking Aim Compositions” – key note lecture presented at the 2nd International Conf. on Intelligent Processing and Manufacturing of Materials (IPMM ‘99)’, July 10 - 15, 1999, Honolulu, Hawaii, USA, published in the conference proceedings, ed. by J. A. Meech, M. M. Veiga, M. H. Smith and S. R. LeClaire, pp. 105 - 110.

***Other Refereed Journal Papers:***

1. **S. Acharya, P. A. Manohar, and P. Wu:** Intellectual Merit and Broader Impact: Collaborative Education Towards Building a Skilled Software Verification and Validation Community, Information Systems Education Journal, Vol. 17, No. 6, Dec. 2019, pp. 12 - 21
2. S. Acharya, P. A. Manohar, P. Wu, B. Maxim and M. Hansen: “Design, Development and Delivery of Active Learning Tools in Software Verification and Validation Educations”, *Journal of Education and Learning*, Vol. 7, No. 1, 2018, pp. 13 – 28
3. S. Acharya, P. A. Manohar, P. Wu and W. Schilling: “Using Academia-Industry Partnerships to Enhance Software Verification & Validation Education via Active Learning Tools”, *Journal of Education and Learning*, Vol. 6, No. 2, 2017, pp. 69 – 84.
4. S. Acharya, P. A. Manohar, and Peter Wu, “Using Case Study Videos as an Effective Active Learning Tool to Teach Software Development Best Practices”Journal of Systemics, Cybernetics and Informatics, Vol. 15, No. 3, 2017, pp. 70 – 75, ISSN# 1690-4524 (invited paper).
5. S. Acharya, P. A. Manohar, P. Wu and W. Schilling: “Using Academia-Industry Partnerships to Enhance Software Verification & Validation Education via Active Learning Tools”, *Journal of Education and Learning*, Vol. 6, No. 2, 2017, pp. 69 – 84
6. P. Wu, P. A. Manohar and S. Acharya: “Design and Evaluation of Class Exercises for Active Learning in Software Verification and Validation” *Information Systems and Education Journal*, Vol. 14, No. 4, July 2016, pp. 4 – 12..
7. S. Acharya, P. A. Manohar, P. Wu., W. Schilling and A. Ansari: “Integrated Active Learning Tools for Enhanced Pedagogy in a Software Engineering Course”, *Computers in Education Journal*, Vol. 7, No. 2, April – June 2016, pp. 17 - 28.
8. P. A. Manohar, S. Acharya, P. Wu., M. Hansen, A. Ansari and W. Schilling: “Case Studies for Enhancing Student Engagement and Active Learning in Software V&V Education”, *Journal of Education and Learning*, Vol. 4, No. 4, 2015, pp. 39 - 52.
9. P. A. Manohar: “Failure Analysis of a Striking Bar”, accepted for publication in the *Journal of Failure Analysis and Prevention (JFAP)*, (Expected Publication Date: February 2016 issue).
10. B. Palac and P. A. Manohar: “Education Spotlight: Materials Sustainability App Serves As Teaching Tool”, *Advanced Materials and Processes (AM&P)*, Nov./Dec. 2015, Vo. 173, No. 10, pp. 29 – 30.
11. P. A. Manohar: Solving Problems in the Human / Legal Domains Using Failure Analysis Methods, *Advanced Materials and Processes (AM&P)*, April 2015, Vol. 173, No. 4, pp. 24 – 27.
12. P. A. Manohar, S. Acharya and P. Wu: “Enhancing Manufacturing Process Education via Computer Simulation and Visualization", *Journal of Education and Learning*, Vol. 3, No. 3, 2014, pp. 172 – 182.
13. S. Acharya, P. A. Manohar, P. Wu, W. Schilling and A. Ansari: “Collaborative Education: Building a Skilled Software Verification and Validation User Community”, *Journal of Computers in Education*, Vol. 5, No. 4, Oct. - Dec. 2014, pp. 26 - 35.
14. P. A. Manohar: “Failure Analysis of a Hammer Drill Shaft Under Complex Loading Paths and Severe Environmental Conditions”, *Materials Science Forum*, Vols. 638 – 642, 2010, pp. 3889 – 3894.
15. P. A. Manohar: “Thermomechanical Process Innovation and Optimization via Computer Modeling and Simulation”, *Materials Science Forum*, Vols. 638 – 642, 2010, pp. 3883 - 3888.
16. P. A. Manohar: “Beehive Coke – The Stuff That Built a Nation”, *Advanced Materials and Processes*, Vol. 167, No. 8, 2009, pp. 54.
17. P. A. Manohar: “Stress Corrosion Cracking Failure of Jackbolts for Die Casting Press”, *Materials Science Forum*, Vols. 539 – 543, 2007, pp. 2162 - 2167.
18. P. A. Manohar: “A Memo to the Budding Professor”, Spot-Light Editorial Article on website of TMS, <http://materialstechnology.tms.org/TECarticle.asp?articleID=1051>, July 2007
19. P. A. Manohar, K-H. Lim, A. D. Rollett and Y. Lee: “Computational Exploration of Microstructural Evolution in a Medium C-Mn Steel and Applications to Rod Mill”, *ISIJ International*, Vol. 43, No. 9, 2003, pp. 1421 - 1430.
20. P. A. Manohar, K. Kunishige and T. Chandra: “Influence of Thermomechanical Processing on Microstructural Evolution in Si-Mn and Al-Mn TRIP Steels”, *Materials Science Forum*, Vols. 426 - 432, 2003, pp. 1127 – 1132.
21. P. A. Manohar, K-H Lim and A. D. Rollett: “Simulation of Microstructural Evolution in Wire Rod Rolling of Medium C-Mn Steel”, *Materials Science Forum*, Vols. 426 - 432, 2003, pp. 3789 – 3794.
22. K-H Lim, P. A. Manohar, D. Lee, Y. C. Yoo, C. M. Cady, G. T. Gray III and A. D. Rollett: “Constitutive Modelling of High Temperature Mechanical Behavior of a Medium C-Mn Steel”, *Materials Science Forum*, Vols. 426 - 432, 2003, pp. 3903 – 3908.
23. P. A. Manohar, K. Kunishige M. Ferry and T. Chandra: “Continuous Cooling Transformation Behavior of Si - Mn and Al - Mn TRIP Steels”, *Materials Science and Technology*, Vol. 18, No. 8, 2002, pp. 856 – 860.
24. M. Ferry, M. Thompson and P. A. Manohar: “Decomposition of Coarse Grained Austenite During Accelerated Cooling of C-Mn Steels”, *ISIJ International*, Vol. 42, No. 1, 2002, pp. 86 – 93.
25. M. Thompson, M. Ferry and P. A. Manohar: “Simulation of Hot-Band Microstructure of C-Mn Steels During High Speed Cooling”, *ISIJ International*, Vol. 41, No. 8, 2001, pp. 891 - 899.
26. P. A. Manohar, S. S. Shivathaya and M. Ferry: “Design of an Expert System for the Optimization of Steel Compositions and Process Route”, *Expert Systems With Applications*, Vol. 17, No. 2, 1999, pp. 129 - 134.
27. P. A. Manohar and M. Ferry: “Grain Growth in Particle-Containing Metastable Microstructures”, *Materials Science Forum*, Vols. 312 – 314, 1999, pp. 455 – 460.
28. P. A. Manohar and T. Chandra: “Continuous Cooling Transformation Behavior of High Strength Microalloyed Steels for Linepipe Applications”, *ISIJ International*, Vol. 38, No. 7, 1998, pp. 766 - 774.
29. P. A. Manohar and T. Chandra: “Dimensions of Grain Boundary Mobility”, *ISIJ International*, Vol. 37, No. 7, 1997, pp. 726 - 728.
30. P. A. Manohar, T. Chandra and C. R. Killmore: “Continuous Cooling Transformation Behavior of Microalloyed Steels Containing Ti, Nb, Mn and Mo”, *ISIJ International*, Vol. 36, No. 12, 1996, pp. 1486 - 1493.
31. P. A. Manohar, D. P. Dunne, T. Chandra and C. R. Killmore: “Grain Growth Predictions in Microalloyed Steels”, *ISIJ International*, Vol. 36, No. 2, 1996, pp. 194 - 200.
32. P. A. Manohar and M. Dadhich: “Machinability Prediction by Simulation”, published in the journal *Indian Machinist and Flexible Manufacturing*, Vol. 4, Nos. 2 - 3, 1992, pp. 67 - 70.

***Refereed Conference Papers:***

1. P. A. Manohar and F. Almutairi: “Work In progress - A Thesis Based Option for Enhancing Pedagogy in Engineering Economy at Graduate Level”, ASEE Conference, June 16 – 19, 2019, Tampa, Florida.
2. P. Wu, P. A. Manohar and S. Acharya: “Collaborative Education: Building a Software V & V Community”, EDSIG Conference, Norfolk, VA, Nov. 2018.
3. P. A. Manohar, S. Acharya, P. Wu and M. Hansen: “Dissemination of Active Learning Tools for Software V&V Education and Their Pedagogical Assessment”, accepted for submission ASEE 2018 Conference June 24 – 28, Salt Lake City, Utah.
4. S. Acharya, P. A. Manohar and P. Wu: “Measuring Broader Impact of NSF Funded Project on Software Engineering Education”, ASEE 2018 Conference June 24 – 28, Salt Lake City, Utah.
5. S. Acharya, P. A. Manohar and P. Wu: “Strategies for Delivering Active Learning Tools in Software Verification & Validation Education”,ASEE 2017 Conference, June 25 – 28, 2017, Columbus, Ohio
6. P. A. Manohar: “Research Conversations for Promoting Interdisciplinary Education, Research, and Faculty Collaboration”, ASEE Conference, June 26 – 29, 2016, New Orleans, Louisiana.
7. S. Acharya, P. A. Manohar and P. Wu: “Using Case Study Videos to Effectively Teach Software Development Best Practices”, published in the conference proceedings of The 20th World Multi-Conference on Systemics, Cybernetics, and Informatics (WMSCI) Conference, July 05 – 08, 2016, Orlando, FL, Organized by International Institute of Informatics and Systemics (IIIS), pp. 230 – 235
8. P. A. Manohar: “Through-Process Modeling for Hot Processing of Advanced High Strength Steel Strips”, 6th International Conference on Recrystallization and Grain Growth, Pittsburgh, July 17 – 21, 2016, ed. by E. A. Holm *et al*., TMS, pp. 165 – 170
9. S. Acharya, P. A. Manohar, P. Wu: “Enhancing Verification and Validation Education using Active Learning Tools Developed through an Academia-Industry Partnership”, ASEE Conference, June 26 – 29, 2016, New Orleans, Louisiana.
10. S. Acharya, P. A. Manohar and P. Wu: “Collaborative Education: Building a Skilled Software Verification and Validation User Community”, presented at the NSF and American Association for the Advancement of Science (AAAS) Symposium on April 27 – 29, 2016 in Washington D.C.
11. P. Wu, S. Acharya and P. A. Manohar: “Class Exercises for Active Learning in Software Verification and Validation”, Association of Information Technology Professionals (AITP) / Education Special Interest Group (EDSIG) Conference, Wilmington, North Carolina, Nov. 01 - 04 , 2015 (accepted)
12. P. A. Manohar, S. Acharya, P. Wu, W. Schilling and A. Ansari: “Case Study Based Educational Tools for Teaching Software V&V Course at Undergraduate Level”, ASEE Conference, Seattle, June 14 – 17, 2015
13. S. Acharya, P. A. Manohar, P. Wu, W. Schilling, and A. Ansari: “Integrated Active Learning Tools for Enhanced Pedagogy in Software Engineering Course”, ASEE Conference, Seattle, June 14 – 17, 2015
14. P. A. Manohar: “Letter from the Chair: A Dream Come True”, ASM Pittsburgh Chapter Newsletter, *The Materials Matrix*, Oct. 2013, Vol. 16, No. 1, p. 1-2.
15. P. A. Manohar: “Letter from the Chair: Taking on the Challenge of Being Young Forever”, ASM Pittsburgh Chapter Newsletter, *The Materials Matrix*, Jan. 2014, Vol. 16, No. 2, p. 4-5.
16. P. A. Manohar: “Letter from the Chair: Review of the Successful Year and Looking Ahead”, ASM Pittsburgh Chapter Newsletter, *The Materials Matrix*, May 2014, Vol. 16, No. 3.
17. P. A. Manohar, P. Wu and S. Acharya: “Enhancing Manufacturing Process Education via Computer Simulation and Visualization”, ASEE Conference Indianapolis, June 15 – 18, 2014.
18. S. Acharya, P. A. Manohar, P. Wu, W. Schilling and A. Ansari: “Collaborative Education: Building a Skilled Software Verification and Validation User Community”, ASEE Conference Indianapolis, June 15 – 18, 2014.
19. P. A. Manohar and C. Jones: “Improving effectiveness of Interdisciplinary Design Project: Lessons Learnt”, ASEE Conference, Atlanta, June 23 – 26, 2013.
20. C. Jones, P. A. Manohar and J. Radermacher: “Enhancing Collaboration During the Product Development Process: An Interdisciplinary Project Combining Marketing Research, Engineering, and Media Arts”, Atlantic Marketing Conference, Williamsburg, Friday, 09/28/2012, 09:45 – 11:15 session, paper presented by C. Jones.
21. P. A. Manohar: “Case Studies in Engineering Economics for Manufacturing Competitiveness”, presented at the Annual ASEE Conference, June 13 – 16, 2012, San Antonio, Texas.
22. P. A. Manohar: “Bottom Up Engineering of Complex Tissue Using Protein Nanofibers”, ASM Pittsburgh Chapter Newsletter, *The Materials Matrix*, February 2013, p. 9.
23. P. A. Manohar: “Development of Smart Materials Requires Interdisciplinary Collaboration”, ASM Pittsburgh Chapter Newsletter, *The Materials Matrix*, February 2013, p. 4, p. 11.
24. P. A. Manohar: Product and Service Design Bundle: A Curriculum for Teaching Manufacturing Competitiveness”, Annual ASEE Conference, June 26 – 29, 2011, Vancouver, BC, Canada.
25. P. A. Manohar: “Pittsburgh Golden Triangle Night Lectureship”, *Advanced Materials and Processes*, March 2012, p. 40.
26. P. A. Manohar: “Andrew Carnegie Lecture in Honor of Edward Sobota”, *The Materials Matrix*, May 2011, p. 2.
27. P. A. Manohar: “Pittsburgh Night Lecture Honors Tom Joseph”, *The Materials Matrix*, Oct. 2011, p. 2.
28. P. A. Manohar: “A Hands-on Course Curriculum for Supporting Design Education for Manufacturing Students”, ASEE Conference, June 20 – 23, Louisville, Kentucky, 2010.
29. P. A. Manohar: “A Top-Down Approach for Teaching an Introductory Engineering Materials Course”, ASEE Conference, June 14 – 17, Austin, Texas, 2009.
30. P. A. Manohar: “Modern Tools and Techniques for Teaching Manufacturing Engineering in the Digital Age”, ASEE Conference, June 22 – 25, 2008, Pittsburgh.
31. P. A. Manohar, A. Sirinterlikci and Z. Czajkiewicz: “On-Line Games and Simulation Tools for Teaching Manufacturing Engineering Laboratory”, ASEE Conference, June 22 – 25, 2008, Pittsburgh.
32. P. A. Manohar: “The Development of Flexible Hot Rolling Technology Based on Through-Process Modeling”, 137th TMS Annual Meeting, *Frontiers in Process Modeling* Symposium, New Orleans, March 9 – 13, 2008.
33. P. A. Manohar, C. Jones and J. Radermacher: “Development and Implementation of a Junior-Year Design Course in an Interdisciplinary Environment Along with Media Arts and Marketing, ASEE Conference, June 23 – 26, 2007, Hawaii, received ***2007 BEST PAPER*** award of the ASEE Manufacturing Division.
34. P. A. Manohar: “An Innovative Two-Tiered Approach to Teaching Engineering Materials to Manufacturing Engineering Students”, The Annual ASEE Conference, Chicago, June 18 – 21, 2006.
35. P. A. Manohar and A. D. Rollett: “Asynchronous Parallel Potts Model for Simulation of Grain Growth”, ‘Materials Science and Technology (MS & T ‘03) Conference’ incorporating ‘Modeling, Microstructure and Control in Ferrous and Non-ferrous Industry Symposium’, Ed. F. Kongoli *et al*., TMS and ISS, Chicago, Nov. 9 – 12, 2003, pp. 399 – 412.
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41. P. A. Manohar and M. Ferry: “Microstructural Stability in Particle-Containing Nanocrystalline Materials”, paper presented at the ‘International Symposium on Metastable, Mechanically Alloyed and Nanocrystalline Materials (ISMANAM-98)’, July 7 - 11, 1998, University of Wollongong.
42. P. A. Manohar, M. Ferry and T. Chandra: “Prediction of Critical Grain Radius in Particle-Containing Materials”, paper presented at the ‘Third Inter. Conf. on Grain Growth (ICGG-3)’, June 14 - 19, 1998, Carnegie Mellon University, Pittsburgh, USA, published in the conf. proceedings, ed. by H. Weiland *et al*., pp. 153 - 159.
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46. P. A. Manohar, T. Chandra and D. P. Dunne: “Grain Coarsening Behavior of Microalloyed Steels Containing Ti, Nb, Mn and Mo”, paper presented at the international conference “Recrystallization ‘96”, Oct. 21 - 24, 1996, Monterey, California, USA, ed. by T. R. McNelley, pp. 445 - 451.
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***Posters and Presentations at Conferences / Meetings / Symposia:***

1. P. A. Manohar: Phase Transformation Morphology and Kinetics in Simulated Strip Cast Low Alloy Steels,MS&T Conference**,** Pittsburgh, PA, Oct. 09 - 13, 2022, (under preparation).
2. P. A. Manohar: Effect ofCoarse Austenite Grain Size on Phase Transformations in Low Alloy Steels,MS&T Conference**,** Columbus, Ohio,Oct. 17 -21, 2021 (meeting canceled due to pandemic).
3. P. A. Manohar: “Through-Process Modeling of Hot Processing for Advanced High Strength Steel Strips”, Recrystallization and Grain Growth Conference, Pittsburgh, July 17 – 21, 2016 (*poster*)
4. B. Palac and P. A. Manohar: “Developing a Mobile Application as a Digital tool for Educating materials Sustainability in Middle and High Schools”, Young Members’ Night, ASM International, Pittsburgh, Feb. 18, 2015 (*poster*)
5. C. Mura and P. A. Manohar: “Materials Challenge for Personal Additive Manufacturing Technologies”, Young Members’ Night, ASM International, Pittsburgh, Feb. 18, 2011 (*poster*)
6. P. A. Manohar: “Catching a Thief Who Left No Fingerprints: Failure Analysis of a Hammer Drill Shaft”, ASM Materials Solutions Conference, Oct. 18 – 21, 2004, Columbus, Ohio.
7. P. A. Manohar: “Failure Analysis: Principles and Practice”, Heat Treat ‘03 Conference and Symposium, ASM International, Indianapolis, Sept. 15 – 17, 2003 (*presentation*).
8. P. A. Manohar, A. D. Rollett and J. R. Morris: “Asynchronous Parallelization of Potts Model and its Application to Grain Growth”, Department of Defense User’s Group Conference, Seattle, June 9 – 12, 2003 (*poster*).
9. P. A. Manohar, A. D. Rollett and J. R. Morris: “Development of an Efficient, Parallel Potts Model for Computer Simulation of Grain Growth in 2D”, Thermec 2003, Spain, (*poster*)
10. A. D. Rollett, M. Demirel, P. Manohar, B. El-dasher, J. Fridy, D. Saylor and K-Y Jung: “Advances in Modelling Microstructural Evolution”, Thermec 2003, Spain (*presentation*).
11. K-H. Lim, A. D. Rollett and P. A. Manohar: “Simulation of Texture Development in Rod Rolling”, Annual Pitt-CMU Graduate Research Poster Competition, Pittsburgh, 2003 (*poster*).
12. P. A. Manohar and A. D. Rollett: “An Efficient, Parallel Monte Carlo Method for Asynchronous Simulation of Grain Growth: Preliminary Results in 2D”, Computational Materials Science Network (CMSN) Meeting, Ames, Iowa, Oct. 14 – 15, 2002; presented an update of this work at CMSN meeting held at University of California at San Diego (UCSD), March 6 - 7, 2003 (*presentations*).
13. P. A. Manohar, K-H. Lim and A. D. Rollett: “Mathematical Modelling of Microstructural Evolution During High Strain Rate Deformation”, TMS Fall Meeting and ‘Materials Solutions’ conference, Columbus, Ohio, USA, October 6 – 10, 2002 (*poster*).
14. A. D. Rollett and P. A. Manohar: “Towards Realistic Mesoscopic Methods for Microstructural Evolution”, TMS Fall Meeting and ‘Materials Solutions’ conference, Columbus, Ohio, USA, October 6 – 10, 2002 (*presentation*).
15. K-Y. Jung, P. Manohar and A. D. Rollett: “New Methods for Computer Simulation of Microstructural Evolution in 3D”, TMS Fall Meeting and ‘Materials Solutions’ conference, Columbus, Ohio, USA, October 6 – 10, 2002 (*presentation*).
16. P. A. Manohar, K. Kunishige, T. Chandra and M. Ferry: “Continuous Cooling Transformation Behaviour of Si - Mn and Al - Mn TRIP Steels”, poster presented at a workshop entitled ‘Contemporary Research in Physical Metallurgy’, organized by B. C. Muddle and J. F. Nie, Feb. 8 - 9, 1999, Monash University, Clayton Campus (*poster*).
17. P. A. Manohar and M. Ferry: “Microstructural Stability in Particle-Containing Nanocrystalline Materials”, poster presented at the ‘International Symposium on Metastable, Mechanically Alloyed and Nanocrystalline Materials (ISMANAM-98)’, July 7 - 11, 1998, University of Wollongong (*poster*).
18. P. A. Manohar, M. Ferry and T. Chandra: “Prediction of Critical Grain Radius in Particle-Containing Materials”, poster presented at the ‘Third Inter. Conf. on Grain Growth (ICGG-3)’, June 14 - 19, 1998, Carnegie Mellon University, Pittsburgh, USA (*poster*).
19. P. A. Manohar: “Continuous Cooling Transformation Behaviour of Microalloyed Steels”, poster presented at the Postgraduate Research Student Open Day, University of Wollongong, 1996 (*poster*).
20. P. A. Manohar: “Thermomechanical Processing of Microalloyed Steels”, poster presented at the Postgraduate Research Student Open Day, University of Wollongong, 1995 (*poster*).