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Education

Ph.D., Materials Engineering, University of Wisconsin-Milwaukee (1991)
M.S., Materials Science, Indian Institute of Technology, Kharagpur (1983)
B.S. (Honors), Metallurgical Engineering, Indian Institute of Technology, Kharagpur (1980)

Professional and Academic Experience

- Univ. of Wisconsin-Stout, Professor (2005-), Associate Professor (1999-2005), Assistant Professor (1995-99)
- NASA Glenn Research Center, Guest Researcher (42 months during 2004-14, including a year-long sabbatical)
- NASA Glenn, NRC Post-Doc Research Assoc. (1994-95), Project Scientist (1993), CSU Post-Doc Res. Associate (1991-93)
- Foundry Research Institute, Krakow, Poland, Visiting Scientist (Jan-Feb 2002), COBASE grant, National Research Council
- Council of Scientific and Industrial Research (India), Advanced Mater. & Processes Research Institute, Scientist (1983-87)
- UW-Milwaukee, Visiting Assoc. Prof. (2000-04), Visiting Scholar (1998), Visiting Asst. Prof. (1996, 1997) (summers only)
- UW-Milwaukee, Teaching Assistant (1987-88), Research Assistant (1987-91), George Barker Memorial Fellow (1988-89)

Books Authored and Edited

- *Engineering Materials and Processes Desk Reference*: Ashby, Messler, Asthana, Furlani et al, Elsevier, 2009, pp 552
- *Materials Processing and Manufacturing Science*: Asthana, Kumar, Dahotre, Elsevier, 2006, pp 628
- *Solidification Processing of Reinforced Metals*: Asthana, Trans Tech, Switzerland, 1998, pp 421
- *Atlas of Cast MMC Structure*: Sobczak, Sobczak, Asthana et al, Motor Transport Inst. and FRI (Poland), 2007, pp 144
- *Vademecum of Cast Metal-Matrix Composite Materials*: Sobczak, Asthana, Coleman, Purgert, FRI (Poland), 2012, pp 97
- Co-Editor, *Green and Sustainable Manufacturing of Advanced Mater.*, Singh, Ohji, Asthana, Elsevier, 2015, pp 688
- Co-Editor, *Ceramic Integration & Joining Tech.*, Singh, Ohji, Asthana, Mathur, Wiley, 2011, pp 816 (in Chinese, 2016)

Publications (since 2015)

(career total: 120 refereed journal papers, 10 book chapters, 70 conference publ.; 5222 citations; h-index 38, i10-index 96)

- Singh, Smith, Asthana, Gyekenyesi, Active metal brazing of graphite foam-to-Ti joints made with SiC-coated foam, *J. European Ceram. Soc.*, 40, 2533-2541, 2020
- Singh, Asthana, Sobczak, Active brazing of SiC ceramics to high-temperature alloys, *J. Mater. Eng. Perf.* (accepted, 2020)
- Ozaki, Hasegawa, Tsuda, Mori, Halbig, Asthana, Singh, TEM Analysis of Interfaces in Diffusion-Bonded SiC Fiber-Bonded Ceramics Using Ti/Cu Interlayers, *Ceramic Eng. Sci. Proc.*, Wiley, pp 87-94, 2018
- Ozaki, Hasegawa, Tsuda, Mori, Halbig, Singh, Asthana, TEM Analysis of Interfaces in Diffusion-Bonded Silicon Carbide Ceramics Joined Using Metallic Interlayers, *Ceramic Eng. Sci. Proc.*, Wiley, vol. 69, pp 49-56, 2017.
- (Book Chapter) Singh, Asthana, Lin, Integration challenges in alternative and renewable energy systems, in *Engineered Ceramics: Current Status and Future Prospects*, Wiley, 291-329, 2016.
- Martinez-Fernandez, Asthana, Singh, Valera, Active metal brazing of silicon nitride ceramics using a Cu-based alloy and refractory metal interlayers. *Ceram. Int.*, 42(4), 2016, 5447-5454.
- (Book Chapter) Singh, Kondo, Asthana, Manufacturing of ceramic components using robust integration technology, in *Green & Sustainable Manuf. Adv. Mater.*, 295-307, 2015, Elsevier.
- Halbig, Asthana, Singh, Diffusion bonding of a SiC fiber-bonded ceramic using Ti/Mo and Ti/Cu interlayers. *Ceram. Int.*, 41(2), 2015, 2140-2149.
- Lin, Singh, Asthana, Effect of short-term aging on interfacial and mechanical properties of YSZ/stainless steel joints. *J. Euro. Ceram. Soc.*, 35(3), 2015, 1041-1053.
- Sobczak, Purgert, Asthana, Sobczak, Homa, Nowak, Bruzda, Siewiorek, Pirowski, Wettability and reactivity of Y2O3 with liquid Ni and its alloys, *Ceramic Eng. Sci. Proc.*, Wiley, 36(8), 2015, pp 309-321.
- Tsuda, Mori, Halbig, Singh, Asthana, Microstructural observation of interfaces in diffusion bonded silicon carbide ceramics by TEM, *Ceramic Eng. Sci. Proc.*, Wiley, 36(6), 2015, pp. 13-20,
- Tsuda, Mori, Halbig, Singh, Asthana, Transmission Electron Microscopy of Interfaces in Diffusion-Bonded SiC Ceramics, *Advances in Science and Technology*, P. Vincenzini (Ed.), Vol. 88, 2015, pp. 139-147, Trans Tech
- Tsuda, Mori, Halbig, Singh, Asthana, Diffusion bonding and characterization of sintered fiber-bonded SiC ceramics using B-Mo interlayers, *Ceramic Eng. Sci. Proc.*, Wiley, 35(6), 2015, pp 73-80

Academic and Professional Service

Dept. Personnel Comm. (3 terms); Faculty Search Comm. (2007, 09); Sabbatical Leave Rev. Comm. (2004-05); Planning

& Review Comm. (2002-03); Discovery Center Steering Comm. (2008-09); College Promotion Comm. (2003-04); Advisory Comm., B.S. & M.S. in Manuf. Eng.; ET ABET Comm.; IM Program Dir. Search Comm. (2000); Developed MoU with Polish Foundry Res. Inst.; CORE Comm.; Reviewer for FRI grants, Faculty Research Awards, J. Student Res.

- Panelist for DoE-ARPA-E (3 years), NSF SBIR/STTR (3 years) and European COST (Czech Republic, 1 year)
- Merit Reviewer (multiple times): NSF, DoE (SBIR, TCF, NU, Powe Award), US Army, NSF of Poland, Romania, Qatar
- Professional society committees (ASM Nominating Committee; Howe Medal, Eisenman, Grossman, Stoughton, ASM-IIM Lecture Awards; ACerS Samuel Geijsbeek Award, ACerS Nominating Committee, Eng. Ceramics Div. etc.)
- Reviewed papers for 69 SCI journals (e.g., Nature Scientific Reports, PLOS ONE, Acta Mater., Phil. Mag., Met. Trans.)
- Reviewer: book proposals (Wiley, Elsevier, Springer, CRC) and 24 conference proceedings for ASM, ACerS and ASEE
- External examiner: 21 Ph.D. dissertations (India and Germany); External evaluator for faculty tenure at US and foreign universities; Content expert for professional courses of Amer. Soc. for Mater. (ASM); Member: ASM, ASEE, ACerS

Professional Activity

- Editor-in-Chief, *Journal of Materials Engineering and Performance* (2012-)
- Editor-in-Chief, *Springer Materials* (2014-16)
- Guest Editor: *Journal of Materials Science* (2010), *Materials Science & Engineering A* (2008), *Current Opinion in Solid State and Materials Science* (2005), *MRS Proceedings* (vol. 1820) (2016)
- Editorial Boards: *Materials Science & Engineering A*, *Ceramics International*, *Bull. Polish Acad. Sci.*, and *Ceramics*
- Consultant, European Center for Emerging Materials & Processes, Technical University of Dresden, Germany (2013)
- Guest Lecturer, PhD Course in Materials, Politecnico di Torino, Italy (2013) and National Institute of Technology, Jaipur, (under Govt. of India's GIAN program, 2020, approved)
- Ph.D. Defense Commission, Technical University of Dresden, Germany (2017)
- 90 presentations (keynote/invited/oral). *Last 5 years at:* Stockholm, Singapore, Bordeaux, Dresden, Torino, Toronto, Perugia, Krakow, Jaipur, Delhi, Bhopal, Warsaw, Montecatini, Pittsburgh, Salt Lake City, Columbus, Daytona, Portland
- Co-organizer/Advisory Board: 30 conferences in US, Poland, Italy, China, UK, Canada, Singapore, Bulgaria, India, Mexico
- Vice-chair, Scientific Comm., 73rd World Foundry Congress; session chair at 10 conferences in US, UK, Poland, Italy, India

Performance Validation

- Fellow, American Society for Materials (2009)
- Distinguished Engineering Educator Award, The Engineers' Council (2015)
- Inaugural Fulton and Edna Holtby Endowed Chair, Univ. of Wisconsin-Stout (2012-15)
- Dean's Outstanding Alumni Award, College of Engineering & Applied Science, Univ. Wisconsin-Milwaukee (2008)
- Chancellor's nominee for UW System Board of Regents Teaching Excellence Award (2011)
- Presidential recognition for outstanding service from President of American Society for Materials (2017)
- Alumni of the Year Award, Materials Engineering Dept., Univ. of Wisconsin-Milwaukee (2006)
- Researcher of the year Award, University of Wisconsin-Stout (2002)
- ASM-IIM Lectureship, American Society for Materials (2006)
- NASA Recognition and Award 'for the creative development of a technical innovation' (1996)
- NRC Post-Doctoral Research Associate Award (1994 and 1995), National Research Council
- *Other:* 2nd Place poster, European Congress on Adv. Mater. (2015); 13th Foseco Cup Gold Award, Chinese Mechanical Eng. Soc. (2011); Edward Mikol Award, ASEE North-Midwest Sec. (2006); Outstanding Journal Reviewer, Amer. Ceram. Soc. (2019); Cover photographs, *Int. Journal of Applied Ceramic Tech.* (2013 & 2009) and *J. Materials* (1991); NASA Research & Technology Magazine (2008); Most cited article (2009-14) of *Int. J. Appl. Ceram. Tech.*; 3rd Place posters at ASM's 20th & 21st Merrill Scheil Contests for Excellence in Metallography (2003 & 2004); Most viewed article (2000-06) of *Adv. Compos. Mater.*; 'Profiles of Teaching Excellence' of STEM College; Albert Nelson Marquis Lifetime Achievement Award

Teaching and Research

Teaching: Taught 19 courses to diverse majors over the last 25 years; advised graduate (M.S.) and undergraduate research, field problems and independent studies; students received research awards and published papers; developed and managed labs in powder metallurgy, ceramics, metal casting and materials testing; developed and revised courses and contributed to program accreditation; advised engineering and technology majors; instructor for a 'learning community' and Stout's STEPS program (7 years); past faculty adviser to Stout's chapter of American Foundry Soc.; event supervisor (state and regionals) for Science Olympiad; attended 21 continuing education courses and workshops related to teaching responsibilities.

Research: Demonstrated floating-zone solidification of sapphire-Ni composites; designed interface and matrix structure for fiber strengthening and dual-phase toughening; generated critical data on interface and residual fiber strength. Demonstrated advanced brazing concepts and technology for technical ceramics and CMCs for NASA. Developed multilayer brazed and diffusion-bonded ceramic-metal joints. As a NASA project scientist for a year (1993), researched microstructure coarsening to support an early flight furnace concept for a Northwestern Univ. spaceflight project and served as liaison for NASA hardware team and NU researchers. Early career research (1983-87) focused on solidification synthesis of cast MMCs.