Steven R. Schmid

Belk-Woodward Distinguished Professor
Mechanical Engineering and Eng. Science
University of North Carolina at Charlotte
166 Duke Centennial Hall
Charlotte, NC 28223
(704) 687-5086

1 Overview

Dr. Schmid is a well-known instructor, researcher, author, and leader in mechanical engineering and advanced manufacturing, and is the Belk-Woodward endowed chair at the University of North Carolina at Charlotte. Prior to joining UNCC, he was a professor for over 26 years at the University of Notre Dame and was an engineer at Triodyne, Inc before pursuing his PhD at Northwestern University. He conducts research and teaches courses in the general fields of manufacturing, metal forming, tribology, and design, including courses for professional societies such as the Society of Manufacturing Engineers (SME), Society of Automotive Engineers, and Materials Research Society. He has served as President of the North American Manufacturing Research Institution of SME, was elected to the Board of SME, chairs the Manufacturing Public Policy Task Team of ASME, and has many other examples of service to the profession. He is a prolific author, with over 200 peer-reviewed papers and presentations, and many books. Of his many textbooks, *Manufacturing Engineering and Technology* (with S. Kalpakjian) is the world's most popular manufacturing textbook and has been translated into fifteen languages. He has won numerous best paper and teaching awards. In 2012-2013, Dr. Schmid was the first Faculty Fellow at the Advanced Manufacturing National Program Office at the Department of Commerce, and served as the Associate Director for Research Partnerships. He played a key role in the design of the National Network for Manufacturing Innovation (now Manufacturing USA) program. From 2016-2019 he served as Program Director for the Advanced Manufacturing Program at the National Science Foundation, where he started the SME Blue Skies competition and helped reorganize the manufacturing programs into the current over-arching Advanced Manufacturing program. Dr. Schmid currently leads the Future of Manufacturing effort on Cyberphysical Systems in Machining and Machine tools, and is Director of the Center for Additive Manufacturing of Advanced Ceramics. He received a number of best paper and teaching awards, the Society of Manufacturing Gold Medal Award in 2019, an Award of Distinction from the Spanish Precision Manufacturing Society in 2020, and serves on the World Manufacturing Forum. He received the David Dornfeld Manufacturing Innovation Award in 2023.

2 Educational Background

1. Northwestern University, Evanston, IL, Ph.D., 1993. *Thesis:* Lubrication with Emulsions.
2. Northwestern University, Evanston, IL, M.S., 1989.
3. Illinois Institute of Technology, Chicago, IL, B.S., 1986.

3 Professional Experience

1. **Belk-Woodward Distinguished Professor**, University of North Carolina at Charlotte, January 2020 to date. Teach undergraduate and graduate courses in the Department of Aerospace and Mechanical Engineering. Supervise and advise students. Provide leadership to the department's efforts in design and manufacturing, including assistance in setting manufacturing policy and engaging all federal and state stakeholders. Director of the Center for Additive Manufacturing of Advanced Ceramics.
2. **Professor**, University of Notre Dame, Notre Dame, IN, 1993 to 2019. *Duties:* Teach undergraduate and graduate courses in the Department of Aerospace and Mechanical Engineering. Supervise and advise students. Conduct research in the fields of tribology, manufacturing and design, especially design of orthopedic implants. Numerous examples of service to the University, including the Review Committee for Admissions, Committee on Appointments and Promotions, and Graduate and Undergraduate Curriculum Committees.
3. **Program Director, Advanced Manufacturing**, National Science Foundation, 2016-2019. Administer an annual $50 million research portfolio as part of the Civil, Mechanical and Manufacturing Innovation (CMMI) program; set research direction and assist in policy formulation; university outreach; program management. Establish the Blue Skies competition in manufacturing; develop formal research funding opportunities with the Deutsche Forschungs-Gemeinschaft (Germany), with relations in-process with Italy and the UK. Oversee reorganization of the advanced manufacturing programs of Nanomanufacturing, Cybermanufacturing, Materials Engineering and Processing and Manufacturing Machines and Equipment into one over-arching Advanced Manufacturing Program.
4. **Associate Director for Research Partnerships**, Advanced Manufacturing National Program Office, 2012-2013. Develop requirements for the National Network for Manufacturing Innovation program; conduct workshops, develop strategic policy, communicate with multi-agency government team to develop vision for NNMI. Co-author of the Institute Preliminary Design document used to establish Institutes in the Manufacturing USA network. Chair, Intellectual Property Committee. Co-Chair, Metrics Committee. Manufacturing USA has leveraged $1 billion in federal funds with over $3 billion in industry and local matching funds since 2013.
5. **Research Assistant**, Northwestern University, Evanston, IL, September 1989 to August 1993. *Duties:* Conduct research as part of a Ph.D. program in mechanical engineering. Thesis: Lubrication with Emulsions.
6. **Part Time Faculty**, Illinois Institute of Technology, Chicago IL, 1991-1992. *Duties:* Teach senior-level courses in the Mechanical Engineering department, including Manufacturing Processes for Engineering Materials, Design for Safety in Machinery and Minimum Weight Design.

7. **Senior Mechanical Engineer**, Triodyne, Inc., Niles IL, June 1986-December 1989. *Duties:* Analysis of machinery and products, especially with regards to safety. Accident investigation and reconstruction, design and fabrication of specialty devices and equipment, extensive involvement in the food processing industry.

4 Professional Recognition, Certification and Honors

1. David Dornfeld Manufacturing Innovation Award, 2023.
2. Member, World Manufacturing Forum, 2021-2022.
3. Award of Distinction, Manufacturing Engineering Society (Spain), 2021.
4. SME Gold Medal. Society of Manufacturing Engineers, 2019.
5. International Delegate (Board of Directors), Society of Manufacturing Engineers, 2018 to 2020 (elected by the SME membership). Provide direction to the leading professional society in Advanced Manufacturing; Journal liaison, requiring oversight of journal operations; Education and Accreditation committee member; Member of the Manufacturing Policy Committee.
6. Outstanding paper, 43rd North American Manufacturing Research Conference, 2015, "Mechanical Properties of Reused Nylon Feedstock for Powder-bed Additive Manufacturing in Orthopedics". The paper was one of five papers honored at the conference, out of 152 papers at the conference.
7. Fellow, Society of Manufacturing Engineers, 2017.
8. President, North American Manufacturing Research Institute, 2015-2016.
9. Secretary, Sustainability Committee, LIFT (Lightweight for Tomorrow Innovation Institute), 2016-2020.
10. Member, Executive Advisory Committee, LIFT (Lightweight for Tomorrow Innovation Institute), 2016-2020.
11. Outstanding paper, 43rd North American Manufacturing Research Conference, 2015, "Bio-based Lubricants for Forming of Magnesium". The paper was one of five papers honored at the conference, out of 130 papers at the conference.
12. Department of Aerospace and Mechanical Engineering, Outstanding Teacher Award, May 2015.
13. Advanced Tribology Division Advisor, Thai Tribology Association, 2014 to date.
14. International Advisory Board, Product Accelerator Research Consortium, Auckland, New Zealand, 2013 to date.
15. Outstanding paper, 41st North American Manufacturing Research Conference, 2013, "Evaluation of Ionic Fluids as Metal Forming Lubricants". The paper was one of three papers honored, out of 105 papers at the conference.
16. Fellow, American Society of Mechanical Engineers, 2012.

17. ASME Foundation Swanson Fellow, 2012-2013. (First Faculty Fellow at the Advanced Manufacturing National Program Office.)
18. Outstanding paper, 35th North American Manufacturing Research Conference, 2007, "Formability of Porous Tantalum Sheet Metal". The paper was one of three papers honored at the conference, out of 90 papers at the conference.
19. Ruth and Joel Spira Award for Excellence in Teaching, University of Notre Dame, 2005.
20. Kaneb Teaching Award, University of Notre Dame Kaneb Center, 2003.
21. Kaneb Center Faculty Fellow, 2002.
22. Kaneb Teaching Award, University of Notre Dame Kaneb Center, 2000.
23. Newkirk Award, American Society of Mechanical Engineers, 2000.
24. John T. Parsons Outstanding Young Manufacturing Engineer, Society of Manufacturing Engineers, 2000.
25. CAREER Researcher, National Science Foundation, 1996.
26. Certified Manufacturing Engineer, SME No. 4200697.
27. Professional Engineer, Illinois No. 062-047633.
28. Pentair Fellowship, 1992.
29. Tau Beta Pi Excellence in Teaching Award, 1989-1990.
30. Graduation with Honors, Illinois Institute of Technology, 1986.

5 Research Funding

Dr. Schmid has been the PI or co-PI on over $12 million in externally funded research projects at Notre Dame (over $16 million total), and over $4 million at the University of North Carolina at Charlotte. In addition, he was part of the proposal writing and review teams for two awarded Manufacturing USA Institutes. Research topics include additive manufacturing, metal forming, manufacturing tribology, orthopedic implant design, lubrication theory and materials synthesis.

6 Professional Membership and Service

1. Journal Service
   (a) Associate Editor, *Journal of Manufacturing Science and Engineering*, 2002 to 2008; 2017 to 2019.
   (b) Editorial Board, *Advances in Mechanical Engineering*, 2007 to 2010.
2. American Society of Mechanical Engineers.
   (a) Member, Nominations Committee, 2022 to date
   (b) ASME Manufacturing Public Policy Task Team, 2015 to date. Chair 2018 to date.

(c) Inter-Sector Committee on Federal Research and Development, Member, 2014 to 2018.

(d) Honorary Member, Board on Government Relations, 2014 to 2020.

(e) Chair, Conference Coordinating Committee, Manufacturing Engineering Division, 2013-2015.

(f) Host, Manufacturing Science and Engineering Conference (MSEC), held June 4-8, 2012.

(g) Organizer of numerous technical sessions at technical conferences.

(h) Technical Expositions Chair, 2003-2005.

(i) Member, International Steering Committee for Japan Society of Mechanical Engineers/American Society of Mechanical Engineers Joint Conference, held October 14-18, 2002. Similarly appointed to International Steering Committee for 2004 and 2008 conferences.

(j) Bulletin Editor, Tribology Division, 2002 to 2006.

(k) Member, Tribology Division Executive Committee, 2001 to 2006.

(l) Publications Chair, Tribology Division, 2001 to 2005.

(m) Member, Technical Planning Committee of Tribology Division, 1998 to 2001.

(n) Organizer, Symposium on Tribology in Manufacturing, 1998.

(o) Faculty Advisor, Student Section, 1994 to 1997.

(p) Organizer, Symposium on Process Tribology, 1995.

(q) RAC Coordinator, 1994.

3. Society of Manufacturing Engineers

(a) International Delegate, Board of Directors, 2019-2021.

(b) Member, Manufacturing Policy Committee, 2017-2019.

(c) Member, Honors and Awards Committee, 2013-2019.

(d) Member, North American Manufacturing Research Institute Board, 2011 to date, Secretary 2013-2014, President Elect 2014-2015, President 2015-2016.

(e) Host and Chair of Organizing Committee, 40th North American Manufacturing Research Conference (NAMRC XL), held at Notre Dame June 4-8, 2012.

(f) Technical Board, NAMRI/SME, 2008 to 2016.

(g) Bulletin Editor, South Bend Chapter, 1997 to 2002.

(h) Chairman, South Bend Chapter, 1997.

(i) Instructor, "Fundamentals of Manufacturing Processes," offered periodically.

4. American National Standards Institute/American Society of Bakery Engineers.

(a) Member, Bakery Safety Committee, 1988 to date, Secretary 1990-1993, Chair, 1994 to 2001, ANSI Liason, 2001 to 2012.

5. Society of Tribologists and Lubrication Engineers.

(a) Member, Sustainability Committee, 2023 to date.

(b) Member, Honor and Awards Committee, 2007 to date, Chair 2011-2012.

(c) Associate Member, Research Committee on Tribology, 1995 to 1997.

6. Society of Automotive Engineers

   (a) Instructor, "Metal Forming", offered periodically.

7. National Science Foundation

   (a) Co-organizer, Additive Manufacturing in Health, National Science Foundation, Arlington, VA, June 9-10, 2016.

   (b) Co-Organizer and Member of Steering Committee, Research Opportunities for Polymer Metrology in Additive Manufacturing, NIST, Gaithersburg, MD, May 9-10, 2016.

   (c) Co-organizer, *DFG/NSF Collaborative Research*, Darmstadt, Germany, February 9-11, 2016.

   (d) Head of Steering Committee and Organizer, *Integration of Research and Engineering Education: A Conference for CAREER Awardees*, held in Alexandria, VA, November 8-10, 1998.

8. International Research Group on Tribology in Manufacturing.

   (a) Host, International Conference on Tribology in Manufacturing Processes, held June 4-8, 2012.

   (b) Member, International Scientific Committee, 2001-date

   (c) Member, International Program Committee, 1998-date.

   (d) Organizer and chair of numerous sessions for ICTMP conferences in 1998, 2004 and 2007.

   (e) Chair of Organizing Committee, ICTMP4, to be held at Notre Dame May 22-25, 2012.

   (f) Founding member (with W.R.D. Wilson, N. Bay, K. Dohda, and P. Groche), 1997.

9. Manufacturing Engineering Society International

   (a) Scientific Committee, 3rd Manufacturing Engineering Society International Conference (MESIC '09), 2009.

   (b) Scientific Committee, 4th Manufacturing Engineering Society International Conference (MESIC '11), 2011.

10. Metal Powder Industries Federation

    (a) Technical Program Committee, PowderMET, 2010 to date.

7 Books and Book Chapters

1. Schmid, S.R., *Manufacturing Engineering and Technology*, 9th. ed., Pearson Education, in process.

2. Schmid, S.R., *Schey's Tribology in Metal Forming*, ASM International, 2023.

3. Kalpakjian, S., and Schmid, S.R., *Manufacturing Engineering and Technology*, 8th. ed., Pearson Education, 2020.

4. Schmid, S.R., and Jeswiet, J., "Lubrication in Manufacturing," *ASM Handbook of Tribology*, v. 18, 2017, pp. 725-733.

5. Saha, P.K., and Schmid, S.R., "Tribology of Extrusion", *ASM Handbook, v. 18: Friction, Lubrication and Wear Technology*, v. 18, 2017, pp. 784-794.

6. Schmid, S.R., and Jeswiet, J., "Surface Treatment and Structure-Change Processes", in Sutherland, J., Dornfeld, D.A., and Linke B.S., (eds.), Energy Efficient Manufacturing: Theory and Applications, Wiley, 2017, pp. 165-192.

7. Schmid, S.R., and Kalpakjian, S., "Machining Processes and Machine Tools", in Sadegh, A.M., and Worek, W.M., eds., *Marks' Handbook for Mechanical Engineers, 12th ed.*. New York, McGraw-Hill, 2018, pp. 503-515.

8. Kalpakjian, S., and Schmid, S.R., *Manufacturing Processes for Engineering Materials*, 6th ed., Pearson Education, 2016.

9. Schmid, S.R., Hamrock, B.J., and Jacobson, B.O., *Fundamentals of Machine Elements*, 3rd ed. New York, CRC Press, 2014.

10. Kalpakjian, S., and Schmid, S.R., *Manufacturing Engineering and Technology*, 7th. ed., Pearson Education, 2014.

11. Schmid, S.R., "Introduction to Manufacturing Tribology," in Wang, J., and Chung, Y-W., eds., *Encyclopedia of Tribology*, Springer, 2013.

12. Schmid, S.R., and Monmittonet, P., "Mechanics of Emulsion Lubricants," in Wang, J., and Chung, Y-W., eds., *Encyclopedia of Tribology*, Springer, 2013.

13. Schmid, S.R., Selles-Canto, M., and Pasang, T., "Tribology of Forging," in Wang, J., and Chung, Y-W., eds., *Encyclopedia of Tribology*, Springer, 2013.

14. Kalpakjian, S., Schmid, S., and Werner, E., *Werktofftechnik*, Pearson, 2012.

15. Giordano, M., and Schmid, S.R., "Application of Contact Mode AFM to Manufacturing Processes", in Bhushan, B., ed., *Applied Scanning Probe Methods XIII: Biomimetics and Industrial Applications*, Springer-Verlag, 2010.

16. Kalpakjian, S., and Schmid, S.R., *Manufacturing Engineering and Technology*, 6th ed., Pearson Education, March, 2009. Also available in Spanish, Macedonian and Indonesian and Chinese translations, e-book version in English, German, Spanish and Arabic, as well as an SI-specific edition.

17. Kalpakjian, S., and Schmid, S.R., *Manufacturing Processes for Engineering Materials*, 5th ed., Pearson Education, 2008. Also available in Korean and Italian translations.

18. Kalpakjian, S., and Schmid, S.R., *Manufacturing Engineering and Technology*, 5th ed. Pearson Education, 2006.

19. Hamrock, B.J., Schmid, S.R., and Jacobson, B.O., *Fundamentals of Machine Elements*, 2nd ed. New York, McGraw-Hill, 2005. Also available in Spanish and Chinese translations.

20. Hamrock, B.J., Schmid, S.R., and Jacobson, B.O. *Fundamentals of Fluid Film Lubrication*. 2nd ed. New York, Marcel-Dekker, 2004.

21. Kalpakjian, S., and Schmid, S.R., *Manufacturing Processes for Engineering Materials*, 4th ed. Prentice Hall, 2003.

22. Kalpakjian, S., and Schmid, S.R., *Manufacturing Engineering and Technology - Hot Processes*, Prentice Hall, 2001.

23. Schmid, S.R., and Wilson, W.R.D., "Tribology of Manufacturing Processes," *CRC Handbook of Modern Tribology*, CRC Press, 2001, pp. 1385-1411.

24. Schmid, S.R., and Schmid, K.J., "Marine Equipment Tribology," *CRC Handbook of Modern Tribology*, CRC Press, 2001, pp. 1371-1384.

25. Kalpakjian, S., and Schmid, S.R., *Manufacturing Engineering and Technology*, 4th ed. Prentice Hall, 2001.

26. Hamrock, B.J., Jacobson, B.O., and Schmid, S.R., *Fundamentals of Machine Elements*. New York, McGraw-Hill Book Co., 1998.

8 Journal Publications (Refereed)

1. Alamos, F., Philo, M., Go, D.B., and Schmid, S.R., "Rough surface contact under creep conditions", *Trib. Int.*, v. 176, December 2022, 107916.

2. Schmid, S.R., and Melkote, S.N., "Manufacturing and the Great Resignation," *Mechanical Engineering*, April/May 2022, pp. 38-43.

3. Alamos, F., Schiltz, J., Kozlovsky, K., Attardo, R., Tomonto, C., Pelletiers, T. and Schmid, S.R., "Effect of powder reuse on orthopedic metals produced through selective laser sintering". *Manuf. Letters*, v. 31, 2022, pp. 40-44.

4. Schmid, S.R., and Melkote, S.N., "Manufacturing and National Security," *Mechanical Engineering*, 2021, v. 143, 37-41. Related Podcast, June 6, 2021.

5. Alamos, F.J., Philo, M., Go, D.B., and Schmid, S.R., "Asperity contact under creep conditions", *Trib. Int.*, v. 160, 2021, 107039.

6. Schiltz, J., Alamos, F.J., Kozlovsky, K., Attardo, R., Gatrall, B., Tomonto, C., Pelletiers, T. and Schmid, S.R., "Fatigue Performance of Direct Metal Laser Sintered Parts using Reused Metallic Feedstocks". *Procedia Manufacturing*, v. 48, 2020, pp. 814-820.

7. Schmid, S.R., Saha, P.K., Wang, J., and Schmitz, T., "Developments in Tribology of Manufacturing Processes," *J. Manufacturing Science and Engineering*, v. 142, 2020, 110803.

8. Schiltz, J., Rosenberger, A., Render, T., Aboud-Gatrell, B., Qu, H., Steiner, C., McGinn, P., and Schmid, S.R., "Wear of structural oxide ceramics produced through additive manufacturing", *Procedia Manufacturing*, v. 34, 2019, pp. 780-788.

9. Schiltz, J., Render, T., Gatrell, B., Qu, H., Steiner, C., McGinn, P., and Schmid, S.R., "Wear behavior of additive manufactured zirconia," *Procedia Manufacturing*, v. 48, 2020, 10.1016/j.promfg.2020.05.119.

10. Alamos, F., Schiltz, J., Kozlovsky, K., Attardo, R., Tomonto, C., Pelletiers, T. and Schmid, S.R., "Effect of powder reuse on mechanical properties of Ti-6Al-4V produced through selective laser melting," *Int. J. Refractory Metals and Hard Materials*, v. 91, 2020, DOI 105273. 10.1016/j.ijrmhm.2020.105273.

11. Kelly, M.R., Schmid, S.R., Adams, D.C., Fletcher, J., and Heard, R., "Experimental investigation of linear friction welding of AISI 1020 steel with pre-heating", *J. Manufacturing Processes*, v. 29, 2019, pp. 26-39.

12. Huang, Y., and Schmid, S.R., "Additive Manufacturing for Health: State of the Art, Gaps, Needs, and Recommendations", *J. Man. Sci. Eng*, v. 140, 2018, DOI: 10.115/1.4040430.

13. Kelly, M.R., Schmid, S.R., Adams, D.C., and Fletcher, J., "Induction Pre-Heated Linear Friction Welding," *Key Engineering Materials*, v. 767, 2018, pp. 331-340.

14. Giordano, M., Schmid, S.R., Arjmandi, S., and Ramezani, M., "Abrasive Wear of Polymer Fibers Investigated by Reciprocal Scratching in an Atomic Force Microscope," *Journal of Tribology*, v. 140, 2018, DOI 10.1115/1.4037728.

15. Rodts, R., Schmid, S.R., Selles, M.A., Pasang, T., and Sanchez-Cabellaro, S., "Selective Laser Fiber Welding on Woven Polymer Fabrics for Biomedical Applications," *Mater. Sci. Eng. C: Mater. Biol. Appl.*, v. 94, pp. 628-634, DOI: 10.1016/j.msec.2018.10.018, 2019.

16. Arjmandi, M., Maziar, R., Giordano, M., and Schmid, S.R., "Finite Element Model of Sliding Wear in Three-dimensional Woven Textiles," *Tribology International,* v. 115, 2017, p. 452.

17. Giordano, M., and Schmid, S.R., Arjmandi, M., and Ramezani, M., "Wear Evaluation of Three-Dimensionally Woven Materials for Use in a Novel Cartilage Replacement," *Wear*, v. 386-387, 2017, pp. 179-187.

18. Ramezani, M., and Schmid, S.R., "Bio-based Lubricants for Forming of Magnesium," *J. Manufacturing Processes*, v. 19, 2015, pp. 112-117.

19. Selles, M.A., Liu, J., Pasang, T., and Schmid, S.R., "Advanced Interface Models for Metal Forming Simulations", *Computational Materials Science*, 01/2013; 79:763-771. DOI: 10.1016 /j.commatsci.2013.07.025.

20. Selles, M.A., Schmid, S.R., Sanchez-Caballero, S., Perez-Bernabeu, E., Reig, M.J., and Segui, V.J., "Theoretical Model of a Multi-layered Polymer Coated Steel-strip Ironing Process Using a Neural Network," *Materials Science Forum*, v. 713, 2012, pp. 139-144.

21. Schmid, S.R., "Energy Requirements in Manufacturing: Lifecycle and Tribology Considerations," *Key Engineering Materials*, v. 502, 2012, pp. 55-62.

22. Prygoski, M.P., Caballero, S.S., Schmid, S.R., Lozier, A.J., and Selles, M.-A., "High Speed Fracture Fixation: Assessing Resulting Fixation Stability and Fastener Withdrawal Strength" *ASME Journal of Biomechanical Engineering*, v. 135, 2013, 135(9):91008.

23. Libardi, A., Sen, M., Schneider, W.A., and Schmid, S.R., "Evaluation of Ionic Fluids as Metal Working Lubricants," *Journal of Manufacturing Processes*, v. 15, 2013, pp. 414-418.

24. Giordano, M., and Schmid, S.R., "Evaluation of Individual Fiber Wear Resistance Using Accelerated Life Testing," *Tribology Transactions*, v. 55, 2012, pp. 140-148. Also honored as Editor's choice in *Tribology and Lubrication Technology*, v. 68, 2012, pp. 44-53.

25. Selles, M.A., Schmid, S.R., Sanchez-Cabellero, S., Perez-Bernabeu, E., and Reig, M.J., "Upper-bound modelization of an ironed three-layer polymer coated steel strip", *Int. J. Adv. Manuf. Technol.*, v. 60, 2012, pp. 161-171.

26. Prygoski, M.P., Pasang, T., Schmid, S.R., and Lozier, A.J., "High Speed Insertion of Bone Fracture Fixation Pins: A Finite Element Penetration Model with Experimental Comparisons," *J. Materials Science: Materials in Medicine*, v. 22, 2011, pp. 2823-2832.

27. Nebosky, P.S., and Schmid, S.R., "Formability of Porous Tantalum Sheet-Metal," *J. Manufacturing Science & Engineering*, 2011, v. 133, 061006.

28. Nebosky, P.S., and Schmid, S.R., and Selles, M.-A. "The Springback Characteristics of a Porous Tantalum Sheet-Metal," *J. Manufacturing Science & Engineering*, 2011, v. 133, 061022.

29. Bay, N., Groche, P., Ike, H., Ngaile, G., Schmid, S.R., Azushima, A., "New, Environmentally Friendly Tribo-systems for Metal Forming," *CIRP Annals - Manufacturing Technology*, v. 59, 2010, pp. 760-780.

30. Kotha, S., Li, C., Schmid, S.R., and Mason, J., "Reinforcement of Bone Cement Using Zirconia Fibers with and without Acrylic Coating," *J. Biomedical Materials Research - Part A*, v. 88, 2009, pp. 898-906.

31. Sellés, M., Schmid, S.R., and Seguí, V.J., "Ironability of a Three-Layered Polymer Coated Steel - Part 1: Experimental Investigation" *J. Materials Processing Technology*, v. 202, 2008, pp. 7-14.

32. Yang, H., Schmid, S.R., Reich, R., and Kasun, T., "Numerical Simulation of Oil Particles in Emulsion Lubrication", *Tribology Transactions*, v. 50, 2007, pp. 453-457.

33. Yang, H., Schmid, S.R., Reich, R., and Kasun, T., "Direct Observations of Emulsion Flow in EHL Contact", *J. Tribology*, v. 128, 2006, pp. 619-623.

34. Kotha, S.P., Li, C., McGinn, P., Schmid, S.R., and Mason, J.J., "Improved Mechanical Properties of Acrylic Bone Cement with Short Titanium Fiber Reinforcement," *J. Materials Science - Materials in Medicine*, v. 17, 2006, pp. 743-748.

35. Kotha, S.P., Li, C., McGinn, P., Schmid, S.R., and Mason, J.J., "Improved Mechanical Properties of Acrylic Bone Cement with Short Titanium Fiber Reinforcement," *J. Materials Science - Materials in Medicine*, v. 17, 2006, pp.1403-1409.

36. Kotha, S.P., Lieberman, M., Vickers, A., Schmid, S.R., and Mason, J.J., "Adhesion enhancement of Steel Fibers to Acrylic Bone Cement through a Silane Coupling Agent," *J. Biomedical Matererials Research Part A*, v. 76A, 2006, pp. 111-119.

37. Kotha, S.P., Li, C., Schmid, S.R., and Mason, J.J., "Fracture Toughness of Steel-fiber-reinforced Bone Cement," *J. Biomedical Materials Research - Part A*, v. 70, 2004, pp. 514-521.

38. X. Wu, D.Z. Chen, J.J. Mason, and S.R. Schmid, "Efficient Approximation Algorithms for Pairwise Data Clustering and Applications,," an invited paper in the Special Issue of the *International Journal of Computational Geometry and Applications* on Selected Papers from the 9th International Computing and Combinatorics Conference (COCOON 2003), Vol. 14, Nos. 1-2, 2004, pp. 85-104.

39. Li, C., Schmid, S.R., and Mason, J.J., "Effects of Pre-cooling and Pre-heating Procedures on Cement Polymerization and Thermal Osteonecrosis in Cemented Hip Replacements" *Medical Engineering and Physics*, v. 25, 2003, pp. 559-564.

40. Mason, J.J., Li, C., Kotha, S., Huang, C.H., Schmid, S.R., Yakamicki, D., and Hawkins, M., "Finite Element Thermal Analysis of Bone Cement for Joint Replacements," *J. Biomechanics*, v. 125, 2003, pp. 315-322.

41. Liu, J., Schmid, S.R., and Wilson, W.R.D., "Advanced Simulations for Hot Forging: Heat Transfer Model for Use with the Finite Element Method," *J. Materials Processing Technology*, v. 155-156, 2004, pp. 1912-1917.

42. Yang, H., Schmid, S.R., Reich, R.A., and Kasun T.J. "Elastohydrodynamic Film Thickness and Tractions for Oil-in-water Emulsions", *Tribology Transactions*, v. 47, 2004, pp. 123-129.

43. Huang, C-H., and Schmid, S.R., "Multi-Scale Polymer Properties with Applications to Solid Lubricants in Ironing," *Wear*, v. 252, 2002, pp. 704-710.

44. Barros, A., Bayly, P, Boulanger, R., Muraleetharan, K., Neimeier, D., and Schmid, S., "Integration of Engineering Education and Research: Perspectives from the NSF Civil and Mechanical Systems 1998 CAREER Workshop," *J. Engineering Education*, 2001, pp. 199-202.

45. Schmid, S.R., and Zhou, J., "Flow Factors for Lubrication with Emulsions in Ironing," *J. Tribology*, v. 123, 2001, pp. 283-289.

46. Huang, C-H, Schmid, S.R., and Wang, J.E., "Thermal Effects on Polymer Laminated Steel Formability in Ironing," *J. Manufacturing Sci. Eng.*, v. 123, 2001, pp. 1-6.

47. Jaworski, J.A., Schmid, S.R., and Wang, J.E., "An Experimental Investigation of the Formability and Friction Characteristics of Tin Coated and Polymer Laminated Steels," *J. Manufacturing Sci. and Eng.*, v. 121 (1999): 232-237.

48. Opalka, S.M., Hector, L.G., Schmid, S.R., Reich, R.A., and Epp, J.M., "Boundary Lubricant Effect on Single Asperity Plowing," *J. Tribology*, v. 121, 1999, pp. 384-393.

49. Jaworski, J.A., and Schmid, S.R., "Survivability of Laminated Polymer Lubricant Films in Ironing," *Tribology Transactions*, v. 42, 1999, pp. 32-38.

50. Schmid, S.R., and Hector, L.G., "Simulation of Asperity Plowing in an Atomic Force Microscope. Part II: Plowing of Aluminum Alloys," *Wear*, v. 215, 1998, pp. 257-266.

51. Hector, L.G., and Schmid, S.R., "Simulation of Asperity Plowing in an Atomic Force Microscope. Part I: Experimental and Theoretical Models," *Wear*, v. 215, 1998, pp. 247-256.

52. Schmid, S.R. "Hydrodynamic Segregation and Entrainment of Particles in O/W Lubrication," *Journal of Tribology*, v. 119, 1997, pp. 342-347.

53. Kumar, A., Schmid, S.R., and Wilson, W.R.D., "Entrainment of Oil Droplets in Emulsion Lubrication Problems," *Wear*, v. 206, 1997, pp. 130-135.

54. Schmid, S.R., and Wilson, W.R.D., "Lubrication Mechanisms of Oil-in-Water Emulsions," *Lubrication Engineering*, v. 52, 1996, pp. 168-175.

55. Schmid, S.R., and Wilson, W.R.D., "Lubrication of Aluminum Rolling by Emulsions," *Tribology Transactions*, v. 38, 1995, pp. 452-458.

56. Wilson, W.R.D., Sakaguchi, Y., and Schmid, S.R., "A Mixed Flow Model for Lubrication with Emulsions," *Tribology Transactions*, v. 37, 1994, pp. 543-551.

57. Schmid, S.R., and Wilson, W.R.D., Discussion of "Elastohydrodynamic Lubrication with O/W Emulsions," *J. Tribology*, v. 116, 1994, pp. 319-320.

58. Schmid, S.R., and Wilson, W.R.D., Discussion of "Lubrication With Binary Mixtures: Liquid-Liquid Emulsion in an EHL Conjunction," *J. Tribology*, v. 115, 1993, pp. 707-708.

59. Wilson, W.R.D., Sakaguchi, Y., and Schmid, S.R., "A Dynamic Concentration Model of Emulsions," *Wear*, v. 161, 1993, pp. 207-212.

9 Conference Papers (Refereed)

1. "Additive Manufacturing of Silicon Carbide," Presented at PRESM 2023, Bankoku Shiryokan, Okinawa, July 16-21, 2023.

2. "Additive Manufacturing of Advanced Ceramics," 2nd International Symposium in Advanced Materials," Japan Society for Technology of Plasticity, Toyama, Japan, Oct. 17-19, 2022.

3. Schmid, S.R., "Developments in Manufacturing Tribology," Presented at the International Conference on Precision Engineering and Sustainable Manufacturing (PRESM 2022), Jeju, South Korea, July 20-22, 2022.

4. Schmid, S.R., "Fracture Fixation with Resorbable Materials: Opportunities and Design Considerations", IFMM2022 Symposium: Application of Magnesium to Medical Field, Virtual Conference, March 26, 2022.

5. Schmid, S.R., Wang, J., Saha, P., and Schmitz, T., "Developments in Tribology of Manufacturing Processes," Presented at the 47th North American Manufacturing Research Conference, Erie, PA, June 22-26, 2020.

6. Schiltz, J., Alamos, F., Kozlovsky, K., Schmid, S.R., Attardo, R., Ostiguy, P., Budzinski, J., Aboud Gatrell, B., Tomonto, C., McGuffin-Cawley, J., and Pelletiers, T., "Effect of powder reuse on static mechanical properties of stainless steels produced through selective laser melting" Presented at *PowderMET 2019 (International Conference on Powder Metallurgy and Particulate Materials)*, Phoenix, AZ, June 23-26, 2019.

7. Schiltz, J., Rosenberger, A., Render, T., Aboud-Gatrell, B., Qu, H., Steiner, C., McGinn, P., and Schmid, S.R., "Wear of structural oxide ceramics produced through additive manufacturing", Presented at the 47th North American Manufacturing Research Conference, Erie, PA, June 22-26, 2020.

8. Schmid, S.R., Schiltz, J., Kozlovsky, K., McGuffin-Cawley, J., Kumar, M., and Ostiguy, P., "Mechanical Properties of Reused Nylon Feedstock for Powder-bed Additive Manufacturing in Orthopedics," presented at the 46th North American Manufacturing Research Conference, College Station, June 18-22, 2018. Also Best Paper Finalist.

9. Kelly, M., Schmid, S.R., Adams, D.C., and Fletcher, J., "Induction Pre-Heated Linear Friction Welding," in *Tribology in Manufacturing Processes and Joining by Plastic Deformation*, 8th International Conference on Tribology in Manufacturing Processes, Elsonore, Denmark, June 24-27, 2018.

10. Schmid, S.R., "Reuse of Metal Powder in Additive Manufacturing," America Makes MMX meeting, Youngstown Ohio, November 15-16, 2017.

11. Rodts, T., Schmid, S.R., Selles, M.A., Pasang, T., Sanches, S., "Selectively Welded Three-Dimensional Woven Materials for Cartilage Replacement," *7th Manufacturing Engineering Society International Conference* (MESIC),Vigo, Spain, June 27-30, 2017.

12. Kozlovsky, K., Schmid, S.R., Schiltz, J., and Kreider, T., "Reuse of Nylon Powder in Selective Laser Sintering", Twenty-fifth International Conference on Processing and Fabrication of Advanced Materials (PFAM-XXV), The University of Auckland, Auckland, New Zealand, 22 - 25 January, 2017.

13. Schmid, S.R., and Jones, K.J., "Experimental Investigation of Laser Texturing and Its Effect on Friction and Lubrication." Presented at the North American Manufacturing Research Conference, Blacksburg, VA, June 27-30, 2016.

14. Schmid, S.R., "Advances in Metal Forming Lubrication" (keynote), presented at the Fifth International Conference in Tribology in Manufacturing Processes, Phuket, Thailand, February 29-March 3, 2016.

15. Schmid, S.R., Rodts, T., Pasang, T., and Selles-Canto, M., "Selectively Welded, 3D Woven Materials for Cartilage Replacement", presented at the International Conference on Innovative Design and Manufacturing, Auckland, New Zealand, January 24-26.

16. Kelly, M., Schmid, S.R., Adams, D., and Fletcher, J, "Advanced Tribology Models for Linear Friction Welding", Presented at the International Conference on Innovative Design and Manufacturing, Auckland, New Zealand, January 24-26, 2016.

17. Ramezani, M., and Schmid, S.R., "Bio-based Lubricants for Forming of Magnesium," presented at the North American Manufacturing Research Conference, Charlotte, NC, June 9-12, 2015.

18. MacDonald, E., and Schmid, S.R., "2D and 3D Numerical Modes of Oblique Orthopedic Surgical Cutting of Cortical Bone using an Arbitrary Lagrangian-Eulerian Formulation", presented at the North American Manufacturing Research Conference, Detroit, MI, June 12, 2014.

19. Sadeghi, F., Schmid, S.R., and Tryggvason, G., "Computational Studies of Fused Deposition Modeling," presented at the North American Manufacturing Research Conference, Detroit, MI, June 12, 2014.

20. Libardi, A., Sen, M., Schneider, W.A., and Schmid, S.R., "Rheological Performance of Ionic Fluids with Application to Lubrication," presented at the North American Manufacturing Research Conference, Madison, WI, June 11-14, 2013.

21. Rodts, T., Schmid, S.R., Selles, M.A., and Sanchez-Caballero, S., "Selective Welding Reinforcement Within Three-Dimensional Fabric," Presented at the 40th North American Manufacturing Research Conference, University of Notre Dame, Notre Dame, IN, June 4-8, 2012. *Note:* Selected as winner of the Best Presentation Award.

22. Schmid, S.R., "Energy Consumption in Manufacturing," *AIP Conf. Proc.*, 2012, doi:10.1063/1.4707591.

23. Giordano, M., and Schmid, S.R., "Evaluation of Fiber Wear Resistance in an Atomic Force Microscope for Use in Cartilage Replacements," presented at the STLE Annual Meeting, Atlanta, GA, May 16, 2011.

24. Giordano, M., and Schmid, S.R., "Evaluation of individual fiber wear resistance using accelerated life testing," presented at the STLE Annual Meeting, Atlanta, GA, May 17, 2011.

25. Giordano, M., and Schmid, S.R., "AFM Investigation of Powder Surface Forces," Presented at PowderMET 2011, San Francisco, CA, May 20, 2011.

26. Schmid, S.R., Nebosky, P.S., and Sellés-Cantó, M.A., "Theoretical and Experimental Investigation of the Springback Characteristics of Metal Foam," presented at the 39th North American Manufacturing Research Conference, Corvalis, OR, June 13-17, 2011.

27. Cieslak, K., Schmid, S.R., and Wagner, D., "Cell Proliferation Depends on Porosity in 3D Woven Scaffolds," presented at the Orthopedic Research Society Annual Meeting, Long Beach (CA), January 13-16, 2011.

28. Rodts, T.W., Legault, E., Kennedy, K., Schmid, S.R., and Lozier, A., "Image Processing Methods for Exploring Trends in Osteoporosis," presented at the pre-ORS Conference, Long Beach (CA), January 11-12, 2011.

29. Schmid, S.R., Sellés-Cantó, M.A., and Sequi-Llinares, V.J,., "Experimental Investigation of Ironing with Polymer Laminated Steels," *Trans NAMRI* v. 38, 2010, pp. 483-490.

30. Bay, N., Nakamura, T., and Schmid, S.R., "Green Lubricants for Metal Forming," (keynote) *Proceedings of the Fourth International Conference on Tribology in Manufacturing Processes*, Nice (France), June 2010.

31. Schmid, S.R., Sellés-Cantó, M.A., and Boronat-Vitoria, T., "Recent Developments in Ironing with Polymer-Coated Steels," *Proceedings of the Fourth International Conference on Tribology in Manufacturing Processes*, Nice (France), June 2010.

32. Schmid, S.R., Nebosky, P.S., and Stalcup, G., "A Framework for the Manufacture of Biomimetic Porous Metals," *Trans. NAMRI*, v. 37, 2009, pp. 183-188.

33. Nebosky, P.S., and Schmid, S.R., "Formability of Porous Tantalum Sheet Metal", *Trans. NAMRI*, v. 35, 2007, pp. 57-64.

34. Post, M., Schmid, S.R., Ovaert, T., and Laurent, M.P., "AFM Evaluation of Chemical-Mechanical Effects of Copper with Controlled Surface Chemistry", in *Proceedings of the International Conference on Tribology in Manufacturing Processes*, 2007, pp. 297-302.

35. Jones, K.E., Nebosky, P.S., and Schmid, S.R., "Effect of Laser Surface Texturing on the Friction and Wear Performance of CoCr", in *Proceedings of the International Conference on Tribology in Manufacturing Processes*, 2007, pp. 213-218.

36. Schmid, S.R., "Friction and Heat Transfer Models for Computer Simulation of Metal Forming", in *Proceedings of the International Conference on Tribology in Manufacturing Processes*, 2007, pp. 55-62.

37. Liu, J., Schmid, S.R., and Wilson, W.R.D., "A Three-Dimensional Heat Transfer Model for Forging," in Proceedings of the 2nd International Conference on Tribology in Manufacturing, 2004, pp. 687-694.

38. Schmid, S.R., Yang, H., Reich, R., and Kasun, T., "Developments in Emulsion Lubrication", in *Proceedings of the 2nd International Conference on Tribology in Manufacturing*, 2004, pp. 509-520.

39. Schmid, S.R, Liu, J., and Wilson, W.R.D., "A Thermal Interface Model for Finite Element Simulation of Hot Forging," *Trans. NAMRI*, v. 31, 2003. pp. 653-660.

40. Liu, J., Wilson, W.R.D., and Schmid, S.R., "Advanced Simulations for Isothermal Forging: A Friction Model for Use with the Finite Element Method," in Olabi, A.G., and Hashmi, S.J., eds., "Proceedings of the International Conference on Advances in Materials and Processing Technologies (AMPT)", 2003, pp. 401-403.

41. Wilson, W.R.D., Schmid, S.R., and Liu, J., "Advanced Simulations for Hot Forging: Heat Transfer Model for Use with the Finite Element Method," in Olabi, A.G., and Hashmi, S.J., eds., "Proceedings of the International Conference on Advances in Materials and Processing Technologies (AMPT)", 2003, pp. 404-406.

42. Smith, A., Niebur, G., and Schmid, S.R., "Forming of Metal Foams," *Trans. NAMRI*, v. 30, 2002, pp. 3-8, also published as *SME Technical Paper MF02-130*, Society of Manufacturing Engineers, 2002.

43. Huang, C-H., and Schmid, S.R., "Temperatures in Ironing of Polymer-Coated Steels", *Trans. NAMRI*, v. 29, 2001, pp. 127-134.

44. Yang, H., Schmid, S.R., Reich, R.A., and Kasun, T., "Elastohydrodynamic Film Thickness and Tractions for Oil-in-Water Emulsions" presented at the STLE/ASME Joint Tribology Conference, October 10-15, 2003.

45. Reich, R.A., Kasun, T., Yang, H., and Schmid, S.R., "The Influence of Oil Droplet Size on the Formation of a Starved Lubricant Film When Cold Rolling Aluminum Metal", Presented at the STLE Annual Meeting, New York, April 28-May 2, 2003.

46. Schmid, S.R., Wilson, W.R.D., and Liu, J., "A Tribology Module for Use with the Finite Element Method," *Proceedings of the JSME/ASME International Conference on Materials and Processing, vol 2*, 2002, pp. 250-255.

47. Schmid, S.R., Corona, E.C., Mason, J.J., and Jun, S., "Bending and Springback of Laminated Steels" in *Proceedings of the JSME/ASME International Conference on Materials and Processing, vol 2*, 2002, pp. 159-163.

48. Schmid, S.R., "An Advanced Tribology Module for Hot Forging," Presented at the 2nd World Tribology Conference, Vienna, Austria, September 5, 2001.

49. Schmid, S.R., Opalka, S.M., Hector, L.G., Reich, R.A., and Epp, J.M., "Single Asperity Plowing of a 3004 Aluminum Alloy in the Presence of Boundary Additives," *Trans. NAMRI*, v. 26, 1998, pp. 213-218, and *SME Technical Paper MR98-247*, Society of Manufacturing Engineers, 1998.

50. Huang, C-H, and Schmid, S.R., "Advances in Ironing with Polymer Coated Steels", in The Advancing Frontier of Engineering Tribology, Proceedings of the H.S. Cheng Tribology Surveillance,1999, pp. 79-84.

51. Hamrock, B.J., Jacobson, B.O., and Schmid, S.R., "The Role of Tribology in the Design of Machine Elements," in Thinning Films and Tribological Interfaces, Proc. 26th Leeds-Lyon Tribology Conf., 1999, pp. 217-228.

52. Jaworski, J.A., and Schmid, S.R., "Survivability of Laminated Polymer Lubricant Films in Ironing", Presented at the 53rd Annual Meeting of the Society of Tribologists and Lubrication Engineers, Detroit, MI, May 17-21, 1998.

53. Schmid, S.R., Hector, L.G., Elings, J., Hampel, H., and Piehler, H., "Single Asperity Plowing of Metallic and Polymeric Surfaces in an Atomic Force Microscope: in Moody, N., ed., *Fundamentals of Nanoindentation and Nanotribology, Materials Research Society Symposium Series*, v. 522, 1998, pp. 391-398.

54. Hector, L.G., Opalka, S.M., Weiland, H., and Schmid, S.R., "Grain Orientation Effect During Single Asperity Plowing of Two-Dimensionally Polycrystalline Aluminum Alloys," in Moody, N., ed., *Fundamentals of Nanoindentation and Nanotribology, Materials Research Society Symposium Series*, v. 522, 1998, pp. 399-408.

55. Jaworski, J.A., and Schmid, S.R., "Survivability of Laminated Polymer Lubricant Films in Ironing," STLE Annual Meeting, Detroit, MI, May 21, 1998.

10 Conference, Symposium and Poster Papers (Other)

1. Schmid, S.R., "The Importance of the Manufacturing Sector in a Time of Pandemic," Innovia Annual Meeting, South Bend, IN, May 23, 2020.

2. Schmid, S.R., "Industry 4.0 and Big Data: The Signal and the Noise" (keynote) *PowderMET 2019 (International Conference on Powder Metallurgy and Particulate Materials)*, Phoenix, AZ, June 23-26, 2019. Also presented at the Center for Powder Metal Technology, June 24, 2019.

3. Schmid, S.R., "Future Trends in Additive Manufacturing," (keynote) *Additive Manufacturing in the Americas,* Pasadena Convention Center, Pasadena, CA, December 6-7, 2018.

4. Schmid, S.R., "The Evolving Landscape of Biomanufacturing" (keynote) *7th Manufacturing Engineering Society International Conference* (MESIC),Vigo, Spain, June 27-30, 2017.

5. Schmid, S.R., "Advances in Additive Manufacturing as Applied to the Aerospace Industry," *7th Manufacturing Engineering Society International Conference* (MESIC),Vigo, Spain, June 27-30, 2017.

6. Schiltz, J., Kozlovsky, K., "Economic Production of Next Generation Orthopedic Materials through Powder Reuse in Additive Manufacturing," America Makes TRX Conference, University of Texas at El Paso, March 14-15, 2017.

7. Kozlovsky, K., Kelly, M., and Schmid, S.R., "Powder Reuse in Additive Manufacturing," NSF/NIST Workshop on Additive Manufacturing with Polymers, Gaithersburg, MD, June 9-10, 2016.

8. Kozlovsky, K., and Schmid, S.R., "Methods of Thermally Cycling Powders for Simulation of SLS", Center for Powder Metallurgy Technology, April 20, 2016.

9. Schmid, S.R., "Additive Manufacturing Research Opportunities," presented at the Workshop on U.S. -German Collaborations in Basic Research in Manufacturing, Darmstadt, Germany, February 9, 2016.

10. Schmid, S.R., "Powder Reuse in Orthopedic Implants," America Makes TRX Conference, University of Texas at El Paso, March 8-10, 2016.

11. Schmid, S.R., "Economic Production of Next Generation Orthopedic Materials through Powder Reuse in Additive Manufacturing", America Makes Users Conference, Youngstown, OH, November 17-28, 2015.

12. Schmid, S.R., "Reuse of Powder in Selective Laser Sintering", Center for Powder Metallurgy Technology, October 7, 2015.

13. Schmid, S.R., "The Digital Revolution and the Future of Manufacturing," Advanced Manufacturing Forum, University of Pennsylvania, May 21, 2015.

14. Schmid, S.R., "Smart Manufacturing: Manufacturing with Less Energy," Center for Powder Metallurgy Technology, April 22, 2015.

15. Schmid, S.R., "Overview of Global Research Initiatives and Efforts in Additive Manufacturing," (plenary) Korean Powder Metallurgy Institution, Fall Annual Meeting, Yeosu, Korea, September 13, 2014.

16. Schmid, S.R., "Additive Manufacturing Research at the University of Notre Dame," at the U.S.-South Korea Collaboration in Advanced Manufacturing Research Workshop, Reno, NV, August 11-12, 2014.

17. Schmid, S.R., "The Internet of Things and the Future of Manufacturing," SATEC Forum on New Industrial Revolution and Intelligent Manufacturing, Beijing, China, May 29, 2014.

18. Schmid, S.R., "Survey of Micromanufacturing in Orthopedics." (plenary) 9th International Conference on Micromanufacturing, Singapore, March 26, 2014.

19. Schmid, S.R., "Contact Stress", American Gear Manufacturers Association, webinar, March 20, 2014.

20. Schmid, S.R., "Advanced Manufacturing Partnerships Recommendations and Action Plan," Center for Powder Metallurgy Technology, Romulus (Detroit), MI, October 8, 2013.

21. Schmid, S.R., "Manufacturing Advances in Metal Forming" (keynote), presented at the Metals Industry Conference, Tauranga, New Zealand, May 9, 2013.

22. Schmid, S.R., "Advanced Manufacturing and Energy: Existing Partnership and Collaboration Models," presented at the 2013 State Energy Outlook Conference, ASERTTI, Washington, D.C., February 8, 2013.

23. Schmid, S.R., "Towards a National Network of Manufacturing Innovation," ASME Industry Advisory Board Meeting, Washington D.C., December 6, 2012.

24. Schmid, S.R., "The National Network of Manufacturing Innovation Institutes Program - Opportunities and Challenges for the Powder Metal Industry", presented at the Powder Metal Leadership Conference, Palm Springs, CA, November 13, 2012.

25. Schmid, S.R., "Friction and Heat Transfer in Hot Stamping," Workshop on Recent Research on Advanced Sheet Metal Forming and Stamping Technology, Center For Precision Forming, Ohio State University, November 2, 2011.

26. Schmid, S.R., "The Environmental Impact of Manufacturing Processes," (keynote), presented at MESIC 2011, Cadiz (Spain), September 23, 2011.

27. Schmid, S.R., "Energy Needs and Consumption in Manufacturing,", IRGTM Summer School, Limburg (Germany), September 20, 2011.

28. Schmid, S.R., Liu, J., Selles, M.A., and Pasang, T., "Metal Forming Simulation: New Advanced Interface Models," MESIC 2011, Cadiz (Spain), September 21-23, 2011.

29. Schmid, S.R., and Mason, J.J., "The Trolley Problem and the Type IV Safety Device," presented at the International Mechanical Engineers Conference and Exposition (IMECE 2011), Denver CO, November 11-17, 2011.

30. Prygoski, M., and Schmid, S.R., "High Speed Nailing for Bone Fracture Fixation: A Finite Element Penetration Model to Examine Nail Tip Design," Summer Bioengineering Conference, Farmington (PA), June 22-25, 2011.

31. Giordano, M., Schmid, S.R., Parrott, R., and Lozier, A., "Investigation of Fiber Wear in a Woven Composite Using Atomic Force Microscopy," presented at the 2010 Summer Bioengineering Conference, June 15-19, Naples, FL.

32. Prygoski, M.P., Schmid, S.R., Lozier, A., and Murphy, D.P., "Assessing the Feasibility of a Nailing Operation for Bone Fracture Fixation Using a Cavity-Expansion Based Penetration Model," presented at the 2010 Summer Bioengineering Conference, June 15-19, Naples, FL.

33. Rodts, T.W., Schmid, S.R., Parrott, R., and Lozier, A., "Compression Testing of 3D Polymer Fabrics for Use as Cartilage Scaffolds," presented at the 2010 Summer Bioengineering Conference, June 15-19, Naples, FL.

34. Schmid, S.R., Liu, J., Sellés-Cantó, M., and Pasang, T., "Advanced Interface Models for Metal Forming Simulations", accepted for the 4th Manufacturing Engineering Society International Conference (MESIC '11), Cadiz, Spain, June 17, 2011.

35. Schmid, S.R., "Manufacturing Engineering Research: International Perspective," (keynote) presented at the 3rd Manufacturing Engineering Society International Conference (MESIC '09), Alcoy, Spain, June 17, 2009.

36. Schmid, S.R., Nebosky, P., and Pasang, T., "Manufacturing and microstructure of porous metals for osseointegration", presented at the Workshop on Processing, Microsructure and Performance of Materials, April 8-9, 2009, Auckland, New Zealand.

37. Schroeder, M., and Schmid, S.R., "Improved Performance of Bone Cement for Minimally Invasive Orthopedic Implants," presented at the 3rd JSME/ASME International Conference on Materials and Processing, Evanston, IL Oct. 7-10, 2008.

38. Schmid, S.R., "Developments in the Design of Minimally Invasive Orthopedic Implants" (keynote) presented at the 2008 Medical Device Industry Conference, Hartford, CT, September 9, 2008.

39. Post, M., Schmid, S.R., Ovaert, T., and Laurent, M.P., "AFM Evaluation of Chemical-Mechanical Effects of Copper with Controlled Surface Chemistry", presented at the International Conference on Tribology in Manufacturing Processes, Yokohama, Japan, September 25-26, 2007.

40. Jones, K.E., Nebosky, P.S., and Schmid, S.R., "Effect of Laser Surface Texturing on the Friction and Wear Performance of CoCr", presented at the International Conference on Tribology in Manufacturing Processes, Yokohama, Japan, September 25-26, 2007.

41. Nebosky, P.S., and Schmid, S.R., "Formability of Porous Metal Sheet", North American Manufacturing Research Conference, Ann Arbor (MI), May 22-25, 2007.

42. Schmid, S.R., "Friction and Heat Transfer Models for Computer Simulation of Metal Forming" (keynote), presented at the International Conference on Tribology in Manufacturing Processes, Yokohama, Japan, September 25-26, 2007.

43. Schmid, S.R., "21st Century Manufacturing Challenges for the Orthopedics Industry," presented at the INDO/US Summer Workshop, Northwestern University, Evanston (IL), June 21, 2007.

44. Schmid, S.R., "Providing Outsourced R&D - The Art of Collaboration", Research and Development Management conference, Indiana LifeSC Collaboration Series, Grace College, Warsaw, IN May 18, 2007.

45. Melly, R., Lero, M., Schmitt, R., Schaefer, R. and Schmid, S.R., "The Effect of Screw/Plate Cross-Threading on Universal Locking System Construct Strength" Orthopedic Device and Technology Conference 2006, Fort Wayne, 10/16/06-10/18/06.

46. Schroeder, M., Shomberger, S., Vara, C., Turnure, D., and Schmid, S.R., "Inspection Concepts for Woven Implants", Orthopedic Device and Technology Conference 2006, Fort Wayne, 10/16/06-10/18/06.

47. Rodts, T., Strasser, B., Bradley, R., Schmid, S.R., "Mapping of Risk Zones in an Osteoporotic Femur" Orthopedic Device and Technology Conference 2006, Fort Wayne, 10/16/06-10/18/06.

48. Phillips, M., Reis, R., Horstman, L., Schmid, S.R., and Corona, E., "Optimized Locking Screw Placement in Fixed-Angle Plating for Treatment of Supracondylar Femur Fractures" Orthopedic Device and Technology Conference 2006, Fort Wayne, 10/16/06-10/18/06.

49. Henkels, J., Medlock, M., Landeck, D., Prygoski, M., and Schmid, S.R., "Comparison of Uni-Cortical vs. Bi-Cortical Screw Fixation in a Fixed Angle Plate System" Orthopedic Device and Technology Conference 2006, Fort Wayne, 10/16/06-10/18/06.

50. Post, M., Liu, J., Schmid, S.R., Ovaert, T., and Laurent, M., "Characterization of Silicon Oxide Based Materials in an Atomic Force Microscope," presented at the International Mechanical Engineering Conference and Exposition, Chicago, Nov. 6-10, 2006.

51. Yang, H., Schmid, S.R., Reich, R., and Kasun, T., "Numerical Simulation of Oil Particles in Emulsion Lubrication", presented at the World Tribology Conference, Washington, D.C., September 12-16, 2005.

52. Nebosky, P., and Schmid, S.R., "Forming Limit Diagrams for Metal Foams", presented at the JSME/ASME Joint Conference, Seattle, WA, June 19-22, 2005.

53. Li, Y., and Schmid, S.R., "Laser Texturing of Advanced Engineered Surfaces", presented at the JSME/ASME Joint Conference, Seattle, WA, June 19-22, 2005.

54. Yang, H., Schmid, S.R., Reich, R., and Kasun, T., "Direct Observations of Emulsion Flow in EHL Contact", presented at the Society of Tribologists and Lubrication Engineers Annual Meeting, Las Vegas, NV, May 15-19, 2005.

55. Schmid, S.R., and Hawkins, M.E., "Development of Polymers for Use in New Orthopedic Implant Designs", presented at the Annual Meeting of the American Association for the Advancement of Science, Washington, D.C., Feb. 17-21, 2005.

56. Schmid, S.R., Liu, J., and Wilson, W.R.D., "A Three-Dimensional Heat Transfer Model for Forging," Presented at the 2nd International Conference on Tribology in Manufacturing (ICTMP2), Nyborg, Denmark, June 15-18, 2004.

57. Schmid, S.R., "Developments in Emulsion Lubrication", (keynote), Presented at the 2nd International Conference on Tribology in Manufacturing (ICTMP2), Nyborg, Denmark, June 15-18, 2004.

58. Nebosky, P., Tyszka, D., Niebur, G., and Schmid, S.R., "Forming and Bending of Metal Foams," Presented at the 8th International Conference on Numerical Methods in Industrial Forming (NUMIFORM8), Ohio State University, Columbus, OH, June 13-17, 2004.

59. Liu, J., Schmid, S.R., and Wilson, W.R.D., "Modeling of Friction and Heat Transfer in Metal Forming," Presented at the 8th International Conference on Numerical Methods in Industrial Forming (NUMIFORM8), Ohio State University, Columbus, OH, June 13-17, 2004.

60. Schmid, S.R., Liu, J., and Wilson, W.R.D, "Advanced Friction and Heat Transfer Models for Simulation of Forging," presented at the 25th Forging Industry Technical Conference, Detroit, MI, April 19-21, 2004.

61. Nebosky, P., Tyszka, D., Schmid, S.R., and Niebur, G., "Formability of an Open-celled Metallic Foam," Presented at the 2003 ASME Mechanics and Materials Conference, Scottsdale, AZ, June 17-21, 2003.

62. Schmid, S.R, Liu, J., and Wilson, W.R.D., "A Thermal Interface Model for Finite Element Simulation of Hot Forging," Presented at the North American Manufacturing Research Conference, McMaster University, Hamilton, ON, (Canada), May 23, 2003.

63. Wilson, W.R.D., Schmid, S.R., and Liu, J., "Advanced Simulations for Hot Forging: Heat Transfer Model for use with the Finite Element Method," Presented at Advances in Materials and Processing Technology Conference, AMPT2003, Dublin (Ireland), July 7-10, 2003.

64. Liu, J., Wilson, W.R.D., and Schmid, S.R., "Advanced Simulations for Isothermal Forging: A Friction Model for Use with the Finite Element Method," Presented at the Advances in Materials and Processing Technology Conference, AMPT2003, Dublin (Ireland), July 7-10, 2003.

65. Schmid, S.R., Liu, J., and Wilson, W.R.D., "A New Tribology Model for the Simulation of Metal Forming Processes with the Finite Element Method," JSME/ASME Joint Conference, Honolulu, October 14-18, 2002.

66. Schmid, S.R., Corona, E.C., Mason, J.J., and Jun, S., "Bending and Springback of Laminated Steels" JSME/ASME Joint Conference, Honolulu, October 14-18, 2002.

67. Schmid, S.R., Niebur, G., Nebosky, P.S., and Smith, A., "Forming of Metal Foams". Presented at the North American Manufacturing Research Conference, Purdue University, May 10, 2002.

68. Li, C., Kotha, S., Huang, C-H, Schmid, S.R., Yakimicki, D., Hawkins, M., and Mason, J.J., "Finite element simulation of thermal behavior of prosthesis-cement-bone system," 2001 Summer Bioengineering Conference, June 27-July 1, 2002, Snowbird, Utah, in ASME.BED-50: pp. 235-236.

69. Li, C., Schmid, S.R., and Mason, J.J., "Effects of initial temperature conditions on cement polymerization and thermal osteonecrosis in cemented hip replacements," The Tenth Annual Symposium of Computational Methods in Orthopaedic Biomechanics, University of Texas Southwestern, Dallas, February 9th, 2002.

70. Li, C., Kotha, S., Yakimicki, D., Hawkins, M., Schmid, S.R., and Mason, J.J., "Experimental Characterizations of Bone Cement Curing Setting Temperature and Time," Society for Experimental Mechanics, 2002 SEM Annual Conference, Milwaukee, WI, June 10-12, 2002.

71. Li, C., Yakimicki, D., Schmid, S.R., and Mason, J.J., "Effects of Preheating Stems Prior to Hip Implantation on Bone Cement Reaction and Void Development," Society for Experimental Mechanics, 2002 SEM Annual Conference, Milwaukee, WI, June 10-12, 2002.

72. Mason, J., Li, C., Wang, Y., and Schmid, S.R., "Predictions of Residual Stresses in Bone Cement for Joint Arthroplasty," IV World Congress of Biomechanics, Calgary, AB, Canada, Aug 5-9, 2002, Calgary Award Winning Presentation in Orthopedics

73. Kannan, K., Pandheeradi, M., Vaze, S., and Schmid, S.R., "Modeling of Die-Workpiece Interface During Hot Forging," TMS Annual Meeting, Seattle, WA, Feb. 17-21, 2002.

74. Schmid, S.R., and Hueng, C-H., "Multi-Scale Polymer Property Evaluation," Presented at the 2nd World Tribology Conference, Vienna, Austria, September 5, 2001.

75. Schmid, S.R., and Huang, C-H., "Temperatures in Ironing of Polymer-Coated Steels," Presented at the North American Manufacturing Research Conference, Gainsville, FL, May 22-25, 2001 and *SME Technical Paper MF01-253*, Society of Manufacturing Engineers, 2001.

76. Schmid, S.R., "Nanoscale Tribology of Manufacturing Processes," Presented at the NATO/ASI Conference on Fundamentals of and Bridging the Gap Between Nano and Micro-Tribology, Kesthely, Hungary, August 14-25, 2000.

77. Kannan, K., Vaze, S., Barker, D., Schmid, S., and Wallis, R., "Characterization of Friction and Heat Transfer at the Die-Workpiece Interface During Forging," presented at Manufacturing Technology for Aerospace Materials, July 27-28, 2000, Arlington, VA.

78. Schmid, S.R., and Hector, L.G., "Macroscale Insight from Nanoscale Testing: Manufacturing Applications of Single Asperity Plowing," presented at Nanotribology: Critical Assessment and Research Needs, NIST, Gaithersburg, MD,. March 13-15 2000. and in Hsu, S.M., and Ying, Z.C., *Nanotechnology: Critical Assessment and Research Needs*. 2003, Kluwer, p. 399-410.

79. Huang, C-H, and Schmid, S.R., "Advances in Ironing with Polymer Coated Steels", presented at the Joint STLE/ASME Tribology conference, Orlando, FL, Oct. 11, 1999.

80. Hamrock, B.J., Jacobson, B.O., and Schmid, S.R., "The Role of Tribology in the Design of Machine Elements," Presented at the 26th Leeds-Lyon Tribology Conference, Leeds, UK, September 15, 1999.

81. Schmid, S.R., and Hector, L.G., "Friction and Wear in Manufacturing Examined at the Nanometric Scale," presented at the International Mechanical Engineering Conference and Exposition (IMECE 1998), Anaheim, CA, November 16, 1998.

82. Schmid, S.R., "An Overview of Emulsion Lubrication in Metal Rolling," presented at the International Mechanical Engineering Conference and Exposition (IMECE 1998), Anaheim, CA, November 16, 1998.

83. Schmid, S.R., "Single Asperity Scale Plowing with Applications," presented at Integration of Material, Process and Design, Champion, PA, October 20, 1998.

84. Schmid, S.R., Hector, L.G., Opalka, S., Reich, R.A., and Epp, J.M., "Single Asperity Plowing of a 3004 Aluminum Alloy in the Presence of Boundary Additives," North American Manufacturing Research Conference, Atlanta, GA, May 19-22, 1998.

85. Hector, L.G., Opalka, S.M., Weiland, H., and Schmid, S.R., "Grain Orientation Effect During Single Asperity Plowing of Two-Dimensionally Polycrystalline Aluminum Alloys," Presented at the MRS Spring Meeting, San Francisco, CA, April 12-17, 1998.

86. Schmid, S.R., Hector, L.G., Elings, J., Hampel, H., and Piehler, H., "Single Asperity Plowing of Metallic and Polymeric Surfaces in an Atomic Force Microscope: An Overview of Recent Developments," Presented at the MRS Spring Meeting, San Francisco, CA, April 12-17, 1998.

87. Jaworski, J.A., Frigon, A.G., Schmid, S.R., and Wang, J., "Tribological Characteristics of Coated Steels in Ironing," presented at the First International Conference on Tribology in Manufacturing Processes, Gifu, Japan, October 20-23, 1997.

88. Schmid, S.R., and Hector, L.G., "Scratch Testing of Aluminum Alloys in an Atomic Force Microscope," presented at the First International Conference on Tribology in Manufacturing Processes, Gifu, Japan, October 20-23, 1997.

89. Schmid, S.R., "Recent Developments in Nanometer Scale Materials Characterization," Nanoscope User's Conference, Santa Barbara, CA, August 27, 1997.

90. Schmid, S.R., "Interlocks - The Baking Industry Experience". Triodyne Safety Brief, January 1997.

91. Schmid, S.R., Hector, L.G., and Sheu, S., "Friction and Wear Study of Aluminum Alloys in an Atomic Force Microscope Applied to Process Tribology" presented at McNU'97, July 1, 1997.

92. Mason, J.J., Schmid, S.R., Powers, J.M., Finnerty, J.A., and Caspar, R., "Applications of Ultra-High Speed Photography," NSF Design and Manufacturing Grantees Conference, Seattle, January 5-7, 1997.

93. Barnett, R.L., and Schmid, S., "Application of the Safeguard Evaluation Protocol," presented at the 1995 ASME International Mechanical Engineering Conference and Exposition, San Francisco, November 16, 1995.

94. Schmid, S., "Hydrodynamic Segregation, Entrainment and Rejection of Oil in Emulsion Lubrication Problems," presented at the 1995 ASME International Mechanical Engineering Conference and Exposition, San Francisco, November 16, 1995.

95. Schmid, S.R., and Wilson, W.R.D., "Lubrication Mechanisms for O/W Emulsions," Presented at the 50th Annual Meeting of the Society of Tribologists and Lubrication Engineers, Chicago, IL, May 14-19, 1995.

96. Kumar, A., and Schmid, S., "Oil Droplet Entrainment for Emulsion Lubrication Problems," presentation at the International Tribology Conference, Yokohama (Japan) October 31, 1995.

97. Schmid, S.R., and Wilson, W.R.D., "Lubrication of Aluminum Rolling by Oil-In-Water Emulsions", Presented at the 48th Annual Meeting of the Society of Tribologists and Lubrication Engineers, Pittsburgh, PA, May 1-5, 1994.

98. Schmid, S.R., and Wilson, W.R.D., "A Mixed Flow Model for Lubrication with Emulsions," Presented at the 48th Annual Meeting of the Society of Tribologists and Lubrication Engineers, May 17-20, 1993.

99. Wilson, W.R.D., and Schmid, S., "Surfaces in Metal Rolling", in*Engineered Surfaces*, ASME PED-Vol. 62. San Diego, American Society of Mechanical Engineers, presented November 12, 1992.

100. Schmid, S.R., and Petronis, S., "Stress Analysis and Improvements in Harrington Distraction Rods", ASME Paper 92-DE-2. Chicago, American Society of Mechanical Engineers, National Design Conference, February 27, 1992.

101. Wilson, W.R.D., Krug, Carolyn, and Schmid, S.R., "A Simple Model of Orthogonal Metal Cutting," Dallas, American Society of Mechanical Engineers Winter Annual Meeting, November 1990.

11 Patents

1. "Bone and tissue scaffolding for delivery of therapeutic agents" *U.S. Patent No. 7,674,477*, with Niebur, G. and Sumner, D., patented March 9, 2010.

2. "Textured Surfaces for Orthopedic Implants," *U.S. Patent No. 8,323,349*, patented December 4, 2012.

3. "Minimum Energy Curb Negotiating Wheelchair," *U.S. Patent No. 4,692,942*, with Kaplan, R., and Barnett R., patented October 16, 1990.

12 Invited Lectures and Seminars

1. Schmid, S.R., "Supply Chain Issues: Causes, Implications, and the Path Forward," Pearson Education Webcast, April 12, 2022.
2. Schmid, S.R., "Advances in Extreme Plastic Deformation Processing", University of Valencia at Alcoy, Alcoy, Spain, November 8-10, 2021.
3. Schmid, S.R., "The Future of Manufacturing: The Biomanufacturing Landscape", National Taiwan Technical University, Taipei, Tawan, August 30, 2019.
4. Schmid, S.R., "The Future of Advanced Manufacturing," Women in Finishing Forum, Chemical Coaters Association International, Notre Dame, IN, May 10, 2019.
5. Schmid, S.R., "Trends in Manufacturing Research Funding", Offered at universities around the United States from January 2017 to date. Universities visited are: Texas A&M University, University of North Texas, University of Texas - Rio Grande Valley, University of Maryland Baltimore County, Ohio State University, Carnegie Mellon University, University of Idaho, Boise State University, Brigham Young University, University of Utah, University of Miami, Florida International University, Florida State University, Louisiana State University, University of Central Florida, Wake Forest University, Indiana University/Purdue University Indianapolis, Embry Riddle University, University of Louisville, Virginia Technical University, Georgia Institute of Technology, North Carolina State University, University of North Carolina at Charlotte, University of Florida, University of North Florida.
6. Schmid, S.R., "Design and Manufacturing in Mechanical Engineering," Lehigh University, February 17, 2015.
7. Schmid, S.R., "Design of Minimally Invasive Orthopedic Implants," University of Pennsylvania, February 16, 2015.
8. Schmid, S.R., "The Importance of Manufacturing Research Funding", Customization in Internet-Enabled Manufacturing, U.S. Congress, June 17, 2014.
9. "The Internet of Things and the Future of Manufacturing," Close of Engineering Week activities, co-sponsored by multiple engineering societies, Mishawaka, IN, February 28, 2015.
10. "Recent Research in Digital Manufacturing,", University of Auckland, Auckland, New Zealand, November 20, 2014.
11. "Advances in Metal Forming," University of Cali, Cali, Columbia, August 12-15, 2013.
12. "Congressional Briefing on the NNMI Program", with M. Goldsmith, T. Kurfess, and R. Resnick, April 24, 2013.
13. "Advanced Manufacturing", University Polytecnica de Valencia (Spain), April 16-18, 2013.
14. "Keeping Students Involved in Lecture," Kaneb Center Lecture Series, University of Notre Dame, November 1, 2011.
15. "Address to the Kaneb Center Awardees", Kaneb Center Awards Luncheon, April 20, 2011.
16. "Innovations in Manufacturing Education", panelist, North American Manufacturing Research Conference, Kingston, ON, May 25-27, 2010.

17. “Friction and Heat Transfer in Hot Forging”, Auckland Technical University, April 9, 2010.

18. “Innovation in Manufacturing Education”, Illinois Coalition for Manufacturing Innovation, Illinois Institute of Technology, Chicago, IL, March 19, 2010.

19. “Design of Minimally Invasive Orthopedic Implants,” Clemson University, Clemson, SC, February 12, 2010.

20. “Post-Recession Manufacturing Opportunities,” PowderMET2009, Philadelphia, PA, November 9, 2009.

21. “Recent Advances in Manufacturing,” Center for Powder Metallurgy Technology, April 21, 2009.

22. “Effective Teaching Strategy and Tactics”, Kaneb Center Awards Luncheon, April 17, 2009.

23. New Zealand University Seminar Series:

    (a) “Design of Minimally Invasive Implants,” March 10, 2009, Auckland Technical University.

    (b) “Applications of the Safeguard Evaluation Protocol,” March 11, 2009, Auckland University/Auckland Technical University.

    (c) “Lubrication with Emulsions,” March 13, 2009, University of Canterbury.

24. “Advances in Orthopedic Materials,” Escola Politècnica Superior d’ Alcoi, Universitat Politẽcnica de València, Alcoy, Spain, May 30, 2007.

25. “Review of Orthopedic Implant Technology”, Indiana Health Industry Forum, Indianapolis, IN, December 8, 2006.

26. “Design of Machine Elements with Special Emphasis on Safety,” (Experiencias con el Diseño de Màquinas y la Seguridad) Escola Politècnica Superior d’ Alcoi, Universitat Politẽcnica de València, Alcoy, Spain, May 30-31, 2006.

27. “The Relationship Between Materials, Design and Manufacturing in the Fabrication of Orthopedic Implants,” (La relaciòn Diseño-Material-Fabricaciòn. Un caso concreto: la fabricaciòn de implantes ortopèdicos) Escola Politècnica Superior d’ Alcoi, Universitat Politẽcnica de València, Alcoy, Spain, May 30-31, 2006.

28. “Minimally Invasive Orthopedic Implant Design,” Ohio State University, April 14, 2006.

29. “Orthopedics Research at the University of Notre Dame,” Indiana Innovation Network Meeting, University of Notre Dame, May 6, 2005.

30. “Metal Forming Tribology,” Federal Mogul Co., sponsored by American Society for Metals, American Society of Mechanical Engineers and Society of Automotive Engineers., April 14, 2004.

31. “Tribology Tales,” Notre Dame chapter of the American Society for Metals, April 13, 2004.

32. “Friction and Heat Transfer Models for Finite Element Simulation of Hot Forging,” University of Michigan, February 20, 2003

33. "Collaborations in Medical Research" Indiana Health Industry Forum, February 18, 2003.
34. "Active Learning in Science and Engineering Education" University of Notre Dame Kaneb Center, February 15, 2003.
35. "Advanced Tribology Model for Use with the Finite Element Method," The Ohio State University, May 20, 2002.
36. "Development of Minimally Invasive Orthopedic Implants," University of Washington, March 5, 2001.
37. "Probleme mit Reibung in dem AFM" [Problems concerning friction in the AFM], University of Kassel (Germany), June 21, 1998.
38. "Safety vs. Liability: A Triodyne Engineer's Perspective." Society of Manufacturing Engineers, November 11, 1995.
39. "The Current State-of-the-Art of Emulsions in Lubrication," Gifu University (Japan), October 30, 1995.
40. "Fluid Film Lubrication Problems in Design," Allied Signal Aerospace Co., August 1-2, 1995.
41. "An Engineer's Perspective on Poetry, Humor and Society," Keynote Address, Pi Tau Sigma Annual Meeting Luncheon, April 1, 1995.
42. "Issues with Multi-Phased Lubricants," Ohio State University, February 5, 1995.
43. "Advanced Friction Models in Slip Line Field Analysis," ALCOA Technical Center, Alcoa PA, December 15, 1994.
44. "The Engineer's Perspective and Approach Towards Problem Solving," Pi Tau Sigma Spring Dinner, February 9, 1994.
45. "Lubrication in the Manufacture of Steel Food Containers," Weirton Steel Co., October 19, 1993.

13 Master's Theses Supervised

1. Abhay Kumar, 1995
2. Fen Li, 1996
3. Joseph Finnerty, 1997
4. John Jaworski, 1997
5. Jin Zhou 1998.
6. Xiao-Chang Huang, 1999
7. Andrew Rutten, 2001.
8. Xinrui Nui, 2002.
9. Marissa Post, 2007.

10. Julia Henkels, 2007.
11. Timothy Stuhldreher, 2008.
12. Craig Fryman, 2010.
13. Kevin Wilson (ESTEEM), 2010.
14. Amy Libardi, 2012.
15. Tyler Jaramillo, 2017.
16. Cassidy Holene, 2022.

14 Doctoral Dissertations Supervised

1. Chen-Hsi Huang 2001. Currently Research Assistant Professor, Yuan Ze University.
2. Jiying Liu 2004. Currently Senior Manufacturing Researcher, Schlumberger Corp.
3. Haixia Yang 2005. Currently Senior Consultant, Analysis Group, Inc.
4. Michael Hawkins 2006. Currently Vice President of Research, Zimmer Biomet, Inc.
5. Paul S. Nebosky 2006. Currently Senior Research Engineer, SITES LLC.
6. Yue Li 2008. Currently Research Engineer, Medtronic.
7. Kyle Jones 2010. Currently Senior Research and Quality Engineer, Zimmer Biomet, Inc.
8. Michael Giordano, 2011. Currently Senior Research Scientist, Orthopediatrics, Inc.
9. Matthew Prygoski, 2012. Currently Senior Research Scientist, Orthopediatrics, Inc.
10. Timothy Rodts, 2012, Currently Front-End Research Scientist, DePuy Synthes, Inc.
11. Elaine MacDonald, 2014. Currently Senior Structural Research Engineer, Boeing, Inc.
12. Erin Johnson 2014, currently Vice President, Spine Implants, DePuy, Inc..
13. Matt Kelly, 2019. Currently Senior Research Engineer, Raytheon, Inc.
14. Kirsten Kozlovsky, 2019. Currently Senior Researcher, Auris Health.
15. Jessical Schiltz, 2019. Currently Senior Research Engineer, Align Technologies, Inc.
16. Fernando Alamos-Domeyko, 2020. Currently Senior Engineer, Meta, Inc.
17. Tien Herd, in process.
18. Connor Babcock, in process.