

## **APPENDIX B – FACULTY RESUMES**

The following program faculty vitae are provided below.

- Grant A. Crawford
- William M. Cross
- Stanley M. Howard
- Bharat K. Jasthi
- Jon J. Kellar
- M. Sadegh Safarzadeh
- Michael K. West
- David R. Salem
- Christian A. Widener

## **GRANT A. CRAWFORD**

Assistant Professor

### **DEGREES WITH FIELDS, INSTITUTION, AND DATE**

- B.S., Metallurgical Engineering, South Dakota School of Mines and Technology (2004)
- Ph.D., Materials Science Engineering, Arizona State University, Tempe, AZ (2008)

### **ACADEMIC EXPERIENCE**

2011-present      Assistant Professor, Tenure Track

### **NON-ACADEMIC EXPERIENCE**

2011	Intel Corporation, Litho Area DETD Chandler, AZ	Area Manager (Interim)
2010-2011	Intel Corporation, Litho Area DETD Chandler, AZ	Area Coordinator
2008-2010	Intel Corp, Materials Tech Development Chandler, AZ	Sen. Eng

### **CURRENT MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS**

TMS

### **HONORS AND AWARDS**

2015	Outstanding Recent Graduate, South Dakota School of Mines and Technology
2009-2011	Intel Performance Awards (various)
2006-2008	Achievement Rewards for College Scientists (ARCS) Scholar (2006-2008)

### **SERVICE ACTIVITIES**

1. Director, NSF REU Site: Security Printing and Anti-Counterfeiting Technology
2. Co-Director, Biomedical Engineering Graduate Program
3. Co-Organizer, Advanced Materials in Dental and Orthopedic Applications Symposium, TMS Annual Meeting 2015-2016
4. NSF Proposal review Panelist, National Science Foundation, Arlington, VA (2013-2014)
5. Member, University Admissions Committee (2012-present)
6. Member, University Faculty Workload Policy Committee (2015-2016)
7. Session Judge: SDSMT Undergraduate and Graduate Research Symposium (2012-2015)
8. Reviewer, Journal of Materials Science, Materials Science and Engineering A-C, Metallurgical and Materials Transactions A, Journal of Mechanical Behavior of Biomedical Materials, Surface Innovations

### **PRINCIPAL PUBLICATIONS OF LAST FIVE YEARS**

1. Rokni MR, Widener CA, Champagne VK, Crawford GA, Microstructure and mechanical properties of cold sprayed 7075 deposition during non-isothermal annealing, *Surface and Coatings Technology* 276 (2015) 305–315.
2. Rokni MR, West M, Widener C, Crawford GA, An investigation into microstructure and mechanical properties of cold sprayed 7075 Al deposition, *Materials Science and Engineering A*, 625 (2015) 19-27.

3. Rokni MR, Widener C, Crawford GA, Microstructural Evolution of 7075 Al Gas Atomized Powder and High-Pressure Cold Sprayed Deposition, *Surface and Coatings Technology* 251 (2014) 254-263.
4. Meruga JM, Cross WM, May PS, Luu Q, Crawford GA, Kellar JJ, Security Printing of Covert Quick Response Codes Using Upconverting Nanoparticle Inks, *Nanotechnology* 23 (2012) 1-19.
5. Meruga JM, Fountain (Nesson) C, Kellar JJ, Crawford GA, Baride A, May PS, Cross W, Hoover R, Multi-Layered Covert QR Codes for Increased Capacity and Security, *International Journal of Computers and Applications*, Vol. 37, No. 01, 1–11, 2015.
6. Aravind, B., Meruga, J.M., Douma, C., Langerman, D., Crawford, G.A., Kellar, J.J., Cross, W.M., & May, P.S. (2015). A Tamper-Resistant Covert Print-and-Read System Based on NIR-to-NIR Upconversion Luminescence. *RSC Advances*, 2015, 5, 101338.
7. Kobayashi T, Owens M, Cross W, Kellar JJ, and Crawford GA, Structural Color for Security Printing: Patterned Robust Colloidal Crystals, *NIP & Digital Fabrication Conference*, Volume 2015, Number 1, January 2015, pp. 395-396(2).
8. Thompson F, Wicks G, Crawford GA, Porous-wall Hollow Glass Microspheres for Security Printing Applications, *NIP & Digital Fabrication Conference*, Volume 2015, Number 1, January 2015, pp. 391-394(4).
9. Meruga J.M., Kern, J., Petersen J., Logue, B.A., Baride, A., May, P.S., Cross, W.M., Crawford, G., Tamayo, D., Richards, J., and Kellar, J.J. (2015). Innovative Security Applications using Direct-Write Printing. *Keesing Journal of Documents & Identity*, 47.
10. Meruga, J.M., Holland, C., Petersen, J., Cross, W., Crawford, G., & Kellar, J, Polyaniline Nanofibers for Security Printing Applications. *NIP & Digital Fabrication Conference*, Volume 2015, Number 1, January 2015, pp. 69-71(3)
11. Bhatta E, Crawford GA Processing, Microstructure Characterization and Biological Response of Cold Sprayed Biocomposite Coatings. *TMS Annual Meeting and Exhibition*, Orlando, FL, March 2015.
12. Little M, Hong P, Crawford GA, Processing, Cytotoxicity Testing of Aluminum Magnesium Boride Powders for Medical Implant Applications. *Innovations in Biomedical Materials Conference: Focus on Ceramics 2014 - American Ceramics Society*, Columbus, OH, 7/2014.
13. Gegg C, McLinn C, Michael A, Sauter E, Crawford GA, Processing, Microstructure Characterization and Biological Performance of Hierarchical Surface Coatings for Titanium. *TMS Annual Meeting and Exhibition*, San Diego, CA, March 2014.
14. Crawford GA, Hierarchical TiO<sub>2</sub> Nanotube Coatings for Titanium Implants, *Society for Biomaterials/University of South Dakota – Biomaterials Day Symposium*, Sioux Falls, SD, May 2013. (**Invited - Plenary Speaker**)
15. G.A. Crawford, I. Salama, Misalignment Correction for Embedded Microelectronic Die Application, Patent No. US 8,372,666 B2, February 13, 2013.

#### **RECENT PROFESSIONAL DEVELOPMENT ACTIVITIES**

1. EPSCoR Young Investigator Recognition, EPSCoR Coalition Meeting, Washington, DC, March 2014.

## **WILLIAM M. CROSS**

Associate Professor

### **DEGREES WITH FIELDS, INSTITUTION, AND DATE**

- BS., Metallurgical Engineering, South Dakota School of Mines and Technology, Rapid City, SD (1984)
- MS., Metallurgical Engineering, South Dakota School of Mines and Technology, Rapid City, SD (1986)
- Ph.D., Metallurgical Engineering, University of Utah, Salt Lake City, UT (1999)

### **ACADEMIC EXPERIENCE**

1993-1997	Research Associate
1997-2007	Research Scientist III
1990, 1993, 1998, 2000-2006	Instructor
2007-present	Associate Professor, Tenured (2012)

### **NON-ACADEMIC EXPERIENCE**

1983	Duval Corporation Battle Mountain, NV	Summer Engineer
1986 - 93	Department of Metallurgical Engineering University of Utah Salt Lake City, UT	Research Fellow
1995	IMI-TAMI Haifa, Israel	Consultant
2000	Allied-Signal Phoenix, AZ	Consultant

### **CERTIFICATIONS AND PROFESSIONAL REGISTRATIONS**

none

### **CURRENT MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS**

SME, MRS

### **HONORS AND AWARDS**

- 1990 Outstanding Teaching Assistant, University of Utah, Department of Metallurgical Engineering.
- 1993 Outstanding Graduate Seminar, University of Utah, Department of Metallurgical Engineering.

### **SERVICE ACTIVITIES**

President, Soccer Rapid City, 2001-2010  
SDSM&T Faculty Senate and Academic Affairs Subcommittee Chair, 2010-present  
SDSM&T KTEQ Student Radio Faculty Advisor 2008-present  
SDSM&T Curriculum Committee, 2010-present

## PRINCIPAL PUBLICATIONS OF LAST FIVE YEARS

- Aravind Baride, Jeevan M. Meruga, Cecilia Douma, David Langerman, Grant Crawford, Jon J. Kellar, William M. Cross, P. Stanley May, **RSC Advances**, 5, pp. 101338-101346, 2015.
- J.M. Meruga, C. (Nesson) Fountain, J.J. Kellar, G. Crawford, A. Baride, P.S. May, W. Cross, and R. Hoover, **International Journal of Computers and Applications**, 37(1), pp. 1-11, 2015.
- Jeevan Manikyarao Meruga, Jamie Kern, Jacob Petersen, Brian Logue, Aravind Baride, P. Stanley May, William Cross, Grant Crawford, Domingo Tamayo and Jon J. Kellar, **Keesing Journal of Documents and Identity**, June, pp. 20-25, 2015.
- Mohammed N Alghamdi, Lidvin Kjerengtroen, Jon J Kellar, William M Cross, Selvin P Thomas, **Applied Mechanics and Materials**, 704, pp. 39-47, 2015.
- J.M. Meruga, A. Baride, W. Cross, P.S. May and J.J. Kellar, **Journal of Materials Chemistry C**, 2, pp. 2221-2227, 2014.
- S. Vunnam, K. Ankireddy, J. Kellar and W. Cross, **Nanotechnology**, 25(19), pp. 195301, 2014.
- Kenneth N. Han, Jon J. Kellar, William M. Cross and Sadegh Safarzadeh, **Geosystem Engineering**, 17(3), pp. 178-194, 2014.
- J. Petersen, J. Meruga, J. Randle, W. Cross and J. Kellar, **Langmuir**, 30(51), pp. 15514–15519, 2014.
- S. Vunnam, W. Cross, W., Ankireddy, K. and Kellar, J., **Thin Solid Films**, 531, pp. 294–301, 2013.
- K. Ankireddy, S. Vunnam, J. Kellar and W. Cross, **Journal of Materials Chemistry C**, 1, pp. 572-579, 2013.
- K. Ankireddy, M. Iskander, S. Vunnam, D. Anagnostou, J. Kellar and W. Cross, **Journal of Applied Physics**, 114, pp. 124303, 2013.
- J.M. Meruga, W.M. Cross, P.S. May, Q.A. Luu, G.A. Crawford and J.J. Kellar, **Nanotechnology**, 23(39), pp. 39521 (1-19), 2012.
- T. Blumenthal, J. Meruga, P.S. May, J. Kellar, W. Cross and Q.N. Luu, chosen as cover article, **Nanotechnology**, 23(8), pp. 185305 (1-7), 2012.
- D. Hansen, J. Kellar and W. Cross, **Leonardo Transactions**, 44(2), pp. 166-167, 2011.
- J. Ash, W. Cross, J. Kellar and L. Kjerengtroen., **Journal of ASTM International**, Volume 8, Issue 2 (February 2011), pages 11, 2011.

## RECENT PROFESSIONAL DEVELOPMENT ACTIVITIES

- Optical Document Security Conference, San Francisco, CA, February 2016 (16 hours)
- Security Printing Technology Workshop, Rochester Institute of Technology, June 2015 (40 hours)
- External Reviewer Department of Energy, National Energy and Research Laboratory Program, DE-FOA-0001202, “Opportunities to Develop High Performance, Economically Viable, and Environmentally Benign Technologies to Recover Rare Earth Elements (REEs) from Domestic Coal and Coal Byproducts” (56 hours)

## **STANLEY M. HOWARD**

Emeritus Professor and Senior Lecturer

### **DEGREES WITH FIELDS, INSTITUTION, AND DATE**

- BS., Metallurgical Engineering, Colorado School of Mines, Golden, CO (1967)
- Ph.D., Metallurgical Engineering (Minor - Chemical Petroleum Refining Engineering), Colorado School of Mines, Golden, CO (1971)

### **ACADEMIC EXPERIENCE**

1971- 1976	Assistant Professor, Tenure Track - original appointment
1976 – 1980	Associate Professor, Tenured
1980 – 2014	Professor, Tenured
2014 –	Emeritus Professor and Senior Lecturer

### **NON-ACADEMIC EXPERIENCE**

2005 - 07	Yucca Mountain Storage Facility, Summerlin, NV - Technical Auditor
2002 - 03	Oak Ridge National Laboratory, Metals and Ceramic Division - Consultant
1992 - 01	Caterpillar Corporation, Technical Center, Peoria, IL - Consultant
1988 - 91	Electronic Man. & Prod. Facility, U. S. Dept of the Navy, Ridgecrest, CA - Consultant
1986 - 87	Kerr-McGee Corporation, Oklahoma City, OK - Consultant
1981 - 88	Group V Metals, Inc., Rapid City, SD - Pres (81 - 84) & VP (84 - 88)
1976 - 77	Stanford Research Center, Menlo Park, CA - Visiting Scientist
1967 - 71	Dept of Met. Eng, Colorado School of Mines, Golden, CO - Research Fellow
1967	Atomic Weapons Division, Dow Chemical Company, Golden, CO - Engineer

### **CERTIFICATIONS AND PROFESSIONAL REGISTRATIONS**

**Professional Engineer: SD #2219**      1972-present

### **CURRENT MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS**

TMS, ASM, ACeRS, AIST, SIGMA XI

### **HONORS AND AWARDS**

2003 - AIME Mineral Industry Education Award  
 1994 - Benard A. Ennenga Faculty Award (1994)  
 1994 - Presidential Award: South Dakota School of Mines & Technology; Rapid City, SD  
 1974 - Honored Guest: Kroll Institute Dedication; Golden, CO  
 1970 - The Society of Sigma Xi  
 1966 - Alpha Sigma Mu Honorary Society

### **SERVICE ACTIVITIES**

2016-17    TMS President  
 2015-18    TMS Board of Directors  
 2013-18    TMS Foundation Board of Trustees  
 2010-12    SDSM&T Faculty President and Senate Chair  
 1991-      SDSM&T Material Advantage Student Chapter Advisor  
 2016      Metallurgical & Materials Engineering PE Exam Standard-Setting Panel Observer

## PRINCIPAL PUBLICATIONS OF LAST FIVE YEARS

- Barbara Szczerbinska, Stan Howard, et al.: *Center for Ultra-Low Background Experiments at DUSEL*, Acta Physica Polonica B, 2010, vol. 41, no. 6, pp.1709-18
- Bharat Jasthi, Edward Chen, William Arbegast, Matthew Heringer, Douglas Bice, Stanley Howard: *Friction Stir Processing of Cast Inconel 718*, Proceedings Friction Stir Welding and Processing VI, ed. R. S. Mishra, M W. Mahoney, Y. Sato, Y Hovanski, and R. Verma, Friction Stir Welding and Processing VI, 2011 TMS Annual Meeting & Exhibition, Feb 28, 2011, San Diego, The Materials, Metals, and Materials Society, Warrendale, PA, pp. 25-32
- B.K. Jasthi, E.Y. Chen, W.J. Arbegast, B. Kaligotla, M. West, C.A. Widener, and S. M. Howard: *Microstructure and Mechanical Properties of Friction Stir Processed Cast Alloy 718*, 9<sup>th</sup> International Symposium on Friction Stir Welding Proceedings, May 15-17, 2012, Huntsville, TWI Ltd, Granta Park, Great Abington, Cambridge, CB21 6AL, UK.
- Brahmanandam Kaligotla, Bharat K. Jasthi, William J. Arbegast, and Stanley M. Howard: *Effect of Thermomechanical Processing on Abnormal Grain Growth in Al-2195 Friction Stir Welds*, Trends in Welding Research 2012, Proceedings of the 9<sup>th</sup> International Conference, June 4-6, 2012, ed. S. Babu, H.K. Bhadeshia, C.E. Cross, S.A. David, T. DebRoy, J. DuPont, T. Koseki, S. Liu, Chicago, IL, ASM International, Materials Park, OH, pp. 553-7
- Bharat K. Jasthi, Glenn J. Grant, and Stanley M. Howard: *In-situ Reaction Processing Using Friction Stir Processing*, Trends in Welding Research 2012, Proceedings of the 9<sup>th</sup> International Conference, June 4-6, 2012, Editors S. Babu, H.K. Bhadeshia, C.E. Cross, S.A. David, T. DebRoy, J. DuPont, T. Koseki, S. Liu, Chicago, IL, ASM International, Materials Park, OH, pp. 978-82
- Brahmanandam Kaligotla, Bharat K. Jasthi, Christian A. Widener, and Stanley M. Howard: *Ultrasonic Spot Welding of 301 Stainless Steel to Aluminum 6061-T6*, Trends in Welding Research Proceedings of the 9<sup>th</sup> International Conference, June 4-8, 2012, ed. S. Babu, H.K. Bhadeshia, C.E. Cross, S.A. David, T. DebRoy, J. DuPont, T. Koseki, S. Liu, Chicago, IL, ASM International, Materials Park, OH, pp 631-4
- B.K. Jasthi, W. J. Arbegast, and S. M. Howard: *Effect of Thermal Aging on the Corrosion and Microstructure of Friction Stir Welded Alloy 22*, Metall. Trans. A, 2012, vol. 43A, pp. 3192-201
- Xiaoqian Ma, Stanley M. Howard and Bharat K. Jasthi: *Friction Stir Welding of Bulk Metallic Glass Vitreloy 106a*, Journal of Manufacturing Science and Engineering, 2014, vol. 136, issue 5, 7 pages. doi: 10.1115/1.4027941
- G.K. Giovanetti, -- , S. Howard; F. Avignone & W. Haxton, editors, *A Dark Matter Search with MALBEK*, Proceedings of the 13th International Conference on Topics in Astroparticle and Underground Physics, Physics Procedia, Elsevier, TAUP 2013.
- Xu, W., et al., *Testing the Ge Detectors for the MAJORANA DEMONSTRATOR*. Physics Procedia, 2015. **61**: p. 807-815.

## RECENT PROFESSIONAL DEVELOPMENT ACTIVITIES

- ASAE Symposium for Chief Staff Executives and Chief Elected Officers
- LaTeX Training
- R Training
- Listening Workshop and Meetings Matter by Paul Axtell
- D2L Distant Learning Software Short Course
- Numerous 'Lunch'N Learn' seminars on interaction and team skills





- B.K. Jasthi, T. Curtis, C. Widener, M. West, M. Carriker, A. Dasgupta, and R. Ruokolainen, “Friction Stir Processing of Direct-Metal-Deposited 4340 Steel”- Friction Stir Welding and Processing-VIII, TMS 2015, pp. 191-198.
- T. Curtis, C. Widener, M. West, B.K. Jasthi, Y. Hovanski, B. Carlson, and R. Szymanski, “Friction Stir Scribe Welding of Dissimilar Aluminum to Steel Lap Joints”, Friction Stir Welding and Processing-VIII, TMS 2015, pp. 163-169.
- M.R. Rokni, C.A. Widener, S.P. Ahrenkiel, B.K. Jasthi, V.R. Champagne, Annealing Behavior of 6061 Aluminum Deposited by High Pressure Cold Spray. *Surface Engineering*, (30)-5, (2014), pp. 361- 368.
- X. Ma, S. Howard, and B.K. Jasthi, “Friction Stir Welding of Bulk Metallic Glass Vitreloy 106a E”, Journal of Manufacturing Science and Engineering, OCTOBER 2014, Vol. 136 / 051012-1.
- A.Zainulabdeen, M. Abbas, A. Ataiwi, S. Khanna, B.K. Jasthi, and C. Widener, “Investigation of Fatigue Behavior and Fractography of Dissimilar Friction Stir Welded Joints of Aluminum Alloys 7075-T6 and 5052-H34” International Journal of Materials Science and Engineering, Vol. 2, No. 2 December 2014.
- B.K. Jasthi, E. Klinckman, T. Curtis, C. Widener, M. West, R.B. Ruokolainen, A. Dasgupta, “Effect of Post-weld Aging on the Corrosion and Mechanical Properties of Friction Stir Welded Aluminum Alloy 7475-T73”, Friction Stir welding and Processing, VII (2013), pp. 225-234.
- Md Shamsujjoha, B.K. Jasthi, M. West and C. Widener, “Microstructure and Mechanical Properties of FSW Lap Joint between Pure Copper and 1018 Mild Steel Using Refractory Metal Pin Tools”, Friction Stir welding and Processing, VII (2013), pp. 151-160.
- B.K. Jasthi, W. J. Arbegast, and S. M. Howard, “Effect of Thermal Aging on the Corrosion Properties of Friction Stir Welded Alloy 22. Metallurgical and Materials Transactions-A, 43(A) (2012), pp. 3192-3201.
- B. Kaligotla, B.K. Jasthi, W.J. Arbegast, and S.M. Howard, “Effect of Thermomechanical Processing on Abnormal Grain Growth in Al-2195 Friction Stir Welds”, Trends in Welding Research, (9) (2012), pp. 553-557.
- B.K. Jasthi, S.M. Howard, W.J. Arbegast, “Friction Stir Processing of Cast Inconel 718, Friction Stir Welding and Processing, VI (2011), pp. 25-32.
- B.K. Jasthi, Stanley M. Howard, William J. Arbegast, “Friction Stir Processing of Alloy 22” Friction Stir Welding and Processing, VI (2011), pp. 11-18.
- M. West, B.K. Jasthi, P. Hosemann, V. Sodesetti, “Friction Stir Welding of Oxide Dispersion Strengthened Alloy MA956”, Friction Stir Welding and Processing, VI (2011), pp. 33-40.

#### **RECENT PROFESSIONAL DEVELOPMENT ACTIVITIES**

- D2L Distant Learning Software Short Course (8 hours)
- Listening Workshop and Meetings Matter by Paul Axtell (5 hours)
- ‘Lunch’N Learn’ seminars on Teaching with Technology and Teaming Skills

## **JON J. KELLAR**

Professor

### **DEGREES WITH FIELDS, INSTITUTION, AND DATE**

- B.S., Metallurgical Engineering, South Dakota School of Mines and Technology, Rapid City, SD (1984)
- M.S., Metallurgical Engineering, South Dakota School of Mines and Technology, Rapid City, SD (1986)
- Ph.D., Metallurgical Engineering, University of Utah, Salt Lake City, UT (1991)

### **ACADEMIC EXPERIENCE**

1990- 1994      Assistant Professor, Tenure Track - original appointment  
1994 – 1999      Associate Professor, Tenured  
1999 –            Professor, Tenured

### **NON-ACADEMIC EXPERIENCE**

1983	Duval Corporation Sierrita, AZ	Engineer (Intern)
1984	Hecla Mining Company Wallace, ID	Engineer (Intern)
1992	Allied Signal	Consultant
1993	Dead Sea Bromine	Consultant
1995	Micron Inc.	Consultant

### **CERTIFICATIONS AND PROFESSIONAL REGISTRATIONS**

Not Applicable

### **CURRENT MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS**

SME

### **HONORS AND AWARDS**

1993      Benard A. Ennenga Faculty Award (SD Mines)  
1994      Presidential Faculty Fellow Award (National Science Foundation)  
1997      Award for Excellence in Research (SD Board of Regents)  
1999      Presidential Faculty Award (SD Mines)  
2008      Carnegie Foundation for Advancement of Learning Professor (South Dakota) of the Year  
2015      Mineral Industry Education Award (American Institute of Mining, Metallurgical & Petroleum Engineers)  
2016      Distinguished Member (Society of Mining, Metallurgy and Exploration)

### **SERVICE ACTIVITIES (last five years)**

Society of Mining, Metallurgy and Exploration,

- Governmental Affairs and Planning Committee, (2011)
- Richards Award Committee, (2011)
- Mineral Processing Division, Wadsworth Award Committee, (2011)

- Governmental Affairs and Planning Committee (2012)
- Richards Award Committee (2012)
- Mineral Processing Division, Wadsworth Award Committee (2013)
- Mineral Processing Division, Nominating Committee (2013)
- Education Sustainability Committee, (2015)
- Taggart Award Committee (Chair), (2015)
- Rong Yu Wan Dissertation Award Committee, (2015)
- MPD Scholarship Committee, (2015)
- Richards Award Committee (Chair), (2015)

#### **PRINCIPAL PUBLICATIONS OF LAST FIVE YEARS**

- J. Meruga, J. Kern, J. Petersen, B. Logue, A. Baride, P.S. May, W. Cross, G. Crawford, D. Tamayo, J. Richards and J. Kellar, “Innovative Security Applications using Direct-Write Printing,” Keesing Journal of Documents and Identity, V. 47, 6/15/15.
- A. Baride, J. Meruga, C. Douma, D. Langerman, G. Crawford, J.J. Kellar, W.M. Cross, and P.S. May, P.S. “A NIR-to-NIR upconversion Luminescence System for Security Printing Applications,” RSC Advances, 5, 101338-101346, 2015.
- J.M. Meruga, A. Baride, W. Cross, P.S. May and J.J. Kellar, “Red-Green-Blue Printing using Luminescence-Upconversion Inks,” Journal of Materials Chemistry C, 2014, 2, 2221-2227.
- S. Vunnam, K. Ankireddy, J. Kellar and W. Cross, “Highly Transparent and Conductive Al-doped ZnO Nanoparticulate Thin Films Using Direct Write Processing,” Nanotechnology, 2014, 25, 195301.
- J.M. Meruga, C. (Nesson) Fountain, J.J. Kellar, G. Crawford, A. Baride, P.S. May, W. Cross, and R. Hoover, “Multi-Layered Covert QR Codes for Increased Capacity and Security,” International Journal of Computers and Applications, 2015, V. 37, No1, pg. 1-11.
- K.N. Han, J.J. Kellar, W.M. Cross and S. Safarzadeh, “Opportunities and Challenges for Treating Rare-Earth Elements,” Geosystem Engineering, 2014, V. 17, No. 3, pg. 178-194.
- S. Vunnam, K. Ankireddy, J. Kellar and W. Cross, “Environmental Stability of Solution Processed Al-doped ZnO Nanoparticulate Thin Films using Surface Modification Technique,” Applied Surface Science, 2014, 322, pg 1-5.
- J.B. Petersen, J. Meruga, J., Randle, W.M. Cross and J.J. Kellar, “Hansen Solubility Parameters of Surfactant-Capped Silver Nanoparticles for Ink and Printing Technologies,” Langmuir, 2014, 51, 15514-9.
- S. Vunnam, W. Cross, W., Ankireddy, K. and Kellar, J., “Surface Treatments of Indium-Tin Oxide for Printing Nanoparticle Inks using Direct Write Technologies”, Thin Solid Films, V. 531, March 2013, Pages 294–301.

#### **RECENT PROFESSIONAL DEVELOPMENT ACTIVITIES**

- Materials Handling Institute Workshop, July 2015, Madison, WI (five days)

## **M. SADEGH SAFARZADEH**

Assistant Professor

### **DEGREES WITH FIELDS, INSTITUTION, AND DATE**

- BS, Materials Science Engineering, Sahand University of Technology, Iran (2003)
- MS, Materials and Metallurgical Engineering, Iran University of Science and Technology, Iran (2005)
- Ph.D., Metallurgical Engineering, University of Utah, Salt Lake City, UT (2013)

### **ACADEMIC EXPERIENCE**

2014 – Assistant Professor

### **NON-ACADEMIC EXPERIENCE**

2004 - 2009 Iranian Zinc Mines Development Company Senior Research Scientist

### **CURRENT MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS**

TMS, SME

### **HONORS AND AWARDS**

- 2012 - Wagner Equipment Award, MPD Annual Meeting, Colorado Springs, CO
- 2012 - International Precious Metals Institute (IPMI) Metalor Technologies Graduate Student Award, Las Vegas, NV
- 2013 - SME's Mineral and Metallurgical Processing Division (MPD) Award, Denver, CO
- 2015 - SME's Rong Yu Wan PhD. Dissertation Award, Denver, CO

### **SERVICE ACTIVITIES**

- Committee Member, Arthur F. Taggart Award, SME, 2015-2018
- Key Reader, Metallurgical and Materials Transactions B, TMS, 2015-
- Associate Editor of the Elsevier journal Hydrometallurgy, 2013-
- Member of Faculty Senate Research and Scholarly Affairs Committee, SDSM&T, 2013-

### **PRINCIPAL PUBLICATIONS OF LAST FIVE YEARS**

- M.S. Safarzadeh, M.S. Moats, J.D. Miller, 2014. "Recent trends in the processing of enargite concentrates." *Mineral Processing and Extractive Metallurgy Review*, 35, 283-367.
- M.S. Safarzadeh, M.S. Moats, J.D. Miller, 2014. "An update to "Recent trends in the processing of enargite concentrates"." *Mineral Processing and Extractive Metallurgy Review*, 35, 390-422.
- N. Dhawan, M.S. Safarzadeh, J.D. Miller, M.S. Moats, R.K. Rajamani, C.L. Lin, 2012. "Recent advances in the application of X-ray Computed Tomography in the analysis of heap leaching systems." *Minerals Engineering*, 35, 75-86.
- N. Dhawan, M.S. Safarzadeh, J.D. Miller, M.S. Moats, R.K. Rajamani, 2013. "Crushed ore agglomeration and its control for heap leach operations." *Minerals Engineering*, 41, 53-70.
- M.S. Safarzadeh, J. Li, M.S. Moats, J.D. Miller, 2012. "The stability of selected sulfide

minerals in sulfuric acid and acidic thiocyanate solutions.” *Electrochimica Acta*, 78, 133-138.

- J. Li, M.S. Safarzadeh, M.S. Moats, J.D. Miller, K.M. LeVier, M. Dietrich, R.Y. Wan, 2011. “Thiocyanate hydrometallurgy for the recovery of gold. Part I: Chemical and thermodynamic considerations.” *Hydrometallurgy*, 113-114, 1-9.
- J. Li, M.S. Safarzadeh, M.S. Moats, J.D. Miller, K.M. LeVier, M. Dietrich, R.Y. Wan, 2011. “Thiocyanate hydrometallurgy for the recovery of gold. Part II: The leaching kinetics.” *Hydrometallurgy*, 113-114, 10-18.
- J. Li, M.S. Safarzadeh, M.S. Moats, J.D. Miller, K.M. LeVier, M. Dietrich, R.Y. Wan, 2011. “Thiocyanate hydrometallurgy for the recovery of gold. Part III: Thiocyanate stability.” *Hydrometallurgy*, 113-114, 19-24.
- J. Li, M.S. Safarzadeh, M.S. Moats, J.D. Miller, K.M. LeVier, M. Dietrich, R.Y. Wan, 2011. “Thiocyanate hydrometallurgy for the recovery of gold. Part IV: Solvent extraction of gold with Alamine 336.” *Hydrometallurgy*, 113-114, 25-30.
- J. Li, M.S. Safarzadeh, M.S. Moats, J.D. Miller, K.M. LeVier, M. Dietrich, R.Y. Wan, 2011. “Thiocyanate hydrometallurgy for the recovery of gold. Part V: Process alternatives for solution concentration and purification.” *Hydrometallurgy*, 113-114, 31-38.
- M.S. Safarzadeh, J.D. Miller, H.H. Huang, 2014. “Thermodynamic analysis of the Cu-As-S-(O) system relevant to sulfuric acid baking of enargite at 473 K (200 °C).” *Metallurgical and Materials Transactions B*, 45 (2), 568-581.
- M.S. Safarzadeh, J.D. Miller, 2014. “Reaction of enargite ( $\text{Cu}_3\text{AsS}_4$ ) in hot concentrated sulfuric acid under an inert atmosphere. Part I: Enargite Concentrate.” *International Journal of Mineral Processing*, 128, 68-78.
- M.S. Safarzadeh, J.D. Miller, 2014. “Reaction of enargite ( $\text{Cu}_3\text{AsS}_4$ ) in hot concentrated sulfuric acid under an inert atmosphere. Part II: High-quality Enargite.” *International Journal of Mineral Processing*, 128, 79-85.
- M.S. Safarzadeh, J.D. Miller, 2014. “Reaction of enargite ( $\text{Cu}_3\text{AsS}_4$ ) in hot concentrated sulfuric acid under an inert atmosphere. Part III: Reaction Stoichiometry and Kinetics.” *International Journal of Mineral Processing*, 130, 56-65.

#### **RECENT PROFESSIONAL DEVELOPMENT ACTIVITIES**

- Co-organizing a symposium for the 3rd Pan American Materials Congress, TMS, Minerals Extraction and Processing

## **DAVID R. SALEM**

Professor and Director of Composites and Polymer Engineering (CAPE) Laboratory

### **DEGREES WITH FIELDS, INSTITUTION, AND DATE**

- PhD, Polymer and Fiber, Manchester University, U.K. (1983)
- BS, Textile Science and Technology, Bradford University, U.K. (1979)

### **ACADEMIC EXPERIENCE**

- 2010 - Present Professor, Director of CAPE Laboratory, SDSM&T
- 2013 - Present Director, CNAM Center, SDSM&T

### **NON-ACADEMIC EXPERIENCE**

- 2008-10 David Salem Consulting, Boulder CO - Materials Science Consultant
- 2007-08 NanoProducts Corp., Longmont CO - Director, Applications Development
- 2002-07 Charge Injection Technologies Inc., NJ - VP, Research & Development
- 1995-02 TRI/Princeton, Princeton NJ - Director of Research
- 1994 TRI/Princeton, Princeton NJ - Principal Scientist
- 1988-94 TRI/Princeton, Princeton NJ - Senior Scientist
- 1986-88 Rhône-Poulenc, St. Fons, France - Senior Scientist
- 1985-6 TRI/Princeton, Princeton NJ - Staff Scientist
- 1983-5 Post-Doctoral Fellow,

### **CERTIFICATES AND PROFESSIONAL REGISTRATIONS**

Chartered Physicist, CPhys (1994)

### **PROFESSIONAL ORGANIZATION MEMBERSHIPS**

Member of the Institute of Physics, U.K.  
Society for the Advancement of Material and Process Engineering (SAMPE)  
Fiber Society

### **HONORS AND AWARDS**

Plenary Lecturer, International Conference on Oriented Polymers, Montreal, 1998  
Award for Distinguished Achievement in Fiber Science, Fiber Society, 1996  
CASE Studentship Award, 1979 - 83, Science and Engineering Research Council, U.K.

### **SERVICE ACTIVITIES**

- Member of the Nanoscience and Nanoengineering Graduate Program Advisory committee
- Judge at the annual NanoExpo 2012, 2013 and 2014
- Faculty Advisor of SAMPE student chapter, SDSMT, 2013 - Present
- Member of Scientific Advisory Committee, International Conference on Polymer Fibers (2002 - 2010)
- Session Moderator, *SAMPE Tech Conference 2014*, Seattle, WA
- Session Chair, *International Symposium on Fibers Interfacing the World, 2013*, Clemson SC

### **PUBLICATIONS**

1. H. Hong, G.P. Peterson and D.R. Salem, “Composite Materials with Magnetically Aligned Carbon Nanoparticles having Enhanced Electrical Properties and Methods of Preparation”, US Patent 9,312,046 (2016)
2. Y. Zhao, T. Xu, X. Ma, M. Xi, D.R. Salem and H. Fong, “Hybrid multi-scale epoxy composites containing conventional glass microfibers and electrospun glass nanofibers with improved mechanical properties”, *J. Appl. Polym. Sci.*, **132**, 42731 (2015)
3. E. Schmid and D.R. Salem, “Fabrication Technique and Thermal Insulation Properties of Micro- and Nano-Channeled Polymer Composites”, *Acta Astronautica*, **116**, 68 (2015)
4. B. Chu, A.T. Brady, B.D. Mannhalter and D.R. Salem, “Effect of Silica Particle Surface Chemistry on the Shear Thickening Behavior of Concentrated Colloidal Suspensions”, *J. Phys. D: Appl. Phys.* 47, 335302 (2014)
5. B. Chu and D.R. Salem, “Flexoelectricity in Several Thermoplastic and Thermosetting Polymers”, *Appl. Phys. Lett.* 101, 103905 (2012)

### **PRESENTATIONS**

1. D.R. Salem, “The Composite and Nanocomposite Advanced Manufacturing Center: Activities and Goals”, *Johns Manville Corporation*, Invited Seminar, Denver CO, October 2015:
2. D.R. Salem “Overview of Composite and Nanocomposite Research at the South Dakota School of Mines and Technology”, *University of Clemson Invited Seminar*, Clemson SC, March 2015
3. E.D. Schmid and D.R. Salem, “Micro- and Nano-channeled Materials for Structural, Thermal Insulation Composites (STICs)”, *Proceedings of the International Symposium on Fibers Interfacing the World*, p. 122 (2013)
4. A.T. Kulesa, M. J. Robinson, W. M. Cross, and D. R. Salem, “Analytical Study of Thermal and Mechanical Properties of Syntactic Foams for Space Applications”, *64<sup>th</sup> Annual Astronautical Congress (IAC)*, Vol. 8., C2.6.4 p. 6031 (2013)
5. B. Chu, A.T. Brady, B.D. Mannhalter and D.R. Salem, “Controlling the Shear Thickening Behavior of Silica Nanoparticle Suspensions by Particle Heat Treatments”, *Proceedings of the Annual Conference of the Society for the Advancement of Materials and Process Engineering (SAMPE)* (2013)

### **PROFESSIONAL DEVELOPMENT ACTIVITIES**

- *CAMX Conference and Exhibition*, Dallas Texas 2015. Attendee.
- *CAMX Conference and Exhibition*, Orlando Florida 2014. Attendee.

## **MICHAEL K. WEST**

Associate Professor, Department Head

### **DEGREES WITH FIELDS, INSTITUTION, AND DATE**

- B.S.E. Nuclear Engineering, Arizona State University, Tempe, AZ (1994)
- MS., Nuclear Engineering, Texas A&M University, College Station, TX (1998)
- PhD., Materials Science and Engineering, University of Tennessee, Knoxville, TN (2006)

### **ACADEMIC EXPERIENCE**

2006-2011 Assistant Professor, Materials and Metallurgical Engineering, SDSM&T  
2012-present Associate Professor, Materials and Metallurgical Engineering, SDSM&T  
(Tenured 2011)

### **NON-ACADEMIC EXPERIENCE**

2009-2010 Interim Director, Advanced Materials Processing Center (AMP), SDSM&T  
2009-2010 Interim Director, Repair, Refurbish, and Return to Service (R3S) State of South  
Dakota “2010 Center”, SDSM&T

### **CERTIFICATIONS AND PROFESSIONAL REGISTRATIONS**

none

### **CURRENT MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS**

TMS, ASM, AWS

### **HONORS AND AWARDS**

Tau Beta Pi, Engineering Honor Society, 1993  
Alpha Nu Sigma, Nuclear Engineering Honor Society, 1996  
Phi Kappa Phi, Academic Honor Society, 1997  
Tennessee Advanced Materials Laboratory (TAML) Fellowship, 2001

### **SERVICE ACTIVITIES**

Faculty advisor for Black Hills AWS Student Chapter, 2007-present.  
Faculty advisor SDSM&T Racquetball Club, 2009-present  
Site Director, NSF I/UCRC Center for Friction Stir Processing at SDSM&T, 2007-2014.  
Site Director, NSF REU Site “Back to the Future”, 2009-present. NSF/REU student research  
supervisor 2007, 2009-present.  
Organizer, South Dakota Undergraduate Research Symposium, 2014-present.  
Organizer/Instructor, ASM International "Materials Camp" for High School Students, SDSM&T  
2009-present, University of Tennessee, Knoxville, 2004-2006.  
Mentor, Army Educational Outreach Program for High School Students REAP/UNITE program,  
2012-present.  
Instructor, Fundamentals of Engineering (FE) SDSM&T Exam Review, Materials Engineering,  
2009-2013.  
Instructor, Gear-Up Program for Native American Students, South Dakota School of Mines and  
Technology, 2007-present.  
GEAR-UP Program for Native American High School Students, 2007-present.



STEPS Science Technology and Engineering Preview Camp for Middle School Girls and Boys, 2007-2012.

SDSM&T Youth Engineering Adventure, 2007-2012.

NASA Space Observation Learning and Research SOLAR Program, 2009-2012.

NASA Space Days, 2008-2012.

### **PRINCIPAL PUBLICATIONS OF LAST FIVE YEARS**

V. Champagne III, M. West, R. Rokni, T. Curtis, V. Champagne Jr, B. McNally, “Joining of Cast ZE41A to Wrought 6061 by the Cold Spray Process and Friction Stir Welding,” *Journal of Thermal Spray Technology*, Vol. 25 (1-2) (2016) p. 143-159.

Md Shamsujjoha, B.K. Jasthi, M. West and C. Widener, “Friction Stir Lap Welding of Aluminum to Steel Using Refractory Metal Pin Tools,” *Journal of Engineering Materials and Technology*, Vol. 137 (2) (2015).

M.R. Rokni, C. A. Widener, G. A. Crawford, M. K. West, “An investigation into microstructure and mechanical properties of cold sprayed 7075 Al deposition”, *Materials Science and Engineering: A*, 2015 Volume 625, (2015) Pages 19-27.

T. Curtis, C. Widener, M. West, B.K. Jasthi, Y. Hovanski, B. Carlson, R. Szymanski, and W. Bane, “Friction Stir Scribe Welding of Dissimilar Aluminum to Steel Lap Joints” *Friction Stir Welding and Processing-VIII*, TMS 2015, pp. 191-198.

B.K. Jasthi, T. Curtis, C. Widener, M. West, M. Carriker, A. Dasgupta and R. Ruokolainen, “Friction Stir Processing of Direct-Metal-Deposited 4340 Steel” *Friction Stir Welding and Processing-VIII*, TMS 2015, pp. 191-198.

Timothy Johnson, Todd Curtis, Bharat Jasthi, Eric East, Christian Widener, Michael West, “Effect of Friction Stir Processing on Armor Grade Materials”, *Friction Stir Welding and Processing-VII*, TMS 2013, pp. 173-182.

M. West, B. Jasthi, N. Smith, J. Oduor, Y. Chen, “Microstructure and Mechanical Properties of Friction Stir Processed Grade 40 Grey Cast Iron”, *Friction Stir Welding and Processing VI*, Wiley-TMS, Edited by Mishra et al. (2011) 41-48.

### **RECENT PROFESSIONAL DEVELOPMENT ACTIVITIES**

DOE SBIR/STTR Additive Manufacturing of Nuclear Components Reviewer, 2014.

NSF REU Programs Reviewer, 2010, 2013.

DOE Breakthrough Joining Proposals Reviewer, 2013.

NASA EPSCoR Proposal Reviewer, 2011-present.

DOE Nuclear Engineering University Programs Reviewer, 2011-2013.

## **CHRISTIAN A. WIDENER**

Associate Professor and Director of Arbegast Materials Processing and Joining Laboratory

### **DEGREES WITH FIELDS, INSTITUTION, AND DATE**

- B.S., Mechanical Engineering, Wichita State University (1996)
- M.S., Mechanical Engineering, Wichita State University (2004)
- Ph.D., Mechanical Engineering (Minor – Materials Engineering), Wichita State University (2005)

### **ACADEMIC EXPERIENCE**

2005 – 10 Adjunct Lecturer, Wichita State University

2010 - Associate Professor, Tenured, South Dakota School of Mines & Technology

### **NON-ACADEMIC EXPERIENCE**

1997-09	Westinghouse Electric Company Houston, TX	Gas Turbine Field Service Engineer
1999-02	Siemens Power Generation Orlando, FL	Gas Turbine Installation Site Manager
2004-10	National Institute for Aviation Research Wichita, KS	Research Scientist

### **CERTIFICATIONS AND PROFESSIONAL REGISTRATIONS**

Thermal Spray Management Certificate, ASM Thermal Spray Society, 2015

### **CURRENT MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS**

TMS, ASM, ASME, SME, AWS

### **HONORS AND AWARDS**

1991 – Kansas Honor Scholar

1993 – Wallace Scholar

1994 – Pi Tau Sigma Mechanical Engineering Honor Society Member

1996 – Emory Lindquist Honors Graduate

2004 – Dwayne & Velma Wallace Outstanding Graduate Student Teacher Award

2009 – Honorary Commander, McConnell Air Force Base

2015 – South Dakota Governor’s Giant Vision (1<sup>st</sup> place – tie)

### **SERVICE ACTIVITIES**

Guest Editor, International Journal of Thermal Spray, 2015

Associate Editor, International Thermal Spray Conference, 2015

SDSM&T University Research Committee Member 2014 –

### **PRINCIPAL PUBLICATIONS OF LAST FIVE YEARS**

- Ozdemir, O.C., Widener, C.A., Helfritch, D., and Delfanian, F. (2015), Estimating the effect of helium and nitrogen mixing on deposition efficiency in cold spray, International Journal of Thermal Spray, (Under Review, 9/18/15).

- Widener, C.A., Hrabe, R.H., Stamey, T., Hoiland, B., Carter, M. and Champagne, V.K. (2016). Navy Valve Actuator Repair Using Cold Spray, *International Journal of Thermal Spray*, 25(1-2), 193-201.
- Rokni, M.R., Widener C.A., and Crawford, G.A. (2015). An Investigation into Microstructure & Mechanical Properties of Cold Sprayed 7075 Al deposition, *Materials Science & Engineering A*, v. 625; 19-27.
- Rokni, M.R., Widener, C.A., Champagne, V.K., and Crawford, G.A. (2015). Microstructure and mechanical properties of cold sprayed 7075 deposition during non-isothermal annealing, *Surface and Coatings Technology Journal*, v. 276; 305-315.
- Rokni, M.R., Widener, C.A. and Crawford, G.A. (2014). Microstructural evolution of 7075 Al gas atomized powder and high-pressure cold sprayed deposition, *Surface and Coatings Technology Journal*, v. 251; 254-263.
- Rokni, M.R., Widener C., and Champagne V.R. (2014). Microstructural Stability of Ultrafine Grained Cold Sprayed 6061 Aluminum Alloy, *Applied Surface Science*, v. 290 p. 482-489.
- Rokni, M.R., Widener, C. A., Ahrenkiel, S. P., Jasthi, B. K., & Champagne, V. R. (2014). Annealing behaviour of 6061 aluminium deposited by high pressure cold spray. *Surface Engineering*, 30(5); 361-368.
- Rokni, M.R., Zarei-Hanzaki, A. Widener, C.A., and Changizian, P. (2014). The Strain-Compensated Constitutive Equation for High Temperature Flow Behavior of an Al-Zn-Mg-Cu Alloy, *Journal of Materials Engineering and Performance*, 23(11); 4002-4009.
- Rokni, M.R., Widener, C.A., and Champagne, V. R. (2014). Microstructural Evolution of 6061 Aluminum Gas-Atomized Powder and High-Pressure Cold-Sprayed Deposition, *Journal of Thermal Spray Technology*, 23(3); 514-524.
- Rokni, M.R., Widener, C.A. and Champagne, V.K. (2014). Microstructural Stability of Ultrafine Grained Cold Sprayed 6061 Aluminum Alloy, *Journal of Applied Surface Science*, v. 290; 482-489.
- Misak, H., Widener, C.A., Burford, D., and Asmatulu, R. (2014). Fabrication and Characterization of CNT Nanocomposites into 2024-T3 Al Substrates via Friction Stir Welding Process, *Journal of Engineering Materials and Technology*, 136(2), 024501 (online 5 pages).
- Rokni, M.R., Widener, C.A., Nardi, A.T., and Champagne, V.K. (2013). Nano crystalline high energy milled 5083 Al powder deposited using cold spray, *Applied Surface Science*, v. 305; 797-804.
- Widener, C.A., Hrabe, R.H., Stamey, T., Hoiland, B., Carter, M. and Champagne, V.K. (2015). Navy Valve Actuator Repair Using Cold Spray, *International Thermal Spray Conference and Exposition (ITSC)*, Long Beach, CA, May 11-14, 2015.
- Widener, C.A., Franklin, J., Jasthi, B.K., and West, M.K. (2013). Mechanical Properties of Repaired 7075-T73 Friction Stir Weld Butt Welds, *Friction Stir Welding and Processing VII*, Edited by R. Mishra, M. Mahoney, Y. Sato, Y. Hovanski, and R. Verma, John Wiley and Sons, Inc., Hoboken, NJ; pp. 205-213.

#### **RECENT PROFESSIONAL DEVELOPMENT ACTIVITIES**

- Business Launch Boot Camp Graduate, SD Technology Business Center, (40 hours)
- Lean Manufacturing Training, South Dakota MTS, (16 hours)

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