

JAE-WON CHOI, Ph.D.

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APPOINTMENTS

- Sep. 2017 – present **Associate Professor with Tenure, Director of Advanced Additive Manufacturing Lab (AAML)**, Mechanical Engineering, The University of Akron (UA), Akron, OH
- Jan. 2011 – Aug. 2017 **Assistant Professor, Director of AAML**, Mechanical Engineering, UA
- Jan. 2011 – Aug. 2011 **Adjunct Assistant Professor**, Mechanical Engineering, The University of Texas at El Paso (UTEP), TX
- Sep. 2009 – Dec. 2010 **Research Assistant Professor and Lecturer** in the W.M. Keck Center for 3D Innovation (Keck Center), Mechanical Engineering, UTEP
- Oct. 2007 – Aug. 2009 **Postdoctoral Researcher (2007 – 2008), Research Specialist (2008 – 2009)** in the Keck Center, Mechanical Engineering, UTEP
- Mar. 2007–Aug. 2007 **Postdoctoral Researcher** in Production Automation Lab., Mechanical and Intelligent Systems Engineering, Pusan National University (PNU), Busan, South Korea
- Sep. 2004 – Feb. 2007 **Research Assistant** in Mechanical and Intelligent Systems Engineering, PNU
- Mar. 2001– Nov. 2006 **Technical Research Personnel** as an alternative military service, PNU
(acquired qualification for pursuing a Ph.D. degree by passing a national examination)
- Jun. 2000 – Dec. 2005 **Research Assistant** in Pusan Kyoungnam Automotive Technology (PKATEC), PNU
(Reserve Engineering research and service: operation of Surveyor 1200™ as a 3D laser scanner, and Reserve Engineering software)

EDUCATION

- Feb. 2007 **Ph.D.**, Department of Mechanical and Intelligent Systems Engineering, PNU
Dissertation: *Development of Projection-based Microstereolithography Apparatus Adapted to Large Surface and Microstructure Fabrication for Human Body Application*
(Advisor: Seok-Hee Lee, Ph.D.; sehlee@pusan.ac.kr)
- Feb. 2001 **M.S.**, Department of Mechanical and Intelligent Systems Engineering, PNU
Thesis: *A Study on Generation of Free-Form Surface from Measuring Point using Laser Scanner* (Advisor: Seok-Hee Lee, Ph.D.)
- Feb. 1999 **B.S.**, School of Mechanical Engineering, PNU

TEACHING

- **Aerospace Systems Manufacturing**, Undergrad course, Mechanical Eng. Dept. at UA
- **3D Printing and Additive Manufacturing**, Undergrad/Grad course, Mechanical Eng. Dept. at UA
- **3D Printing Lab**, ME Lab, Undergraduate, Mechanical Eng. Dept. at UA
- **CAD/CAM**, Undergrad/grad course, Mechanical Eng. Dept. at UA
- **Tools for Mechanical Engineering (Lecture/Lab.)**, Undergrad course, Mechanical Eng. Dept. at UA
- **Kinematics of Machines**, Undergrad course, Mechanical Eng. Dept. at UA
- **Micro/Nano Engineering**: Grad course in Ph.D. program of Material Science and Engineering (MASE 5390) and Metallurgical and Materials Engineering Dept. (MME 5390) at UTEP, TX (Fall 2009)
- **Mechanics of Materials, Mechanical Vibration, and Computer Programming**: Undergrad courses, Mechanical and Automotive Eng. Dept. at Andong National University, S. Korea (Spring 2007)

RESEARCH INTERESTS

- **Advanced Additive Manufacturing**: Design and Development of Multi-Material, Multi-Scale Additive Manufacturing; Direct-Print Photopolymerization; Conformal 3D Printing; Biomimicry 3D Printing; Hybrid Manufacturing System; Low-cost 3D Metal Printing
- **Materials for Additive Manufacturing**: Rheology-Controlled Photopolymers for Direct-Print, 3D Printable Piezoresistive and Conductive Polymer/Nanocomposites; 3D Printable Bio-Materials
- **Smart Structures**: 3D Printing of Sensors, Actuators, and Electronics; Biomimetic Robotic Tactile Sensors
- **Biomedical Engineering**: Computer-Aided Tissue Engineering; Transdermal Drug Delivery System; Scaffold Fabrication; Artificial Nerve Guidance Conduits; Biomedical Devices; 3D Printing of Sustainable Materials

AWARDS

March 2018	UA Faculty Research Grant Award (3D Printing of Smart Tires, \$10,000)
June 2016	Young Researcher Award, International Symposium on Green Manufacturing and Applications (ISGMA 2016), June 21 – 25, Bali, Indonesia
April 2015	Best Post Presentation, The 11 th Annual University of Akron Student Innovation Symposium (UASIS): A Showcase of Research (advisor)
March 2015	UA Leading Entrepreneurial Academics into Practice (LEAP) (Technology Validation for 3D Printed Tactile Sensors, \$25,000)
March 2015	UA Faculty Research Grant Award (Multi-scale 3D Printing of Microneedle Arrays for Early-stage Melanoma, \$10,000)
May 2013	Best Paper Award at International Conference on Manufacturing, Design and Tribology (ICMDT), Busan, S. Korea, 2013 (corresponding author)
Oct 2007	Overseas Postdoctoral Fellowship (KRF-2007-357-D00023), Korea Research Foundation (\$20,000)

GRANTS RECEIVED (Total external funding since joining UA: ~\$776,000)

- *Multi-scale 3D Printing Using Vat-free Photopolymerization*, NSF CMMI – MME, Aug 1 2016 – July 31 2019, \$303,501, PI (active).
- *RoboSense – Artificial Tactile Sensors for Prosthetic Applications*, NSF I-Corps Teams, July 1 2015 – Dec 31 2016, \$50,000, PI.
- *Artificial Tactile Sensors using Hybrid 3D Printing Technologies*, Ohio 3rd Frontier, Technology Validation and Startup Funds, Sep 1 2015 – Aug 31 2016, \$50,000, PI.
- *Concussion Detection Sensors*, NSF I-Corps Sites, April 1 2015 – August 31 2015, \$2,500, Academic lead, funded.
- *Artificial Tactile Sensors*, NSF I-Corps Sites, Nov 1 2014 – April 30 2015, \$2,500, Academic lead.
- *Flexible Tactile Sensor with 30% Flexibility using Hybrid Additive Manufacturing Technology*, Korea Institute for Advancement of Technology (KIAT) under Korea Ministry of Knowledge Economy, 08/01/2012 – 07/31/2015, \$268,697, PI.
- *Development of Automotive MID Parts using Direct Write Technology*, Korea Association of Industry, Academy, and Research Institute (KAIARI) under Korea Small & Medium Business Administration, 06/01/2012 – 05/31/2014, \$104,848, PI.
- *Development of Fusion Process for Fabrication of 3D Biodegradable Scaffolds and Investigation of Cell Culture according to Inner Geometry of Scaffolds*, Korea Research Foundation (KRF), Overseas Postdoctoral Fellowship (KRF-2007-357-D00023), 10/1/2007 – 9/30/2008, \$20,000, PI.

ACTIVITIES

- Journal Editorial Membership
 - International Journal of Precision Engineering and Manufacturing – Green Technology (IJPEM-GT), Editorial Board Member, 2017 – Present.
 - Additive Manufacturing (Elsevier), Editorial Board Member, 2014 – Present.
 - KSMPE – Korean Society of Manufacturing Processing Engineers, Editor (2015 – Present), Associate Editor (2014).
 - Guest Editor of Journal Sensors: Special Issue “3D Printed Sensors”
(http://www.mdpi.com/journal/sensors/special_issues/3D_printed_sensors)
- Research Collaborations
 - Techbelt Team (Ohio + Pennsylvania): Original proposal writing team for participating the competition to bring the pilot institute on Additive Manufacturing as one of National Network for Manufacturing Innovation (NNMI) initiated by the President. The team won the competition with a \$30M federal contribution, and established National Additive Manufacturing Innovation Institute (NAMII) located in Youngstown, OH in 2012.
- Conference/Symposium/Workshop
 - US-Korea Joint Conference (UKC) 2018 (New York, NY): Session Organizer for 3D Printing and Advanced

Manufacturing

- International Symposium on Green Manufacturing and Applications (ISGMA) 2017: Organizing Committee Member
- ISGMA 2014 (Busan, Korea), 2015 (Cheongdo, China), 2016 (Bali, Indonesia): Session Organizer/Chair (3D Printing)
- MSEC 2017 (Univ. of Southern California), 2018 (Texas A&M Univ.): Symposium Co-Organizer for Advances in Micro- and Nano-Additive Manufacturing
- ASME IMECE 2016 (Phoenix, AZ) and 2017 (Tampa, FL): Track Co-Organizer of Advanced Manufacturing
- ASME IMECE 2013 (San Diego), 2014 (Montreal, Canada), 2015 (Houston): Additive Manufacturing Topic Organizer, Session Chair, and Reviewer
- 252nd American Chemical Society National Meeting: Polymers designed for 3D printing applications: evaluation of the fundamental and applied aspects of the field, Co-Organizer, August 22-24, 2016, Philadelphia
- 30th International Conference of Polymer Processing Society (PPS) 2014: Symposium Organizer and Reviewer (Additive Manufacturing), Cleveland, OH
- International Conference on Control, Automation and Systems (ICCAS) 2013: Special Session Organizer, Chair, Reviewer (Flexible Tactile Sensors for Robotic Applications), Jeju, Korea
- Proposal Reviewer
 - Applied and Engineering Researches, Israel Ministry of Science, Technology and Space
 - NSF CMMI – MME, MRI, SBIR/STTR
 - Leaders New Opportunity, Canada Foundation for Innovation (CFI) and the Quebec Government
- Journal/Conference Reviewer
 - Acta Biomaterialia
 - Sensors
 - Additive Manufacturing
 - Biofabrication
 - Sensors and Actuators A - Physical
 - Rapid Prototyping Journal
 - International Journal of Advanced Manufacturing Technology
 - International Journal of Optomechatronics
 - Journal of Mechanical Science and Technology
 - ASME Journal of Electronic Packaging
 - ASME Journal of Manufacturing Science and Engineering
 - Journal of Nanotechnology
 - International Journal Precision Engineering and Manufacturing
 - ASME IMECE, ICCAS, PPS

- Technical affiliation
 - SME – Society of Manufacturing Engineers, Regular member, 2011 – present.
 - SPIE – The International Society for Optical Engineering, Life time member
 - ASME – American Society of Mechanical Engineers, Regular member, 2011 – present.
- Student Group Advising
 - 3D4E: Advisor at UA
- Entrepreneurial Activities/Consulting
 - 3D Controls – Technical consultant, 2016 – present
 - Osstem Implant, Inc. – Technical consultant, 2016-2017
 - eSens (founded in 2015): Co-Founder and CTO
 - Non-Dimensional Innovations LLC (founded in 2015): Founder and President
 - JEIOS – Technical consultant, 2015
 - Cuyahoga Community College’s Education Advisory Council, 2014
 - 4ENs – Technical consultant, 2013 – 2015
 - Chemstress – Technical consultant/translator, 2014

PATENTS

- (1) **Choi, J.W.**, “3D Structuring on Demand using Liquid Bridge in a Large Area,” Provisional patent application submitted in Nov 22, 2017 (USPTO: 62/589,956).
- (2) **Choi, J.W.**, “Sheet-type Elastomeric Pressure Sensors for Tire Health Monitoring,” Provisional patent application submitted in Feb 11, 2016 (USPTO: 62/293,829); “Flexible Sensors and Methods for Making the Same,” applied on Mar 2, 2017.
- (3) **Choi, J.W.**, Yun, Y. H., “Liquid Bridge Formation for Multi-scale, Multi-material 3D Printing,” Provisional patent application submitted in Oct 30, 2015 (USPTO: 62/248,730); “Additive Printing Apparatus and Method Employing Liquid Bridge,” PCT submitted in Oct 28, 2016 (PCT/US16/59350).
- (4) **Choi, J.W.**, Vatani, M., Engeberg, E.D., Kim, H.C., R. Thomas Swiger, “Flexible Tactile Sensors and Method of Making,” (PCT: 15/270,626), Sep 20, 2016 (Continuation of PCT/US15/21729).
- (5) **Choi, J.W.**, Engeberg, E.D., Vatani, M., Kim, H.C., “Flexible Tactile Sensors and Method of Making,” PCT submitted in March 20, 2015 (PCT/US15/21729; WO 2015/143307) from a provisional patent (USPTO: 62/043,461) - “Ionic Liquid (IL)-Based Highly Sensitive Strain, Pressure and Temperature Sensors” submitted in Aug 29, 2014 and provisional patent (USPTO: 61/955,863) - “Nanocomposite Sensors for Detecting Proximity, Temperature, and Pressure” submitted in March 20, 2014.
- (6) **Choi, J.W.**, Vatani, M., Lu, Y., “Direct-Print Photopolymerization for Multi-Layer, Multi-Material Structures,” Provisional patent application in March 20, 2014 (USPTO: 61/955,854).
- (7) **Choi, J.W.**, Engeberg, E., Kim, H.C., Lee, K.S., “Flexible Tactile Sensors and Method of Making,” US 9,664,717 B2 registered on May 30, 2017. (Provisional patent application filed on April 26, 2012 (USPTO: 61/638,721);

Published in April 23, 2015 (Pub. No. US20150109006 A1, App. No. US14/396,980)).

- (8) Kim, H.C., Lee, I.H., Lee, G.C., **Choi, J.W.**, “A Tactile Sensor and Manufacturing Method for Thereof,” applied in April 18 2013 (10-2013-0042792), accepted in Dec 21 2014 (Korean, registration number will be assigned).
- (9) **Choi, J.W.**, Ha, Y.M., Park, I.B., Lee, S.H. “Manufacturing Method Large Area Microstructure,” submitted in Aug 2007 (10-2007-0078035), accepted in Feb 2009 (Korean, 100895864).

BOOKS/BOOK CHAPTERS

- (1) Kim, H.C., Yun, H.Y., Lee, I.H., Park, K., Kim, C.Y., Ahn, D.G., **Choi, J.W.**, “Development of 3D Printers,” National Competency Standards (NCS) Learning Modules, Andong National University and Korea Research Institute for Vocational Education & Training (KRIVET), ISBN: 979-11-339-4789-8, Feb 28, 2017 (written in Korean).
- (2) Lee, I.H., Bae, Y.H., Yun, H.Y., **Choi, J.W.**, Kim, H.S., Kim, H.C., “Development of Products using 3D Printing,” NCS Learning Modules, Andong National University and KRIVET, ISBN: 979-11-339-4799-7, Feb 28, 2017 (written in Korean).
- (3) **Choi, J.W.**, Lu, Y., Wicker, R.B., “Ch. 4: Projection Microstereolithography as Micro-Additive Manufacturing Technology: Processes, Materials, and Applications,” *Additive Manufacturing: Innovations, Advances, and Applications* edited by T.S. Srivatsan, T.S. Sudarshan, Taylor & Francis (Philadelphia, PA, USA), Published in Sep 25, 2015.

PEER-REVIEWED JOURNAL PUBLICATIONS (*corresponding author)

Google Scholar: Citation 1084; h-index 18; (<https://scholar.google.com/citations?user=LrOoOUkAAAAJ&hl=en>)

- (1) Emon, M.O.F., Alkadi, F., Philip, D., Choi, J.W., “3D Printed Tactile Sensors,” *Additive Manufacturing, In Preparation*.
- (2) Lee, J., Alamdari, A., Emon, M.O.F., Choi, J.W.*, “Effect of Surface Energy Reducing Agents to Control Adhesion Force between Cured Layers and Substrates in Liquid Bridge Microstereolithography,” *Additive Manufacturing, In Preparation*.
- (3) Jain, T. Saylor, D., Piard, C., Liu, Q., Patel, V., Kaushal, R., Choi, J.W., Fisher, J., Isayeva, I., Joy, A., “The effect of dexamethasone as a bioactive filler on ambient temperature 3D printing, rheology, and degradation of a low modulus polyester,” *Biofabrication, Under review*.
- (4) Emon, M.O.F., Lee, J., **Choi, J.W.***, “Characterization of a 3D Printable Soft-Sensor on the basis of Ionic Liquid Concentration and Thickness of the Piezoresistive Layer,” *Sensors and Actuators A – Physical, Under review*.
- (5) Vatani, M., Alkadi, F., **Choi, J.W.***, “Algorithm to Reduce Leading and Lagging in Conformal Direct-Print,” *ASME Journal of Manufacturing Science and Engineering, Under review*.
- (6) Govindarajan, S.R., Jain, T., **Choi, J.W.**, Joy, A., Isayeva, I., Vorvolakos, K., “Viscoelastic Copolyester “CPP8515” for 3D Printing of Low Modulus Degradable Hydrogels: Chemistry, Rheology and Interface Formation,” *Polymers, Under review*.

- (7) Copploe, A., Vatani, M., Amini, R., **Choi, J.W.**, Tavana, H., “Engineered Airway Models to Study Liquid Plug Splitting at Bifurcations: Effects of Orientation and Airway Size,” *ASME Journal of Biomechanical Engineering*, Under review.
- (8) Jo, K.H., Lee, S.H., **Choi, J.W.***, “Liquid Bridge Stereolithography – A Proof of Concept,” *International Journal of Precision Engineering and Manufacturing*, In press.
- (9) Alkadi, F., Lee, J., Yeo, J.S., Hwang, S.H., **Choi, J.W.***, 2018, “3D printed tire treads using recycled tire rubbers,” *International Journal of Precision Engineering and Manufacturing – Green Technology*, In press.
- (10) Lee, J., Lu, Y., Kashyap, S., Alamdari, A., Emon, M.O.F., **Choi, J.W.***, 2018, “Liquid Bridge Microstereolithography,” *Additive Manufacturing*, Vol. 21, pp. 76-83.
- (11) Lee, J.K., **Choi, J.W.**, Lee, K.C., Lee, S., 2018, “Development of a Direct-Printed Tactile Sensor for Slip Detection and Its Application to Gripper Control,” *International Journal of Control, Automation and Systems*, Vol. 16 (2), pp. 929-936.
- (12) Thyagaraj, S., Pahlavian, S.H., Loth, F., Vatani, M., **Choi, J.W.**, Tubbs, S., Giese, D., Kroger, J.-R., Bunck, A.C., Martin, B., 2017, “An MRI-Compatible Hydrodynamic Simulator of Cerebrospinal Fluid Motion in the Cervical Spine,” *IEEE Transactions on Biomedical Engineering*, Issue: 99, TBME-00907-2017 (8 pages).
- (13) Lee, J., Kim, H.C., **Choi, J.W.**, and Lee, I.H., 2017, “A review on 3D printed smart devices for 4D printing,” *International Journal of Precision Engineering and Manufacturing – Green Technology*, Vol. 4, No. 3, pp. 373-383.
- (14) Emon, M.O.F., **Choi, J.W.***, 2017, “Flexible piezoresistive sensors embedded in 3D printed tires,” *Sensors*, Vol. 17, No. 3, 656 (13 pages).
- (15) Vatani, M., **Choi, J.W.***, 2017, “Direct-print photopolymerization for 3D printing,” *Rapid Prototyping Journal*, Vol. 23, Issue 2, pp. 337-343.
- (16) Lee, J., Emon, M.O.F., Vatani, M., **Choi, J.W.***, 2017, “Effect of degree of crosslinking and polymerization of 3D printable polymer/ionic liquid composites on performance of stretchable piezoresistive sensors,” *Smart Materials and Structures*, Vol. 26, 035043 (8 pages).
- (17) Govindarajan, S.R., Xu, Y., Swanson, J.P., Jain, T., Lu, Y., **Choi, J.W.**, Joy, A., 2016, “A Solvent and Initiator Free, Low-Modulus, Degradable Polyester Platform with Modular Functionality for Ambient-Temperature 3D Printing,” *Macromolecules*, Vol. 49, No. 7: pp. 2479 – 2437.
- (18) Vatani, Morteza, Vatani, Mohammad, **Choi, J.W.***, 2016, “Multi-layer stretchable pressure sensors using ionic liquids and carbon nanotubes,” *Applied Physics Letters*, Vol. 108, pp. 061908 (5 pages).
- (19) Hasan, M.N., Vatani, M., Chandy, A., **Choi, J.W.***, 2016, “Experimental and Numerical Analysis of Filament Front Deformation for Direct-Print,” *ASME Journal of Manufacturing Science and Engineering*, Vol. 138, No. 1, pp. 011003 (12 pages).
- (20) Lu, Y., Yun, H.Y., Vatani, M., Kim, H.C., **Choi, J.W.***, 2015, “Direct-Print/Cure as a Molded Interconnect Device (MID) Process for Fabrication of Automobile Cruise Controllers,” *Journal of Mechanical Science and Technology*, Vol. 29, No. 12, pp. 5377-5385.

- (21) Hasan, M.N., Chandy, A., **Choi, J.W.***, 2015, “Numerical Analysis of Droplet Impact and Consequent Deformation for Direct-Print,” *Engineering Applications of Computational Fluid Mechanics*, Vol. 9, No. 1, pp. 554-566.
- (22) Lu, Y., Mantha, S.N., Crowder, D.C., Chinchilla, S., Yun, Y.H., Wicker, R.B., **Choi, J.W.***, 2015, “Microstereolithography and Characterization of Poly(propylene fumarate)-based Drug-loaded Microneedle Arrays,” *Biofabrication*, Vol. 7, pp. 045001 (13 pages), (**Media released in IOP Publishing**).
- (23) Engeberg, E., Dilibal, S., Vatani, M., **Choi, J.W.**, Lavery, J., 2015, “Anthropomorphic Finger Antagonistically Actuated by SMA Plates,” *Bioinspiration & Biomimetics*, Vol. 10, pp. 056002 (15 pages).
- (24) Vatani, M., Engeberg, E.D., **Choi, J.W.***, 2015, “Conformal Direct-Print of Piezoresistive Polymer/Nanocomposites for Compliant Multi-layer Tactile Sensors,” *Additive Manufacturing*, Vol. 7, pp. 73-82.
- (25) Vatani, M., Lu, Y., Engeberg, E.D., **Choi, J.W.***, 2015, “Combined 3D Printing Technologies and Materials for Fabrication of Tactile Sensors,” *International Journal of Precision Engineering and Manufacturing*, Vol. 16, No. 7, pp. 1375-1383.
- (26) Vatani, M., Engeberg, E.D., **Choi, J.W.***, 2014, “Detection of the Position, Direction, and Speed of Sliding Contact with a Multi-layer Compliant Tactile Sensor Fabricated using Direct-Print Technology,” *Smart Materials and Structures*, Vol. 23, pp. 0905008 (11pp).
- (27) Lu, Y., Vatani, M., **Choi, J.W.***, 2013, “Direct-Write/Cure Conductive Polymer Nanocomposites for 3D Structural Electronics,” *Journal of Mechanical Science and Technology*, Vol. 27, No. 10, pp. 2929-2934.
- (28) Vatani, M., Engeberg, E.D., **Choi, J.W.***, 2013, “Force and Slip Detection with Direct-Write Compliant Tactile Sensors Using Multi-Walled Carbon Nanotube/Polymer Composites,” *Sensors and Actuators A – Physical*, Vol. 195, pp. 90-97 (**Featured in the ScienceDirect Top 25 List of Most Downloaded Article**).
- (29) Vatani, M., Lu, Y., Lee, K.S., Kim, H.C., **Choi, J.W.***, 2013, “Direct-write stretchable sensors using single-walled carbon nanotubes/polymer matrix,” *ASME Journal of Electronic Packaging*, Vol. 135, pp. 011009-1-5.
- (30) Wu, H., Hu, W., Hu, H-C., Lin, X-W., Zhu, G., **Choi, J.W.**, Chigrinov V., Lu, Y-Q. 2012, “Arbitrary photopatterning in liquid crystal alignments using DMD based lithography system,” *Optics Express*, Vol. 20, Iss. 15, pp. 16684-16689.
- (31) **Choi, J.W.***, Quintana, R., Wicker, R. 2011, “Fabrication and characterization of embedded horizontal microchannels using line-scan stereolithography,” *Rapid Prototyping Journal*, Vol. 17, Issue 5, pp. 351-361.
- (32) **Choi, J.W.**, Kim, H.C., Wicker, R. 2011, “Multi-material stereolithography,” *Journal of Materials Processing Technology*, Vol. 211, pp. 318-328.
- (33) **Choi, J.W.**, Medina, F., Kim, C., Espalin, D., Rodriguez, D., Stucker, B., Wicker, R. 2011, “Development of a mobile fused deposition modeling system with enhanced manufacturing flexibility,” *Journal of Materials Processing Technology*, Vol. 211, pp. 424-432.
- (34) **Choi, J.W.***, Yamashita, M., Sakakibara, J., Kaji, Y., Oshika, T., Wicker, R. 2010, “Combined Micro and Macro Additive Manufacturing of a Swirling Flow Coaxial Phacoemulsifier Sleeve with Internal Micro-Vanes,” *Biomedical Microdevices*, Vol. 12, pp. 875-886.

- (35) **Choi, J.W.***, MacDonald, E., Wicker, R.B. **2010**, “Multi-Material Microstereolithography,” *International Journal of Advanced Manufacturing Technology*, Vol. 49, No. 5, pp. 543-551.
- (36) Kim, H.C., **Choi, J.W.**, Wicker, R.B. **2010**, “Scheduling and process planning for multiple material stereolithography,” *Rapid Prototyping Journal*, Vol. 16, No. 4, pp. 232-240.
- (37) Kim, H.C., **Choi, J.W.**, MacDonald, E., Wicker, R.B. **2010**, “Slice Overlap Detection Algorithm for the Process Planning of Multiple Material Stereolithography Apparatus,” *International Journal of Advanced Manufacturing Technology*, Vol. 46, No. 9, pp. 1161 – 1170.
- (38) Quintana, R., **Choi, J.W.**, Puebla, K., Wicker, R.B. **2010**, “Effects of build orientation on tensile strength for stereolithography manufactured ASTM D-638 Type I specimens of DSM SOMOS® 11120 resin,” *International Journal Advanced Manufacturing Technology*, Vol. 46, No. 1-4, pp. 201-215.
- (39) **Choi, J.W.**, Choi, K.H., Chung, I., Ha, C.S., Lee, S.H., Wicker, R.B. **2009**, “Fabrication of 3D Biocompatible/biodegradable Micro-Scaffolds using dynamic Mask Projection Microstereolithography,” *Journal of Materials Processing Technology*, Vol. 29, pp. 5494-5503.
- (40) **Choi, J.W.**, Wicker, R.B., Cho, S.H., Ha, C.S., Lee, S.H. **2009**, “Cure depth control for complex 3D microstructure fabrication in dynamic mask projection microstereolithography,” *Rapid Prototyping Journal*, Vol. 15, No. 1, pp. 59-70.
- (41) Park, I.B., **Choi, J.W.**, Lee, S.H. **2009**, “Multiple fabrications of sacrificial layers to enhance the dimensional accuracy of microstructures in maskless projection microstereolithography,” *International Journal of Precision Engineering and Manufacturing*, Vol. 10, No. 1, pp. 91-98.
- (42) Ha, Y.M., **Choi, J.W.**, Lee, S.H. **2008**, “Mass Production of 3-D Microstructures Using Projection Microstereolithography,” *Journal of Mechanical Science and Technology*, Vol. 22, No. 3, pp. 514~521.
- (43) **Choi, J.W.**, Ha, Y.M., Choi, K.H., Lee, S.H. **2007**, “Fabrication of 3-Dimensional Microstructures using Dynamic Image Projection,” *Key Engineering Materials*, Vol. 339, pp. 473-478.
- (44) **Choi, J.W.**, Ha, Y.M., Lee, S.H., Choi, K.H. **2006**, “Design of Microstereolithography System based on Dynamic Image Projection for Fabrication of Three-Dimensional Microstructures,” *Journal of Mechanical Science and Technology*, Vol. 20, No. 12, pp. 2094-2104.
- (45) **Choi, J.W.**, Hur, S.M., Lee, S.H. **2002**, “Free-form Surface Generation from Measuring Points using Laser Scanner,” *International Journal of the Korean Society of Precision Engineering*, Vol. 3, No. 4, pp. 15-23.

PEER-REVIEWED CONFERENCE PAPERS

- (1) Emon, M.O.F, **Choi, J.W.***, **2017**, “A preliminary study on 3D printed smart insoles with stretchable piezoresistive sensors for plantar pressure monitoring,” Proceedings of the ASME 2017 International Manufacturing Engineering Congress and Exposition (IEMCE 2017), November 3-9, 2017, Tampa, FL, Paper No: IMECE2017-71817 (6 pages).
- (2) Lu, Y., Kashyap, S., Emon, M.O.F, Lee, J., **Choi, J.W.***, **2017**, “Development and characterizations of liquid bridge based microstereolithography (LBMSL) system,” Proceeding of the Manufacturing Science and

- Engineering Conference (MSEC 2017), June 04-08, Los Angeles, Paper No. MSEC2017-2731, pp. V002T01A023 (6 pages).
- (3) Vatani, M., Lu, Y., Engeberg, E.D., **Choi, J.W.***, 2014, “Combined 3D Printing Technologies and Materials for Fabrication of Tactile Sensors,” International Symposium of Green Manufacturing and Applications, June 24 – 28, Busan, Korea (a proceeding was transferred to a journal article in IJPEM).
 - (4) Hasan, M.N., Vatani, M., Lu, Y., Kim, H.C., **Choi, J.W.***, 2013, “Numerical and Experimental Analysis of Droplet Impact, Deformation and Formation of Droplet Train,” Nov. 13-21, San Diego, CA, Vol. 2A, Paper No.: IMECE2013-64801, pp. V02AT02A096 (6 pages).
 - (5) Vatani, M., Engeberg, E.D., **Choi, J.W.***, 2013, “Hybrid Additive Manufacturing of 3D Compliant Tactile Sensors,” Nov. 13-21, San Diego, CA, Vol. 2A, Paper No.: IMECE2013-63064, pp. V02AT02A004 (6 pages).
 - (6) Lu, Y., Vatani, M., Kim, H.C., Lee, R.C., **Choi, J.W.***, 2013, “Development of Direct Printing/Curing Process for 3D Structural Electronics,” Nov. 13-21, San Diego, CA, Vol. 2A, Paper No.: IMECE2013-63068, pp. V02AT02A005 (5 pages).
 - (7) **Choi, J.W.***, Vatani, M., Engeberg, E.D., 2013, “Direct-Write of Multi-layer Tactile Sensors,” 13th International Conference on Control, Automation and Systems, Oct. 20-23, Gwangju, Korea, pp. 164-168.
 - (8) Engeberg, E.D., Vatani, M., **Choi, J.W.***, 2013, “Detection of the Direction and Speed of Motion of Forces on the Surface of a Compliant Tactile Sensor,” 13th International Conference on Control, Automation and Systems, Oct. 20-23, Gwangju, Korea, pp. 158-163.
 - (9) Lu, Y., Vatani, M., **Choi, J.W.***, 2013, “Direct-Write/Cure Conductive Polymer Nanocomposites for 3D Structural Electronics,” 5th International Conference on Manufacturing, Design and Tribology (ICMDT) 2013, Busan, S. Korea, p. 169, **Best Paper Award**.
 - (10) Engeberg, E.D., Vatani, M., **Choi, J.W.**, 2012, “Direction of slip detection for a biomimetic tactile sensor,” 12th International Conference on Control, Automation and Systems (ICCAS), Oct. 17-21, Jeju island, Korea, pp. 1933-1937.
 - (11) **Choi, J.W.**, Irwin, M.D., Wicker, R.B. 2010, “DMD-based 3D micro-manufacturing,” Proc. of SPIE, Photonics West, Jan. 23-28, San Francisco, CA, Vol. 7596, pp. 75960H-1~11.
 - (12) **Choi, J.W.**, Park, I.B., Wicker, R.B., Lee, S.H., Kim, H.C. 2008, “Fabrication of Complex 3D Micro-Scale Scaffolds and Drug Delivery Devices using Dynamic Mask Projection Microstereolithography,” 19th Solid Freeform Fabrication Symposium, Aug. 4-6, Austin, TX, pp. 652-675.
 - (13) **Choi, J.W.**, Quintana, R., Wicker, R.B. 2008, “Fabrication of embedded horizontal micro-channels using line-scan stereolithography,” 19th Solid Freeform Fabrication Symposium, Aug. 4-6, Austin, TX, pp. 632-651.
 - (14) Ha, Y.M., **Choi, J.W.**, Lee, S.H., Kim, H.C. 2007, “Fabrication of 3D Micro-structure on Large Surface using Projection Type Micro-stereolithography,” Asian Symposium for Precision Engineering and Nanotechnology (ASPEN 2007), Nov. 6-9, Gwangju, S. Korea, pp. 492-495.
 - (15) **Choi, J.W.**, Ha, Y.M., Choi, K.H., Lee, S.H. 2005, “Curing Characteristics of 3-Dimensional Microstructures using Dynamic Pattern Projection,” Proc. of SPIE, Optomechatronic Technologies, Dec. 5-7, Sapporo, Japan,

Vol. 6050, pp. 605003-1~5.

- (16) **Choi, J.W.**, Ha, Y.M., Won, M.H., Choi, K.H., Lee, S.H. **2005**, “Fabrication of 3-Dimensional Microstructures using Dynamic Image Projection,” Asian Symposium for Precision Engineering and Nanotechnology (ASPEN 2005), Nov. 12-14, Shenzhen, China, pp. 472-476.

CONFERENCE/WORKSHOP PRESENTATIONS

- (1) **Choi, J.W.**, “3D Printing of Smart Materials for Tactile Sensors,” The 2017 Fall Meeting, The Polymer Society of Korea, Oct 11-13, Jeju, S. Korea (oral presentation, **invited talk**).
- (2) **Choi, J.W.**, “Multi-scale, Vat-free Photopolymerization,” NSF Workshop on Accelerating NSF Research in Additive Manufacturing toward Industrial Applications, Univ. of Pittsburgh, PA, August 17-18, 2017 (**invited presentation**).
- (3) Emon, M.O.F., **Choi, J.W.**, “Flexible and Stretchable Ionic Liquid Based Pressure Sensor Fabrication via Direct-Print Photopolymerization,” 28th International Solid Freeform Fabrication Symposium - An Additive Manufacturing Conference, Aug 7-9, 2017, Austin, TX (abstract/poster presentation)
- (4) **Choi, J.W.**, Emon, M.O.F., Alkadi, F., Lee, J., “3D Printing of stretchable tactile sensors and treads using recycled tire rubber for health monitoring of tires,” International Symposium on Green Manufacturing and Applications (ISGMA 2017), (abstract/oral presentation).
- (5) **Choi, J.W.**, “3D Printing and Additive Manufacturing at The University of Akron,” Global Technology Cooperation Forum, Sponsored by Korea Institute for Advancement of Technology (KIAT), 17-18 November 2016, COEX, Seoul, Korea (oral presentation, **invited talk**).
- (6) Emon, M.O.F., Alkadi, F., Lee, J., Vatani, M., **Choi, J.W.**, “3D printing of a skin-like tactile sensor using polymer composites with ionic liquids and carbon nanotubes,” ASME IMECE 2016, Phoenix, AZ, Nov 11-17 (abstract/oral presentation).
- (7) Lu, Y., Kashyap, S., Emon, M.O.F., **Choi, J.W.**, “A liquid bridge based microstereolithography process,” ASME IMECE 2016, Phoenix, AZ, Nov 11-17 (abstract/poster presentation).
- (8) Emon, M.O.F., Alkadi, F., Vatani, M., Lee, J., **Choi, J.W.**, “3D Printed Stretchable Tactile Sensors,” ACS Fall 2016, Philadelphia, PA, Aug 21-25 (abstract/oral presentation, **invited talk**).
- (9) Govindarajan, S., Jain. T., **Choi, J.W.**, Joy, A., Isayeva, I., Vorvolakos, K., “Adhesion Changes due to Viscoelastic Transitions Play a Role in Extrusion-based 3D Printability of Low-Modulus Polymer Melts,” ACS Fall 2016, Philadelphia, PA, Aug 21-25 (abstract/oral presentation).
- (10) Jain, T., Govindarajan, S.R., Xu, Y., Swanson, J., Lu, Y., **Choi, J.W.**, Isayeva, I., Joy, A., “A Low Modulus Multi-functional Polyester Platform for Room Temperature 3D Printing,” ACS Fall 2016, Philadelphia, PA, Aug 21-25 (abstract/oral presentation).
- (11) **Choi, J.W.**, “Advances and Challenges in 3D Printing of Stretchable Tactile Sensors,” ISGMA 2016, June 21 – 25, Bali, Indonesia (abstract/oral presentation, **invited talk**).
- (12) **Choi, J.W.**, Alkadi, F., Emon, M.O.F., Lee, J., Vatani, M., “Conformal Direct-Print Photopolymerization for

- Fabrication of Smart Structures,” International Symposium on Green Manufacturing and Applications (ISGMA 2016), June 21 – 25, Bali, Indonesia (abstract/oral presentation).
- (13) **Choi, J.W.**, Emon, M.O.F., Alkadi, F., Lee, J., Vatani, M., “Stretchable Tactile Sensors using Ionic Liquids and Carbon Nanotubes,” ISGMA 2016, June 21 – 25, Bali, Indonesia (abstract/oral presentation).
 - (14) Emon, M.O.F., Alkadi, F., Vatani, M., **Choi, J.W.**, “Flexible and stretchable sensor fabrication via multi-material direct printing,” Akron Functional Material Center, 2016 Spring Meeting, The University of Akron.
 - (15) Vatani, M., Lee, J., Lee, K., Lee, I.H., Kim, H.C., **Choi, J.W.**, “3D Printing of Multi-Material Tactile Sensors for Robotic Hand Applications,” Rapid 2015, May 18 – 21, Long Beach, CA (abstract/oral presentation)
 - (16) Vatani, M., **Choi, J.W.**, “Multi-Technology, Multi-Material Direct-Print Photopolymerization for 3D Printed Sensors,” ASME IMECE 2014, Nov. 14 – 21, Montreal, Canada (abstract/oral presentation)
 - (17) Lu, Y., Crowder, D.C., Chinchillia, S., Yun, Y.H., **Choi, J.W.**, “Bio-Printing of Microneedles for Transdermal Drug Delivery,” ASME IMECE 2014, Nov. 14 – 21, Montreal, Canada (abstract/oral presentation)
 - (18) Lu, Y., Crowder, D.C., Chinchillia, S., Yun, Y.H., **Choi, J.W.**, “Multi-material Microstereolithography for Fabrication of Microneedles Encapsulating Drugs,” International Conference on Biofabrication 2014, Sep 28 – Oct 1, Pohang, S. Korea (abstract/oral presentation)
 - (19) Vatani, M., Vatani, M., Engeberg, E.D., **Choi, J.W.**, “3D Printing of Artificial Skin-like Tactile Sensors,” 25th Solid Free Form Fabrication Symposium, Aug. 4th – 6th, 2014, Austin, Texas (abstract/oral presentation)
 - (20) Vatani, M., Lu, Y., Hasan, M.N., Jeong, K.U., Engeberg, E., **Choi, J.W.**, “3D Printing Processes and Materials for Fabrication of Sensors and Actuators,” 25th Solid Free Form Fabrication Symposium, Aug. 4th – 6th, 2014, Austin, Texas (abstract/poster)
 - (21) Vatani, M., Hasan, M.N., **Choi, J.W.**, “Direct-Print/Cure Process for 3D Printed Compliant Tactile Sensors,” Rapid, Detroit, MI, June 11 2014 (abstract/selected oral presentation)
 - (22) Lu, Y., Vatani, M., Engeberg, E., Jeong, K.U., **Choi, J.W.**, “Additive Manufacturing Research on Sensors and Actuators at The University of Akron,” PPS30, Cleveland, OH, June 9, 2014 (abstract/poster presentation)
 - (23) **Choi, J.W.**, Jeong, K.U., Engeberg, E.D., Vatani, M., Lu, Y., “3D Printed Sensors and Actuators,” MFG4, Hartford, CT, May 7 2014 (abstract/selected oral presentation)
 - (24) Thyagaraj, S., Pahlavian, S.H., Vatani, M., **Choi, J.W.**, Goodin, M., Bunck, A., Yiallourou, T., Loth, F., Martin, B.A., “3D Printed Model for Simulation of Cerebrospinal Fluid Motion in the Cervical Spinal Subarachnoid Space,” 2014 Midwest American Society of Biomechanics Meeting, The University of Akron (abstract).
 - (25) Vatani, M., Engeberg, E.D., **Choi, J.W.**, “Fabrication of Multi-Material, Multi-Layer Tactile Sensors Using Additive Manufacturing and Direct-Write,” Aug. 12-14 2013, Austin, TX (abstract/oral presentation)
 - (26) Vatani, M., Lu, Y., Engeberg, E.D., **Choi, J.W.**, “Fabrication and Characterization of 3D Printed Compliant Tactile Sensors,” Jun. 10-13 2013, Pittsburgh, PA (abstract/oral presentation).
 - (27) Vatani, M., Engeberg, E.D., **Choi, J.W.**, “Fabrication and Evaluation of Compliant Tactile Sensors,” ASME Manufacturing Science and Engineering Conference, Jun. 10-14 2013, Madison, WI (abstract/poster).
 - (28) Lu, Y., Vatani, M., **Choi, J.W.**, “Fabrication of 3D structural electronics using microstereolithography and direct-

- write,” 23th Solid Freeform Fabrication Symposium, Aug. 6-8 2012, Austin, TX (abstract/poster)
- (29) **Choi, J.W.**, Vatani, M., Lu, Y., Wicker, R., “Hybrid Micro-Scale Additive Manufacturing for 3D Structural Electronics,” RAPID 2012, May 24 2012, Atlanta, GA.(abstract/oral presentation)
- (30) **Choi, J.W.**, “Structural Electronics as Future Printed Electronics Products,” 1st International Conference, March 13 2012, Seoul, S. Korea. (abstract, **plenary talk**)
- (31) **Choi, J.W.**, Wicker, R. “Combined Additive Micro-manufacturing and Direct Writing of 3D Structural Electronics,” KoPERA Annual Workshop (Printable Materials, Printing Technologies and Standardization for Korea/US HiddenChampion), Sep 26-27 2011, ETRI, Daejeon, S. Korea. (abstract, **invited talk**)
- (32) **Choi, J.W.**, Rivera, A., Kim, H.C., Irwin, M.D., Wicker, R.B. “Multiple material stereolithography with enhanced manufacturing capabilities,” 21th Solid Freeform Fabrication Symposium, Aug. 9-12 2010, Austin, TX. (abstract/poster)
- (33) **Choi, J.W.**, Mann, B., MacDonald, E., Wicker, R. “Fabrication of multi-material, multi-lumen, poly (ethylene glycol)-based nerve guidance conduits using microstereolithography,” TERMIS World Congress 2009, Aug. 31 – Sep. 3 2009, Seoul, S. Korea. (abstract/oral presentation)
- (34) **Choi, J.W.**, MacDonald, E., Wicker, R. “Multiple material microstereolithography,” 20th Solid Freeform Fabrication Symposium, Aug. 4-6 2009, Austin, TX, pp. 781-792 (abstract/oral presentation).
- (35) **Choi, J.W.**, Yamashita, M., Sakakibara, J., Kaji, Y., Oshika, T., Wicker, R. “Functional micro/macro fabrication combining multiple additive fabrication technologies: design and development of an improved micro-vane phacoemulsifier used in cataract surgery,” 20th Solid Freeform Fabrication Symposium, Aug. 4-6 2009, Austin, TX, pp. 553-568. (**invited plenary talk**)
- (36) **Choi, J.W.**, Kim, H.C., MacDonald, E., Wicker, R. “Functional multiple material line-scan stereolithography technology,” 20th Solid Freeform Fabrication Symposium, Aug. 4-6 2009, Austin, TX. (abstract/poster).
- (37) **Choi, J.W.**, Lee, S.H., Choi, K.H., Jung, I., Ha, C.S., Wicker, R.B. “3D PPF micro-scaffold fabrication using DMD-based maskless projection microstereolithography,” BIOMEDICAL ENGINEERING Recent Developments, Southern Biomedical Engineering Conference (SBEC 2008), April 18-20 2008, The University of Texas at El Paso (UTEP), El Paso, TX, pp. 205-206 (abstract/oral presentation).
- (38) **Choi, J.W.**, Park, I.B., Kim, H.C., Lee, S.H. “Fabrication of High-aspect ratio Microneedles using Microstereolithography Process,” 7th International Workshop on High-Aspect-Ratio Micro-Structure Technology (HARMST 07), Jun. 6-8 2007, Besançon, France, pp. 213-215 (abstract/poster).
- (39) **Choi, J.W.**, Park, I.B., Ha, Y.M., Jung, M.G., Lee, S.D., Lee, S.H. “Insertion Force Estimation of Various Microneedle Array-type Structures Fabricated by a Microstereolithography Apparatus,” SICE-ICASE International Joint Conference, Oct. 18-21 2006, Busan, Korea, pp. 3678-3681 (oral presentation).
- (40) Choi, K.H., **Choi, J.W.**, Kim, H.C., Doh, Y.H., Kim, D.S., Lee, S.H. “Study on Path Generation and Control based on Dual Laser in Solid Freeform Fabrication System,” SICE-ICASE International Joint Conference, Oct. 18-21 2006, Busan, Korea, pp. 3682-3687 (oral presentation).
- (41) Choi, K.H., **Choi, J.W.**, Doh, Y.H., Kim, D.S., Lee, S.H. “Generation of Laser Scanning Path and Scanning

Control for the Fabrication of Large Size Shape,” International Conference on flexible Automation and Intelligent Manufacturing (FAIM 2005), Jul. 18-20 2005, Bilbao, Spain, pp. 112-118 (oral presentation).

- (42) Choi, K.H., **Choi, J.W.**, Doh, Y.H., Kim, D.S. “Laser Scanning Path Generation for Fabrication of Large Size Shape,” International Conference on Control, Automation, and System (ICCAS 2005), Jun. 2-5 2005, KINTEX, Gyeonggi-do, Korea, pp. 2175-2178 (oral presentation).
- (43) **Choi, J.W.**, Ha, Y.M., Kim, H.S., Won, M.H., Choi, K.H., Lee, S.H. “An Implementation of RP-based Micro Fabrication Apparatus for Micro Structures,” High Aspect Ratio Micro Structure Technology Workshop (HARMST 05), Jun. 10-13 2005, Gyoungju, Korea, pp. 190-191 (poster).

INVITED SEMINARS

- (1) Additive Manufacturing of Smart Structures, Oct 16, 2017, Shanghai Industrial Technology Institute (SITI), Shanghai, China.
- (2) Additive Manufacturing of Smart Structures, Oct 11, 2017, Chosun University, Gwangju, S. Korea.
- (3) Advances in 3D Printing of Smart Structures, July 25 2017, Inha University, Incheon, Korea.
- (4) Advances in Additive Manufacturing: From Polymer to Metal, July 10, 2017, KITECH – Daegyeong Regional Division, Korea.
- (5) Advances in Additive Manufacturing: From Polymer to Metal, July 11, 2017, DeaguTek, Daegu, Korea.
- (6) Advances in 3D Printing: 3D Printing of Smart Structures; 3D Micro-Printing and Its Applications, July 5, 2017, Ulsan National Institute of Science and Technology (UNIST), Ulsan, Korea.
- (7) 3D Micro-Printing and Its Applications, June 15, 2017, Jeonbuk National University, Jeonbuk, Korea.
- (8) Advances in 3D Printing of Smart Structures; Introduction to UA 3+2 Engineering Program, June 8, 2017, Dankook University, Yong-in, Korea.
- (9) 3D Printing of Smart Structures: Advances and Challenges, January 18 2017, Joint Meeting of ASM Akron International and ASME Akron.
- (10) Multi-Scale 3D Printing of Microneedle Arrays for Early-Stage Melanoma Therapy, April 11 2016, FRC Summer Fellowships Seminar at UA.
- (11) 3D Printing with 3D4E on Prosthetics, Jan 28 2016, 1st meeting of 3D4E at UA.
- (12) Additive Manufacturing Capabilities at The University of Akron, Dec 16 2015, AP Systems, Inc., Dongtan, Korea.
- (13) The Future of 3D Printing, Dec 9 2015, Korea Institute of Materials Science, Changwon, Korea.
- (14) The Future of 3D Printing, Dec 9 2015, Changwong National University, Changwon, Korea.
- (15) The Future of 3D Printing: From Technologies to Business Cases, Oct 20 2015, Hudson Library & Historical Society, Hudson, OH.
- (16) 3D Printing of Smart Structures, April 2 2015, Ocean Engineering, Florida Atlantic University, Diana Beach, FL.
- (17) 3D Printed Tactile Sensors for Robotic and Prosthetic Applications, April 1 2015, Mechanical and Civil Engineering Departments, Florida Atlantic University, Boca Raton, FL.
- (18) 3D Printing Technologies for Architecture and Architectural Engineering, Dec 22 2014, Tongmyong University,

Korea.

- (19) 3D Printing and Additive Manufacturing: State of the Art and Research Trends, August 5 2014, Gyeongnam TECHNOPARK, Korea.
- (20) Advancing 3D Printing Technologies toward Smart Structures, August 4 2014, Chonbuk National University, Korea.
- (21) Advancing 3D Printing Technologies toward Smart Structures, July 26 2014, Jeju National University, Korea.
- (22) 3D Printing Technologies: State of the Art in Unites States, July 22 2014, Gumi Mini Cluster, Korea.
- (23) 3D Printing Technologies: From Microstructures to Active Components, July 7 2014, KITECH – Daegyeong Regional Division, Korea.
- (24) 3D Printing Technologies and Materials for Sensors, Actuators, and Electronics, June 30 2014, Yeongnam University, Korea.
- (25) 3D Printed Sensors and Electronics, July 29 2013, JEIOS, Korea.
- (26) Additive Manufacturing – State of the art and National Additive Manufacturing Innovation Institute (NAMII), July 29 2013, POSCO Songdo Product Application Research Center, Korea.
- (27) University of Akron Capabilities for National Additive Manufacturing Innovation Institute (NAMII), July 10 2013, POSTECH, Korea.
- (28) Additive Manufacturing – University of Akron Capabilities for National Additive Manufacturing Innovation Institute in USA, May 30 2013, School of Electrical Engineering, Soongsil University, Korea.
- (29) Additive Manufacturing Capabilities at The University of Akron – Energy Savings and National Additive Manufacturing Innovation Institute in USA, May 28 2013, Energy-Related Workforce Development Institute at Andong National University, Kyungbuk, Korea.
- (30) 3D Printing and its Application, May 15 2013, Firestone High School, Akron, Ohio.
- (31) Microstereolithography and its Applications, May 16 2012, Department of Mechanical and Automotive Engineering, Andong National University, Kyungbuk, Korea.
- (32) Advanced Additive Manufacturing and Applications, May 15 2012, Division of Mechanical & Automotive Engineering, Wonkwang University, Iksan, Korea.
- (33) Functional Micro/Macro Additive Manufacturing, Dec 12 2011, Department of Mechanical Systsms Engineering, Jeju National University, Jeju, Korea.
- (34) Advanced Additive Manufacturing for Biomedical Applications, Oct 7 2011, Department of Biomedical Engineering, The University of Akron, Akron, OH.
- (35) Advanced Additive Manufacturing and its Applications, June 8 2011, Education Center for Green Industry-friendly Fusion Technology (GIFT), Pusan National University (PNU), Busan, Korea.
- (36) Functional Micro/Macro Additive Manufacturing, June 7 2011, School of Mechanical Engineering, Yeungnam University, Gyoungbuk, Korea.
- (37) Functional Micro/Macro Additive Manufacturing Research and Technology Development within the W.M. Keck Center for 3D Innovation at the University of Texas at El Paso, USA, Sep. 3 2009, Korea Institute of Machinery

and Materials (KIMM), Daejeon, Korea.

GRADUATE FACULTY ACTIVITIES

- Phil-Jae Joo, Ph.D., External Committee member, Polymer Engineering, UA, present
- Yuanyuan Luo, Ph.D., External Committee member, Polymer Science, UA, present
- Seied Zaniar Hoseini, Ph.D., Committee member, Electrical Engineering, UA, present
- Hari Poudyal, M.S., Committee member, Mechanical Engineering, May 2018
- Antonio Copploe, M.S., Committee member, Biomedical Engineering, Aug 2017
- Xiaoliang Zhu, Ph.D., Committee member, Mechanical Engineering, UA, Aug 2016
- S. Raj Govindarajan, Ph.D., External Committee member, Polymer Science, UA, May 2016
- Yanfeng Lu, Ph.D., Committee chair, Mechanical Engineering, UA, Aug 2016
- Pashupati Dhakal, M.S., Committee member, Mechanical Engineering, UA, May 2016
- Zachary Ray, M.S., Committee member, Mechanical Engineering, UA, April 2016
- Suraj Thyagaraj, Ph.D., Committee member, Mechanical Engineering, UA, April 2016
- Morteza Vatani, Ph.D., Committee chair, Mechanical Engineering, UA, May 2015
- Noman Muhammad Hasan, M.S., Committee chair, Mechanical Engineering, UA, Aug 2014
- Nymisha Satya Mantha, M.S., Committee chair, Mechanical Engineering, UA, Aug 2013
- Setareh Niknezhad, Ph.D., External Committee member, Polymer Engineering, UA, Dec 2012
- Du Li, Ph.D., Committee member, Mechanical Engineering, UA, Nov 2012
- Zhuochen Wang, M.S., Committee member, Mechanical Engineering, UA, April 2012
- Yinko Grajeda, M.S., Committee member, Mechanical Engineering, UTEP, 2010

GRADUATE STUDENTS/POST-DOC ADVISING

- Daryl Philip, M.S.: joined in Jan 2018 (topic has not been chosen)
- Rui Huang, Ph.D.: joined in Jan 2018 (topic has not been chosen)
- Aslan Alamdari, M.S.: joined in Aug 2017 (topic: liquid-bridge microstereolithography)
- Renil Ukani, M.S.: joined in Dec 2016, terminated in May 2017
- Dr. Jeongwoo Lee, Ph.D.: joined as a post-doc in Feb 2016
- Sumanth Kashyap, M.S.: joined in Aug 2015 (topic: vat-free photopolymerization)
- Md Omar Faruk Emon, Ph.D.: joined in Jan 2015 (topic: 3D printed tactile sensors)
- Faez Alkadi, Ph.D. student: joined in Aug 2014 (topic: 3D conformal printing)
- Noman Muhammad Hasan, M.S.: joined in Jan 2012, graduated in Aug 2014
 - Thesis title: Numerical analysis of droplet and filament deformation for printing process
- Nymisha Satya Mantha, M.S.: joined in Sep 2011, graduated in Aug 2013
 - Thesis title: Fabrication of PPF based drug containing microneedle array by microstereolithography
- Yanfeng Lu, Ph.D.: joined in Sep 2011, graduated in Aug 2016

- Thesis title: A study on liquid bridge based microstereolithography (LBMSL) system
- Morteza Vatani, Ph.D.: joined in Sep 2011, graduated in Aug 2015
 - 2014 Dean's Fellowship Award
 - Thesis title: Additive manufacturing of stretchable tactile sensors: processes, materials, and applications

UNDERGRADUATE STUDENTS ADVISING

- Rinhah Foor: joined in Aug 2016, development of low-cost 3D printers for sensors
- Andrea Felicelli: joined in Fall 2015, development of low-cost 3D printers for sensors
 - NSF REU support (2016) for the development of low-cost 3D printers for microstructuring
- Hall Miles: joined in Spring 2015, development of low-cost 3D printers
- Kristin Wright: joined in Spring 2013, graduated in winter 2013, Senior design project of "Low-cost Additive Manufacturing for Educational Purposes"

HIGH/MIDDLE SCHOOL STUDENTS ADVISING

- Allison Carpenter from National Inventors Hall of Fame STEP High School; worked on low-cost 3D printing for tactile sensor applications (Summer 2016)
- Daniel Hebert from Firestone High School; worked on low-cost 3D printing for tactile sensor applications (Summer 2016)

EXCHANGE STUDENTS ADVISING

- Jong-Hwan Lee from Chonbuk National University in Korea: Flexible sensor research during Jan 2 – 28 2015.
- Dae-Hak Lee; Jin-Hyuk Moon from Chonbuk National University in Korea: Rubber conductor research during Jan 2 – Feb 25 2014.
- Sang-Gu Woo; Seong-Taek Oh from Chungbuk National University in Korea: Sensor research during Aug 9 – 30, 2013.
- Hyung-Ju Ko; Sang-Sik Oh from Andong National University in Korea: MID research during Aug 9 – 30, 2013.