

JAE-WON CHOI, Ph.D.

Office: ASEC 419C Lab: ASEC 2B/15E
Mailing address: 244 Summer Street, Akron, Ohio 44325, USA
Phone: 330-972-5276, 6027(fax)
E-mail: jchoi1@uakron.edu; palagent@gmail.com

APPOINTMENTS

- Jul. 2018 – Aug. 2019 **Visiting Professor**, Pukyong National University (PKNU), Busan, Korea; Invited Scientist at PKNU under Brain Pool Program since April 2019
- Sep. 2017 – present **Associate Professor with Tenure, Director of AAML**, Mechanical Engineering, The University of Akron (UA), Akron, OH
- Jan. 2011 – Aug. 2017 **Assistant Professor, Director of Advanced Additive Manufacturing Lab (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
- **ME Lab – 3D Printing**, 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 (Including Group)

Nov 2019	First place, Mr. Omar Emon's Monte Jade Innovation Competition (MJIC) student competition (advisor)
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-

Revised in January 15th, 2020

	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: ~\$1,092,000)

- (1) *STTR Phase I: SmartRun Monitor for Gait and Form Analytics*, eSens LLC (NSF STTR), June 1 2019 – May 31 2020, \$106,198, PI-subaward (active).
- (2) *3D Printed Smart Tires for Health Monitoring*, CenTiRe, Aug 1 2018 – July 31 2021, \$207,900, PI (active).
- (3) *Multi-scale 3D Printing Using Vat-free Photopolymerization*, NSF CMMI – MME, Aug 1 2016 – July 31 2020, \$303,501, PI (active).
- (4) *RoboSense – Artificial Tactile Sensors for Prosthetic Applications*, NSF I-Corps Teams, July 1 2015 – Dec 31 2016, \$50,000, PI.
- (5) *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.
- (6) *Concussion Detection Sensors*, NSF I-Corps Sites, April 1 2015 – August 31 2015, \$2,500, Academic lead, funded.
- (7) *Artificial Tactile Sensors*, NSF I-Corps Sites, Nov 1 2014 – April 30 2015, \$2,500, Academic lead.
- (8) *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.
- (9) *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.
- (10) *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

- (1) Journal Editorial Membership
 - Additive Manufacturing (Elsevier, IF: 7.173): Associate Editor, Oct 2019 – Present; Editorial Board Member, 2014 – 2019.
 - International Journal of Precision Engineering and Manufacturing – Green Technology (IJPEM-GT, Springer, IF: 4.561): Editorial Board Member, 2017 – Present.
 - International Journal of Precision Engineering and Manufacturing (IJPEM, Springer, IF: 1.779): Editorial Board Member, 2019 – Present.

- Korean Society of Manufacturing Processing Engineers (KSMPE): Editor (2019 – Present), Associate Editor (2014-2018).
- Guest Editor of Journal Sensors (MDPI): Special Issue “3D Printed Sensors” (http://www.mdpi.com/journal/sensors/special_issues/3D_printed_sensors)

(2) Conference/Symposium/Workshop

- International Symposium on Precision Engineering and Sustainable Manufacturing (PRESM) 2019 (Da Nang, Vietnam): Organizing Committee Member
- 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

(3) 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

(4) Technical affiliation

- ASME – American Society of Mechanical Engineers, Regular member, 2011 – present.
- SME – Society of Manufacturing Engineers, Regular member, 2011 – present.
- SPIE – The International Society for Optical Engineering, Life time member

(5) Entrepreneurial Activities/Consulting

- Creative Polymer Solution Technology (CPST) – Technical consultant, 2019
- DEXAM, Inc. (founded in 2017) – Founder and CTO, 2018 – 2019

- 3D Controls – Technical consultant, 2016 – 2018
- Osstem Implant, Inc. – Technical consultant, 2016 – 2017
- eSens (founded in 2015): Co-Founder and CTO, 2015 – present
- JEIOS – Technical consultant, 2015
- Cuyahoga Community College’s Education Advisory Council, 2014
- 4ENs – Technical consultant, 2013 – 2015
- Chemstress – Technical consultant/translator, 2014

PATENTS

- **Regular**

- (1) **Choi, J.W.**, Emon, M.O.F., “Tactile Sensors for Measuring Shear Forces,” Provisional patent application (UA1430) submitted in Nov 16, 2018 (USPTO: 62/768,199); “Flexible Tactile Sensors” filed in Nov 8, 2019.
- (2) **Choi, J.W.**, “Sheet-type Elastomeric Pressure Sensors for Tire Health Monitoring,” Provisional patent application (UA1259) submitted in Feb 11, 2016 (USPTO: 62/293,829); “Flexible Sensors and Methods for Making the Same,” filed on Mar 2, 2017.
- (3) **Choi, J.W.**, Yun, Y. H., “Additive Printing Apparatus and Method Employing Liquid Bridge,” US 2018/0311893 A published Nov 1, 2018; Provisional patent application (UA1243) submitted in Oct 30, 2015 (USPTO: 62/248,730).
- (4) **Choi, J.W.**, Vatani, M., Engeberg, E.D., Kim, H.C., R. Thomas Swiger, “Flexible Tactile Sensors and Method of Making,” US 10,156,487 B2 registered in Dec 18 2018; Provisional patent applications (UA1122/UA1168) filed on March 20 2014 (USPTO: 61/955,863) and Aug 29 2014 (USPTO: 62/043,461).
- (5) **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 (UA980) filed on April 26, 2012 (USPTO: 61/638,721).
- (6) 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).
- (7) **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).

- **Provisional**

- (1) **Choi, J.W.**, Alkadi, F., “Conformal Additive Manufacturing Process,” Provisional patent application submitted in Oct 24, 2018 (USPTO: 62/749,901).
- (2) **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). Expired.
- (3) **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). Expired.

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 1671; h-index 22; (<https://scholar.google.com/citations?user=LrOoOUkAAAAJ&hl=en>)

- (1) Alkadi, F., Lee, K.C., Abdullateef H. Bashiri and **Choi, J.W.***, “Conformal Additive Manufacturing using a Direct-Print Process,” *Additive Manufacturing*, In-press.
- (2) Emon, M.O.F., Lee, J., Choi, U.H., Kim, D.H., Lee, K.C., **Choi, J.W.***, “Characterization of a Soft Pressure Sensor on the basis of Ionic Liquid Concentration and Thickness of the Piezoresistive Layer,” *IEEE Sensors Journal*, Vol. 19, No. 15, pp. 6076-6084, 2019.
- (3) Emon, M.O.F., Alkadi, F., Philip, D., Kim, D.H., Lee, K.C., **Choi, J.W.***, “Multi-Material 3D Printing of a Soft Pressure Sensor,” *Additive Manufacturing*, Vol. 6, pp. 629-638, 2019.
- (4) Copploe, A., Vatani, M., **Choi, J.-W.**, Tavana, H., “A three-dimensional model of human lung airway tree to study therapeutics delivery in the lungs” *Annals of Biomedical Engineering*, Vol. 47, No. 6, pp. 1435-1445., 2019.
- (5) Alkadi, F., Lee, J., Yeo, J.S., Hwang, S.H., **Choi, J.W.***, “3D Printing of Ground Tire Rubber Composites,” *International Journal of Precision Engineering and Manufacturing – Green Technology*, Vol. 6, No. 2, pp. 211-222, 2019.
- (6) Jain, T. Saylor, D., Piard, C., Liu, Q. , Patel, V., Kaushal, R., **Choi, J.W.**, Fisher, J., Isayeva, I., Joy, A., “Effect of dexamethasone on room temperature 3D printing, rheology, and degradation of a low modulus polyester for soft tissue engineering,” *ACS Biomaterials Science & Engineering*, Vol. 5, No. 2, pp. 846-858, 2018.
- (7) Govindarajan, S.R., Jain, T., **Choi, J.W.**, Joy, A., Isayeva, I., Vorvolakos, K., “A hydrophilic coumarin-based polyester for ambient-temperature initiator-free 3D printing: Chemistry, rheology and interface formation,” *Polymer*, Vol. 152, pp. 9-17, 2018.
- (8) 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*, Vol. 140, No. 9, pp. 091012 (8 pages), 2018.

- (9) Jo, K.H., Lee, S.H., **Choi, J.W.***, “Liquid Bridge Stereolithography – A Proof of Concept,” *International Journal of Precision Engineering and Manufacturing*, Vol. 19, No. 8, pp. 1253 – 1259, 2018.
- (10) Vatani, M., Alkadi, F., **Choi, J.W.***, “Algorithm to Reduce Leading and Lagging in Conformal Direct-Print,” *ASME Journal of Manufacturing Science and Engineering*, Vol. 140, No. 10, 101014 (8 pages), 2018.
- (11) Lee, J., Lu, Y., Kashyap, S., Alamdari, A., Emon, M.O.F., **Choi, J.W.***, “Liquid Bridge Microstereolithography,” *Additive Manufacturing*, Vol. 21, pp. 76-83, 2018.
- (12) Lee, J.K., **Choi, J.W.**, Lee, K.C., Lee, S., “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, 2018.
- (13) Thyagaraj, S., Pahlavian, S.H., Loth, F., Vatani, M., **Choi, J.W.**, Tubbs, S., Giese, D., Kroger, J.-R., Bunck, A.C., Martin, B., “An MRI-Compatible Hydrodynamic Simulator of Cerebrospinal Fluid Motion in the Cervical Spine,” *IEEE Transactions on Biomedical Engineering*, Vol. 65, No. 7, pp. 1516-1523, 2018.
- (14) Lee, J., Kim, H.C., **Choi, J.W.**, and Lee, I.H., “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, 2017.
- (15) Emon, M.O.F., **Choi, J.W.***, “Flexible piezoresistive sensors embedded in 3D printed tires,” *Sensors*, Vol. 17, No. 3, 656 (13 pages), 2017.
- (16) Vatani, M., **Choi, J.W.***, “Direct-print photopolymerization for 3D printing,” *Rapid Prototyping Journal*, Vol. 23, Issue 2, pp. 337-343, 2017.
- (17) Lee, J., Emon, M.O.F., Vatani, M., **Choi, J.W.***, “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), 2017.
- (18) Govindarajan, S.R., Xu, Y., Swanson, J.P., Jain, T., Lu, Y., **Choi, J.W.**, Joy, A., “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, 2016.
- (19) Vatani, Morteza, Vatani, Mohammad, **Choi, J.W.***, “Multi-layer stretchable pressure sensors using ionic liquids and carbon nanotubes,” *Applied Physics Letters*, Vol. 108, pp. 061908 (5 pages), 2016.
- (20) Hasan, M.N., Vatani, M., Chandy, A., **Choi, J.W.***, “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), 2016.
- (21) Lu, Y., Yun, H.Y., Vatani, M., Kim, H.C., **Choi, J.W.***, “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, 2015.
- (22) Hasan, M.N., Chandy, A., **Choi, J.W.***, “Numerical Analysis of Droplet Impact and Consequent Deformation for Direct-Print,” *Engineering Applications of Computational Fluid Mechanics*, Vol. 9, No. 1, pp. 554-566, 2015.
- (23) Lu, Y., Mantha, S.N., Crowder, D.C., Chinchilla, S., Yun, Y.H., Wicker, R.B., **Choi, J.W.***,

- “Microstereolithography and Characterization of Poly(propylene fumarate)-based Drug-loaded Microneedle Arrays,” *Biofabrication*, Vol. 7, pp. 045001 (13 pages), (**Media released in IOP Publishing**), 2015.
- (24) Engeberg, E., Dilibal, S., Vatani, M., **Choi, J.W.**, Lavery, J., “Anthropomorphic Finger Antagonistically Actuated by SMA Plates,” *Bioinspiration & Biomimetics*, Vol. 10, pp. 056002 (15 pages), 2015.
- (25) Vatani, M., Engeberg, E.D., **Choi, J.W.***, “Conformal Direct-Print of Piezoresistive Polymer/Nanocomposites for Compliant Multi-layer Tactile Sensors,” *Additive Manufacturing*, Vol. 7, pp. 73-82, 2015.
- (26) Vatani, M., Lu, Y., Engeberg, E.D., **Choi, J.W.***, “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, 2015.
- (27) Vatani, M., Engeberg, E.D., **Choi, J.W.***, “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), 2014.
- (28) Lu, Y., Vatani, M., **Choi, J.W.***, “Direct-Write/Cure Conductive Polymer Nanocomposites for 3D Structural Electronics,” *Journal of Mechanical Science and Technology*, Vol. 27, No. 10, pp. 2929-2934, 2013.
- (29) Vatani, M., Engeberg, E.D., **Choi, J.W.***, “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**), 2013.
- (30) Vatani, M., Lu, Y., Lee, K.S., Kim, H.C., **Choi, J.W.***, “Direct-write stretchable sensors using single-walled carbon nanotubes/polymer matrix,” *ASME Journal of Electronic Packaging*, Vol. 135, pp. 011009-1-5, 2013.
- (31) Wu, H., Hu, W., Hu, H-C., Lin, X-W., Zhu, G., **Choi, J.W.**, Chigrinov V., Lu, Y-Q. “Arbitrary photo-patterning in liquid crystal alignments using DMD based lithography system,” *Optics Express*, Vol. 20, Iss. 15, pp. 16684-16689, 2012.
- (32) **Choi, J.W.***, Quintana, R., Wicker, R., “Fabrication and characterization of embedded horizontal micro-channels using line-scan stereolithography,” *Rapid Prototyping Journal*, Vol. 17, Issue 5, pp. 351-361, 2011.
- (33) **Choi, J.W.**, Kim, H.C., Wicker, R. “Multi-material stereolithography,” *Journal of Materials Processing Technology*, Vol. 211, pp. 318-328, 2011.
- (34) **Choi, J.W.**, Medina, F., Kim, C., Espalin, D., Rodriguez, D., Stucker, B., Wicker, R., “Development of a mobile fused deposition modeling system with enhanced manufacturing flexibility,” *Journal of Materials Processing Technology*, Vol. 211, pp. 424-432, 2011.
- (35) **Choi, J.W.***, Yamashita, M., Sakakibara, J., Kaji, Y., Oshika, T., Wicker, R. “Combined Micro and Macro Additive Manufacturing of a Swirling Flow Coaxial Phacoemulsifier Sleeve with Internal Micro-Vanes,” *Biomedical Microdevices*, Vol. 12, pp. 875-886, 2010.
- (36) **Choi, J.W.***, MacDonald, E., Wicker, R.B., “Multi-Material Microstereolithography,” *International Journal of Advanced Manufacturing Technology*, Vol. 49, No. 5, pp. 543-551, 2010.
- (37) Kim, H.C., **Choi, J.W.**, Wicker, R.B, “Scheduling and process planning for multiple material stereolithography,” *Rapid Prototyping Journal*, Vol. 16, No. 4, pp. 232-240, 2010.

- (38) Kim, H.C., **Choi, J.W.**, MacDonald, E., Wicker, R.B., “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, 2010.
- (39) Quintana, R., **Choi, J.W.**, Puebla, K., Wicker, R.B., “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, 2010.
- (40) **Choi, J.W.**, Choi, K.H., Chung, I., Ha, C.S., Lee, S.H., Wicker, R.B., “Fabrication of 3D Biocompatible/biodegradable Micro-Scaffolds using dynamic Mask Projection Microstereolithography,” *Journal of Materials Processing Technology*, Vol. 29, pp. 5494-5503, 2009.
- (41) **Choi, J.W.**, Wicker, R.B., Cho, S.H., Ha, C.S., Lee, S.H., “Cure depth control for complex 3D microstructure fabrication in dynamic mask projection microstereolithography,” *Rapid Prototyping Journal*, Vol. 15, No. 1, pp. 59-70, 2009.
- (42) Park, I.B., **Choi, J.W.**, Lee, S.H., “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, 2009.
- (43) Ha, Y.M., **Choi, J.W.**, Lee, S.H., “Mass Production of 3-D Microstructures Using Projection Microstereolithography,” *Journal of Mechanical Science and Technology*, Vol. 22, No. 3, pp. 514-521, 2009.
- (44) **Choi, J.W.**, Ha, Y.M., Choi, K.H., Lee, S.H., “Fabrication of 3-Dimensional Microstructures using Dynamic Image Projection,” *Key Engineering Materials*, Vol. 339, pp. 473-478, 2007.
- (45) **Choi, J.W.**, Ha, Y.M., Lee, S.H., Choi, K.H., “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, 2006.
- (46) **Choi, J.W.**, Hur, S.M., Lee, S.H., “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, 2002.

PEER-REVIEWED CONFERENCE PAPERS (*corresponding author)

- (1) Emon, M.O.F, **Choi, J.W.***, “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.***, “Development and characterizations of liquid bridge based microstereolithography (LBMSL) system,” Proceeding of the Manufacturing Science and Engineering Conference (MSEC 2017), June 04-08, 2017, Los Angeles, Paper No. MSEC2017-2731, pp. V002T01A023 (6 pages).
- (3) Vatani, M., Lu, Y., Engeberg, E.D., **Choi, J.W.***, “Combined 3D Printing Technologies and Materials for Fabrication of Tactile Sensors,” International Symposium of Green Manufacturing and Applications, June 24 –

- 28, 2014, 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.***, “Numerical and Experimental Analysis of Droplet Impact, Deformation and Formation of Droplet Train,” Nov. 13-21, 2013, San Diego, CA, Vol. 2A, Paper No.: IMECE2013-64801, pp. V02AT02A096 (6 pages).
 - (5) Vatani, M., Engeberg, E.D., **Choi, J.W.***, “Hybrid Additive Manufacturing of 3D Compliant Tactile Sensors,” Nov. 13-21, 2013, 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.***, “Development of Direct Printing/Curing Process for 3D Structural Electronics,” Nov. 13-21, 2013, San Diego, CA, Vol. 2A, Paper No.: IMECE2013-63068, pp. V02AT02A005 (5 pages).
 - (7) **Choi, J.W.***, Vatani, M., Engeberg, E.D., “Direct-Write of Multi-layer Tactile Sensors,” 13th International Conference on Control, Automation and Systems, Oct. 20-23, 2013, Gwangju, Korea, pp. 164-168.
 - (8) Engeberg, E.D., Vatani, M., **Choi, J.W.***, “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, 2013, Gwangju, Korea, pp. 158-163.
 - (9) Lu, Y., Vatani, M., **Choi, J.W.***, “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.**, “Direction of slip detection for a biomimetic tactile sensor,” 12th International Conference on Control, Automation and Systems (ICCAS), Oct. 17-21, 2012, Jeju island, Korea, pp. 1933-1937.
 - (11) **Choi, J.W.**, Irwin, M.D., Wicker, R.B., “DMD-based 3D micro-manufacturing,” Proc. of SPIE, Photonics West, Jan. 23-28, 2010, 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., “Fabrication of Complex 3D Micro-Scale Scaffolds and Drug Delivery Devices using Dynamic Mask Projection Microstereolithography,” 19th Solid Freeform Fabrication Symposium, Aug. 4-6, 2008, Austin, TX, pp. 652-675.
 - (13) **Choi, J.W.**, Quintana, R., Wicker, R.B., “Fabrication of embedded horizontal micro-channels using line-scan stereolithography,” 19th Solid Freeform Fabrication Symposium, Aug. 4-6, 2008, Austin, TX, pp. 632-651.
 - (14) Ha, Y.M., **Choi, J.W.**, Lee, S.H., Kim, H.C., “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, 2007, Gwangju, S. Korea, pp. 492-495.
 - (15) **Choi, J.W.**, Ha, Y.M., Choi, K.H., Lee, S.H., “Curing Characteristics of 3-Dimensional Microstructures using Dynamic Pattern Projection,” Proc. of SPIE, Optomechatronic Technologies, Dec. 5-7, 2005, Sapporo, Japan, Vol. 6050, pp. 605003-1~5.
 - (16) **Choi, J.W.**, Ha, Y.M., Won, M.H., Choi, K.H., Lee, S.H., “Fabrication of 3-Dimensional Microstructures using Dynamic Image Projection,” Asian Symposium for Precision Engineering and Nanotechnology (ASPEN 2005), Nov. 12-14, 2005, Shenzhen, China, pp. 472-476.

STUDENTS/POST-DOC ADVISING

- **Postdoctoral Scholars**

- (1) Dr. Jeongwoo Lee, Ph.D.: joined as a post-doc in Feb 2016, terminated in April 2018; joined Hankook Tire – America Technical Center (ATC), Akron, OH

- **Doctor of Philosophy**

- (1) Morteza Vatani, Ph.D.: joined in Sep 2011, graduated in Aug 2015, now in Keracel Inc, Santa Clara, CA as a senior engineer, 2014 Dean’s Fellowship Award (Thesis title: Additive manufacturing of stretchable tactile sensors: processes, materials, and applications)
- (2) Yanfeng Lu, Ph.D.: joined in Sep 2011, graduated in Aug 2016, now in Evonik, IN as an Additive Manufacturing Engineer (Thesis title: A study on liquid bridge based microstereolithography (LBMSL) system)
- (3) Faez Alkadi, Ph.D. student: joined in Aug 2014, graduated in May 2019 and joined Jazan University in Saudi Arabia (Thesis title: Development of a Conformal Additive Manufacturing Process and Its Application)
- (4) *Md Omar Faruk Emon, B.S.: joined in Jan 2015, ABD (May 2020) (topic: 3D printed tactile sensors)*
- (5) *Rui Huang, M.S.: joined in Jan 2018 (topic: 3D printing of ceramic materials)*
- (6) *Ahadur Rahim, B.S.: joined in Jan 2019 (topic: not chosen)*

- **Master of Science**

- (1) 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)
- (2) 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)
- (3) Aslan Alamdari, B.S.: joined in Aug 2017 (topic: liquid-bridge microstereolithography)
- (4) *Sumanth Kashyap, B.S.: joined in Aug 2015 (topic: vat-free photopolymerization)*
- (5) *Daryl Philip, B.S.: joined in Jan 2018 (topic: shear stress measurement for bio-applications)*
- (6) *Myoem Kim, M.S., joined in Jan 2019 (topic: 3D printing of rubbers)*

- **M.S. (Non-Thesis)**

- (1) Shane D. Hague from Bridgestone: completed in Spring 2015 (Report title: 3D Printing in the Tire Industry)
- (2) Doug Costlow from Bridgestone: completed in Spring 2017 (Report title: Processing Rubber with Additive Manufacturing)
- (3) Tamira Ford from Timken: completed in Fall 2019 (Report title: Synthesis and Characterization of Zeolite Adsorbents for Application in Fuel Vapor Recovery Systems)

- **Undergraduate**

- (1) Kristin Wright: joined in Spring 2013, graduated in winter 2013, Senior design project of “Low-cost Additive Manufacturing for Educational Purposes”
- (2) Hall Miles: joined in Spring 2015, development of low-cost 3D printers
- (3) 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
- (4) Riniah Foor: joined in Aug 2016, development of low-cost 3D printers for sensors
- **High/Middle School Students**
 - (1) Allison Carpenter from National Inventors Hall of Fame STEP High School; worked on low-cost 3D printing for tactile sensor applications (Summer 2016)
 - (2) Daniel Hebert from Firestone High School; worked on low-cost 3D printing for tactile sensor applications (Summer 2016)
- **Exchange Students**
 - (1) Hyung-Ju Ko; Sang-Sik Oh from Andong National University in Korea: MID research during Aug 9 – 30, 2013.
 - (2) Sang-Gu Woo; Seong-Taek Oh from Chungbuk National University in Korea: Sensor research during Aug 9 – 30, 2013.
 - (3) Dae-Hak Lee; Jin-Hyuk Moon from Chonbuk National University in Korea: Rubber conductor research during Jan 2 – Feb 25 2014.
 - (4) Jong-Hwan Lee from Chonbuk National University in Korea: Flexible sensor research during Jan 2 – 28 2015.