



Seokbeom Kim

ME Mechanical Engineering

Personal Details

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Education

2010–2013 **B.S.**, *Sogang University*, South Korea.

Mechanical Engineering

Certification from Accreditation Board for Engineering Education of Korea (ABEEK)

Graduate of Honors, Summa Cum Laude, 1 Year Early Graduation

2013–2015 **M.S.**, *Sogang University*, South Korea.

Mechanical Engineering

"Development of scanning thermal microscopy using quantum dot integrated tip"

2015–2021 **Ph.D.**, *Sogang University*, South Korea.

Mechanical Engineering

"Development of roll tape-casting additive manufacturing system for high viscous alumina slurry"

2014–2020 **CTO,Co-founder**, *illuminaid*, South Korea.

Exit and M&A with CGBIO, Daewoong. Co., Ltd.

2021–Current **Senior Research Engineer(Part Manager)**, *CGBIO*, South Korea.

2021–Current **Technical advisor**, *Metamorp*, South Korea.

2022–Current **Founder**, *Planck Inc.*, South Korea.

Projects

2018.06– **Development of Multi-material ceramic photocurable 3D printing system**

2019.05 **development**, *Ministry of Trade, Industry and Energy*, *illuminaid inc.*.

PI : Seokbeom Kim

2018.07– **Development of insulators for ultra-high voltage GIS using ceramic functional gradient additive manufacturing**, Ministry of Trade, Industry and Energy, illuminaid inc..
2022.12
PI : Seokbeom Kim

Papers

- 14 J. Choi, J. Lee, J. Yang, Y. Kim, S. Park, **S. Kim**, S. Hong, Y. Son, J. Han, C. Ha, "A Three-Dimensional Liquid-Based Exchangeable Gradient Osmosis Chip for Permeability Controllable Microfluidic Device", *ACS Applied Polymer Materials*, accepted (2021).
- 13 J. Choi, **S. Kim**, Y. Son, S. Park, B. Kim, S. Hong, J. Park, and C. Ha, "Optimization of the Projection Microstereolithography Process for a Photocurable Biomass-Based Resin", *3D Printing and Additive Manufacturing*, DOI: 10.1089/3dp.2020.0173 (2021).
- 12 J. Liu, A. Goswami, K. Jiang, F. Khan, **S. Kim**, R. McGee, Z. Li, Z. Hu, J. Lee, and T. Thundat, "Direct-current triboelectricity generation by a sliding Schottky nanocontact on MoS₂ multilayers", *Nature Nanotechnology*, 13(2), p112-116 (2018).
- 11 T. Kim, K. Kim, **S. Kim**, J. Lee, and W. Kim, "Micropatterning of Liquid Metal by Dewetting", *Journal of Microelectromechanical Systems*, 12(6), p1244-1247 (2017).
- 10 S. Chaudhari, K. Chaudhari, **S. Kim**, F. Khan, J. Lee, and T. Thundat, "Electrophoresis assisted time-of-flow mass spectrometry using hollow nanomechanical resonators", *Scientific Reports*, 3535(7) (2017).
- 9 D. Ponnuvelu, **S. Kim**, and J. Lee, "Polyethyleneglycol diacrylate hydrogels with plasmonic gold nanospheres incorporated via functional group optimization", *Micro and Nano Systems Letters*, 21(5) (2017).
- 8 **S. Kim**, J. Song, S. Kim, and J. Lee, "Facile Batch Fabrication of Hydrogel Atomic Force Microscope Cantilevers via Capillary Filling and Ultraviolet Curing in an Aligned Elastomeric Mold Pair ", *Journal of Microelectromechanical Systems*, 26(3), p504-506 (2017).
- 7 K. Kim, **S. Kim**, T. Kim, W. Kim, and J. Lee, "Spray-coated liquid metal reflectors for transparent hydrogel atomic force microscope cantilevers", *Journal of Microelectromechanical Systems*, DOI:10.1109/JMEMS.2016.2589539 (2016).
- 6 **S. Kim**, J. Lee, and B. Choi, "3D Printed Fluidic Valves for Remote Operation via External Magnetic Field", *International Journal of Precision Engineering and Manufacturing*, 17(7), p.937-942 (2016).
- 5 H. Lee, B. Choi, **S. Kim**, S. Kim, W. Bae, and S. Kim, "Sensitivity-Enhanced LC Pressure Sensor for Wireless Bladder Pressure Monitoring", *IEEE Sensors Journal*, 16(12), p.4715 - 4724 (2016).
- 4 J. Lee, J. Song, S. Kim, **S. Kim**, W. Lee, J. Jackman, D. Kim, N. Cho, and J. Lee, "Multifunctional hydrogel nano-probes for atomic force microscopy", *Nature Communications*, 7, DOI:10.1038/ncomms11566 (2016).

- 3 J. Kim, J. Song, K. Kim, **S. Kim**, J. Song, N. Kim, M. F. Khan, L. Zhang, J. E. Sader, K. Park, D. Kim, T. Thundat, and J. Lee, "Hollow microtube resonators via silicon self-assembly toward subattogram mass sensing applications", *Nano Letters*, 16(3), p.1537-1545 (2016).
- 2 J. Choi, **S. Kim**, J. Lee, and B. Choi, "Improved Capacitive Pressure Sensors Based on Liquid Alloy and Silicone Elastomer", *IEEE Sensors Journal*, 15(8), p.4180-4181 (2015).
- 1 **S. Kim**, J. Lee, and B. Choi. "Stretching and Twisting Sensing with Liquid-Metal Strain Gauges Printed on Silicone Elastomers", *IEEE Sensors Journal*, 15(11), p.6077-6078 (2015).

Patents

- 14 "3D PRINTER FOR MULTI-MATERIAL PRINTING WITH ROTATION MODULE" ,10-2293846 ,Korea.
- 13 "PRINTER FOR MULTI MATERIAL LAMINATION" ,10-2254493 ,Korea.
- 12 "METHOD FOR MANUFACTURING MICROCANTILEVER HAVING FUNCTIONAL PROBE" ,US010132832B2 ,US.
- 11 "3-DIMENSIONAL PRINTER FOR MULTI MATERIAL LAMINATION" ,10-2043809 ,Korea.
- 10 "3-DIMENSIONAL PRINTER FOR MULTI MATERIAL LAMINATION USING FUNCTIONALLY GRADIENT MATERIAL" ,10-2069503 ,Korea.
- 9 "DISCHARGING DEVICE HAVING NOZZLE CLOGGING PREVENTION FUNCTION" ,10-2109444 ,Korea.
- 8 "Micro-chip packing apparatus" ,10-1664381 ,Korea.
- 7 "Cantilever for scanning probe microscopy" ,10-1743434 ,Korea.
- 6 "Injection mold for manufacturing probe of atomic force microscopy and manufacturing method thereof " ,10-2086802 ,Korea.
- 5 "Thermo couple" ,10-1780948 ,Korea.
- 4 "Patterning Method of Liquid Metal Using Micro Cantilever Probe" ,10-1687371 ,Korea.
- 3 "Method of Manufacturing Micro-cantilever Having Functionality Probe" ,10-1681231 ,Korea.
- 2 "Fluid Injectable Vacuum Clamp" ,10-1664381 ,Korea.
- 1 "Net Filter" ,10-1364262 ,Korea.

Awards

- 2017 **Outstanding Student Paper Award Finalist**, IEEE MEMS 2017.
- 2016 **Silver**, *Expert Group*, 1st KSME-SEMES Open Innovation Challenge.
- 2016 **Silver**, *Best Poster*, NANOKOREA2016.
- 2016 **Best Poster**, The 70th Korean Society of Mechanical Engineers Fall Conference.
- 2016 **Best Poster**, The 18th Korean MEMS Conference.

- 2015 **Gold**, *Material processing*, The 22nd Samsung HumanTech Journal Competition.
- 2015 **Silver**, *Mechanical Engineering*, The 22nd Samsung HumanTech Journal Competition.
- 2015 **Industrial Innovation Award**, The 17th Korean MEMS Conference.
- 2012 **Silver**, *Capstone Design*, Sogang University.
- 2011 **Honor roll**, Sogang University.

Scholarships

- 2016 **One-time Scholarship**, *Best Paper*, Sogang University.
- 2015-Current **Full Scholarship**, *Albatross Fellowship*, Sogang University.
- 2015 **One-time Scholarship**, Dow Chemical Korea.
- 2013-2015 **Full Scholarship**, *Albatross Fellowship*, Sogang University.
- 2012-2013 **Full Scholarship**, *National Science & Technology Scholarship*, Korea Student Aid Foundation.
- 2010-2013 **Partial Scholarship**, *Dean's list*, Sogang University.
- 2010 **One-time Scholarship**, *the project enhancing the universities' educational competency*, Ministry of Education, South Korea.

International Conferences

- 6 **S. Kim**, J. Song, and J. Lee, "Facile fabrication of multiple hydrogel atomic force microscope cantilevers via capillary filling and ultraviolet curing in an aligned PDMS mold pair", **MEMS 2017**, Las Vegas, USA, January 2017 Poster.
- 5 J. Kim, J. Je, J. Song, K. Kim, **S. Kim**, and J. Lee, "Direct assembly of a hydrogel nano-tip onto silicon microcantilevers for wear study and facile regeneration of soft atomic force microscope probes", **MEMS 2017**, Las Vegas, USA, January 2017 Oral Presentation.
- 4 **S. Kim**, S. Cho, and J. Lee, "Can hydrogel AFM cantilevers outperform silicon counterparts?", The 4th Kanazawa bio-AFM workshop, Kanazawa, Japan, October 2016 Oral Presentation.
- 3 J. Kim, J. Je, J. Song, K. Kim, **S. Kim**, and J. Lee, "Novel wafer-batch fabrication strategy for microfluidic resonators", The 5th Canada-Korea Conference on Science and Technology, Calgary, Canada, July 2015.
- 2 **S. Kim**, J. Choi, B. Choi, and J. Lee, "Hyper-elastically stretchable gauges based on liquid metals and platinum-catalyzed silicone elastomers", **The 18th International Conference on Solid-State Sensors, Actuators and Microsystems**, Anchorage, USA June 2015 Poster.
- 1 **S. Kim**, J. Lee, and B. Choi, "Fabrication and experiment of polymeric diaphragm pressure sensors", BMEiCON 2013, Krabi, Thailand, October 2013 Oral Presentation.

Domestic Conferences

- 13 **S. Kim**, K. Kim, J. Lee, and J. Lee, "Fabrication of a Hydrogel-silicon Hybrid Cantilever for Wear Characteristics and Regeneration of Hydrogel Nano-tip", *Fall conference of the Korean Society of Mechanical Engineers*, Gangwon , Korea, December 2016..
- 12 **S. Kim**, B. Lee, and J. Lee, "Static and dynamic operation of metal-coated hydrogel cantilever humidity sensors based on hygroscopic mismatch", *Fall conference of the Korean Society of Mechanical Engineers*, Gangwon , Korea, December 2016..
- 11 **S. Kim**, and J. Lee, "Wear characteristics of hydrogel atomic force microscope probes under dynamic mode imaging", *Spring conference of the Korean Society of Mechanical Engineers - Micro/nano division*, Busan, Korea, May 2016..
- 10 J. Song, **S. Kim**, and J. Lee, "Development of Fabrication Processes for Nanochannel Resonators towards High Resolution Mass Sensing Applications in Liquids", The 18th Korean MEMS Conference, Jeju Island, Korea, April 2016..
- 9 **S. Kim**, J. Lee, and J. Lee, "Effect of scan parameters on the tip wear and imaging quality of hydrogel atomic force microscope cantilevers using non-contact mode imaging", The 18th Korean MEMS Conference, Jeju Island, Korea, April 2016..
- 8 **S. Kim**, and J. Lee, "Development of hyperelastically stretchable strain gauge based on liquid metals and platinum catalyzed silicone elastomers", Fall conference of the Korean Society of Mechanical Engineers, Jeju Island, Korea, October 2015..
- 7 **S. Kim**, and J. Lee, "Micro thermal sensor using florescent ref-shift of quantum-dot encapsulated hydrogel probe", Fall conference of the Korean Society of Mechanical Engineers, Jeju Island, Korea, October 2015.
- 6 **S. Kim**, and B. Choi, "Development of hyperelastically stretchable strain gauge based on liquid metals and platinum catalyzed silicone elastomers ", KIEE Summer Conferece 2015, Muju, Korea, July 2015.
- 5 J. Choi, **S. Kim**, Lee, J. Lee, and B. Choi, "Development of hyperelastic strain gauges based on liquid metals and platinum catalyzed silicone elastomers", The 17th Korean MEMS Conference, Jeju Island, Korea, April 2015.
- 4 **S. Kim**, J. Kim, J. Lee, and B. Choi, "Development of custom atomic force microscope combined with digital mask lithography", The 17th Korean MEMS Conference, Jeju Island, Korea, April 2015.
- 3 **S. Kim**, H. Lee, J. Lee, and B. Choi, "Development of magnetic field controllable 3D-printed biomedical check valves", IBEC 2014, Kwangju, Korea, November 2014.
- 2 **S. Kim**, J. Lee, and B. Choi, "Development of magnetic field controlled wireless biomedical valves using projection-stereolithography", KIEE Summer Conferece 2014, Yongpyong, Korea, July 2014.
- 1 **S. Kim**, J. Kim, B. Choi, and J. Lee, "Improved lane detection for unmanned ground vehicle navigation", CNSI 2012, Jeju Island, Korea, July 2012.

Area of Interest

- 3D Printing

- Projection Stereolithography
- Atomic Force Microscopy
- MEMS

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