Sunghan Kim

Contact Information

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Education

Texas A&M University [TAMU] **College Station, TX, USA**
Ph.D. (May.2015) in **Mechanical Engineering**
Thesis title: Surface Properties of Nanopore-Structured Metals and Oxides
[Advisor: Prof. Hong Liang, Ph.D, Co-Advisor: Prof. Andreas A. Polycarpou, Ph.D]

Pohang University of Science and Technology [POSTECH] **Pohang, Korea**
M.S. (Feb. 2006) in **Mechanical Engineering**
Thesis title: Fabrication and Tribological Behavior of Metal Nanohoneycomb Structures
[Advisor: Prof. Woonbong Hwang, Ph.D]

Hanyang University **Seoul, Korea**
B.S. (Feb. 2004) in **Mechanical Engineering (cum laude)**
Study for fundamental physics, chemistry, material science, and mechanics.

Research Interests

Micro/Nanotribology, Micro/Nanomechanics, Nanofabrication, Nanomanufacturing, Biotribology, Ion transfer (for energy storage application), Solid Lubricant, (Electro-) Wetting, Nanoplasmonics, Composites fabrication

Research and Industry Experiences

Georgia Institute of Technology (Aug.2015- Present) **Atlanta, GA, USA**
Postdoctoral Fellow in School of Materials Science and Engineering

Texas A&M University (Jun. 2015- Aug. 2015) **College Station, TX, USA**
Visiting Assistant Professor in Department of Mechanical Engineering

Texas A&M University (Aug. 2011- May.2015) **College Station, TX, USA**
Graduate Research Assistant in Surface Science / Micro tribology dynamics Research Group

Intel Corporation (Jun. 2014~Sep. 2014) **Chandler, AZ, USA**
Graduate Intern in ATTD Quality and Reliability Group

Kyunghee University (Jun. 2011~Jul. 2011) **Suwon, Korea**
Researcher in Nanostructures and Nanomaterials Research Group

Samsung Electronics, Suwon R&D Center (Feb.2006-Jun. 2011) **Suwon, Korea**
Research Engineer in Electro Photography System Lab., IT Solution Business
Senior Engineer (Mar. 2011-Jun. 2011), Engineer (Mar. 2008-Feb. 2011),
Assistant Engineer (Feb. 2006-Feb. 2008)

POSTECH (Mar. 2004-Feb. 2006) **Pohang, Korea**
Graduate Research Assistant in Nano Structures & Composites System Research Group

Teaching Experience

Instructor
Texas A&M University (spring 2015)
- Materials in Design (MEEN 475)

Lab Instructor
Texas A&M University (summer 2015)
- Dynamic Systems and Controls (MEEN 364)

Teaching Assistant
Texas A&M University (fall 2011, spring 2012, and summer 2012)
- Statics & Particle Dynamics (MEEN 221)

Pohang University of Science and Technology [POSTECH] (Spring 2004)
- System Control (MECH 322)

Mentoring
Texas A&M University (summer 2013)
- Mentoring high school teachers for E3 research program

Honor and Awards

1. Graduate Climate Award, 2015, TAMU, USA
2. STLE Young Tribologist Award, 2014, STLE Annual Meeting, USA
3. Second place prize, Poster Contest on Engineering Day, 2014, TAMU, USA
4. Graduate Student Presentation Grant, 2014, OGAPS, TAMU, USA
5. Student Poster Award, 2013, STLE Annual Meeting, Detroit, USA
6. STLE Houston Chapter Awarded Scholarships, 2013, TAMU, USA
7. Samsung Electronics graduate scholarship, 2005, POSTECH, Republic of Korea
8. Graduation with honor prizes awards (cum laude) for curricular achievement, 2004, Hanyang Univ., Republic of Korea
9. Scholarship for academic excellence, fall semester in 2000 and spring semester in 2003, Hanyang Univ., Republic of Korea

Publications

Journal publication (*Peer-reviewed research papers (published, in press, in review, in preparation)*

1. **S. Kim**, A.A. Polycarpou, and H. Liang, "Electrical-potential induced surface wettability of porous metallic nanostructures", Applied Surface Science 351 pp. 460–465, 2015
2. **S. Kim**, Yan Zhou, Jeffrey D. Cirillo, A.A. Polycarpou, and H. Liang, "Bacteria repelling on highly-ordered alumina-nanopore structure", Journal of applied physics, Vol.117, Issue 15, 2015
3. H. Xiao, **S. Kim**, X. He, D. Zhou, C.M. Li, and H. Liang, "Friction Pair Evaluation of Cartilage-diamond for Partial-joint Repair," Carbon, Vol. 80, pp. 551–559, 2014
4. **S. Kim**, A.A. Polycarpou, and H. Liang, "Enhanced-ion transfer via metallic-nanopore electrodes", Journal of The Electrochemical Society, Vol. 161 (10), 2014
5. **S. Kim**, A.A. Polycarpou, and H. Liang, "Active control of surface forces via nanopore structures", APL materials, Vol. 1, 2013
6. J. Yoo, J.H. Kim, K. Lee, S. Lee, **S. Kim**, H.K. Park, S.W. Kim, J. Bae, J.J. Park, and D. Choi, "Dewetted gold nanoparticles on ZnO nanorods for three-dimensionally distributed plasmonic hot spots", Scripta Materialia, Vol.7, 2013
7. W. Hwang, K.H. Lee, H. Park, J. Kim, J. Park, J. H. Cho, J. H. Jeon, D. Choi, D. Kim, D. Kim, **S. Kim**, K. Lee, T. Jing and S. Lee "Some Aspects on Design and Applications of Nanohoneycomb and Nanofiber Array Structures," Mechanics of Composite Materials, Vol. 47, No. 1, pp. 17-52, 2011
8. **S. Kim**, S. M. Lee, D. H. Choi, K.-H. Lee, H. C. Park and W. Hwang "Fabrication of Metal Nanohoneycomb Structures and Their Tribological Behavior," Advanced Composite Materials, Vol. 17, pp. 101-110, 2008
9. D. H. Choi, S.M. Lee, **S. Kim**, P. S. Lee, K.-H. Lee, H. C. Park, and W. Hwang, "Dependence of adhesion and friction on porosity in porous anodic alumina films", Scripta Materialia., Vol. 58 pp. 870-873, 2008
10. **S. Kim**, A.A. Polycarpou, and H. Liang, "Effects of electrical potential on mechanical property of metallic nanopore structure" (In preparation)
11. **S. Kim**, H. Choi, A.A. Polycarpou, and H. Liang, "Physical model of (electro-)wettability on nanopore structures" (In preparation)

Conference Proceedings

1. **S. Kim**, A. A. Polycarpou, and H. Liang, "Optimizing the performance of ion-transfer and energy store via hexagonally ordered alumina nanopore template based electrode" , STLE annual meeting, Dallas, U.S.A, May, 2015
2. **S. Kim**, A. A. Polycarpou, and H. Liang, "AFM Characterization of Effects of Electrical Potential on Self-Organized Metallic Nanopore Structures", STLE annual meeting, Lake Buena Vista, U.S.A, May, 2014
3. **S. Kim**, Y. Zhou, A. A. Polycarpou, and H. Liang, "Effects of Alumina Nanopore Structures on Bacteria Desorption", STLE annual meeting, Lake Buena Vista, U.S.A, May, 2014
4. **S. Kim**, and H. Liang, "Electro-potential dependent frictional characteristic on self-organized metallic nanopore structures", World Tribology Congress 2013, Torino, Italy, September, 2013

5. **S. Kim**, A. A. Polycarpou, and H. Liang, "Morphographical and Tribological Characterization of Self-Organized Metallic Nanopore Structures", STLE annual meeting, Detroit, U.S.A, May, 2013
6. S. M. Lee, **S. Kim** and Hwang, "Fabrication and tribological behavior of metal nanohoneycomb structure," 5th International Congress of Nano-Bio Clean Tech 2008, Sanfrancisco, U.S.A., Oct.,2008
7. S. Lee, **S. Kim**, D. Choi, K. H. Lee, H. C. Park, and W. Hwang, "Fabrication and tribological behavior of metal nanohoneycomb structures", Korea Society of Composite Materials fall conference, Kumoh Univ., Gumi, Korea, Nov. 2006.
8. **S. Kim**, D. H. Choi, W. Hwang, Y. S. Kim, B. S. Jung, and D. W. Kang, Modeling to vibration analysis of a drum washing machine by axiomatic design, Korea Society of Precision Engineering spring conference, Jeju Lamada Plaza Hotel, Korea, June 2005, p.561-564.

Patents

1. Process cartridge and image forming device having the same, USA (13/344028), KOR (P2011-0001294)
2. Developing device usable with image forming apparatus, USA (12/851715), KOR (P2009-0081744), CHN (2010-20501040.1), EUR (10171841.9)
3. Image forming apparatus, USA (12/642260), KOR (P2009-0002922)
4. Developing device and image forming apparatus having the same, USA (11/956438), KOR (P2007-0065351), CHN (2008-10093316.4)
5. A fuel cell stack having multi-module mounting structure, KOR (P2006-0084674)

Presentations

1. Fabrication and Tribological Behavior of metal nanohoneycomb structures, UCLA-POSTECH Symposium, UCLA, LA, USA, Jan. 2006.

Professional Affiliations and Services

Membership

1. Member of STLE (Society of Tribologists and Lubrication Engineers)
2. Member of KSCM (The Korean Society for Composite Materials)
3. Member of KSPE (The Korean Society for Precision Engineering)

Conference Organizer

1. Chair and Paper Solicitation Chair (PSC) of Ceramics and Composites in STLE, 2015

Leadership

1. President of STLE student organization in Texas A&M Univ., 2014-2015
2. Treasurer of STLE student organization in Texas A&M Univ., 2013-2014
3. Vice president of Korean student association of mechanical engineering at TexasA&M Univ., 2012-2013

Journal Reviewer for

1. Colloids and Surfaces A: Physicochemical and Engineering Aspects
2. Journal of Applied Physics
3. Macromolecular Reaction Engineering
4. Tribology Letters
5. Sensors
6. Journal of Electronic Materials
7. Tribology Transactions
8. Nanoscale
9. Nature Communication

Proposal Reviewer for

1. National Science Foundation (NSF)
2. Texas A&M University internal competition