YONG IL KIM

MASTER COURSE

Solar Cell & Aerosol Science Laboratory
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RESEARCH INTERESTS

- Electrohydrodynamics (electrospinning/electrospray applications)
- Nanofibers (polymer, metal, and ceramic)
- Membrane (water/oil separation, water purification, and biocompatible anti-fungal membrane)
- Photocatalysis applications (water purification, water splitting, and anti-microbial activity)
- Heat transfer applications (air cooling layer, pool boiling, and transparent heater film)
- Self-healing composites
- Metal-organic frameworks (MOFs)
- Transparent conductive electrodes (TCEs)
- Supersonic gas flow
- Secondary batteries (Li-ion battery, supercapacitor)

EDUCATION

- Master course in Mechanical Engineering, (4.13/4.5)
  Korea University, Seoul, Korea
  Advisor: Prof. Sam S. Yoon
- Bachelor of Science in Mechanical Engineering, Aug. 2015 (3.00/4.5)
  Korea University, Seoul, Korea
  Advisor: Prof. Sam S. Yoon
  Senior Dissertation: Experimental study of nano-textured Cu_2O nanofiber film for efficient air cooling

EMPLOYMENT

- 2016/Sep. to 2016/Dec.: Teaching Assistant, School of Mechanical Engineering, ***Korea University***, Creativity in machine design: capstone design.

- 2017/Mar. to 2017/June.: Teaching Assistant, School of Mechanical Engineering, ***Korea University***, Fluid mechanics I.

PUBLICATIONS (†equal contribution, *corresponding author)

International Journal Papers (0 published, 5 submitted)

1. S An, HS Jo, **YI Kim**, KY Song, MW Kim, KB Lee, AL Yarin*, SS Yoon*, Bio-inspired colorful, flexible, defrostable light-scattering hybrid films for effective distribution of LED light, ***Nanoscale*** (IF=7.760), In revision.
2. S An†, **YI Kim**†, HS Jo, MT Swihart, AL Yarin*, SS Yoon*, Oxidation-resistant metallized nanofibers as transparent conducting films and heaters, ***ACS Applied Materials & Interfaces*** (IF=7.145), Submitted.
3. HS Jo†, S An†, XH Nguyen, **YI Kim**, SC James, J Choi*, SS Yoon*, Modifying capillary pressure and boiling regime of micro-porous wicks textured with graphene oxide, ***Applied Thermal Engineering*** (IF=3.043), Submitted.
4. EP Samuel†, HS Jo†, BH Joshi, HG Park, **YI Kim**, S An, MT Swihart, JM Yun, KH Kim*, SS Yoon*, High-performance supercapacitors using flexible and freestanding MnO_x/carbamide carbon nanofibers, ***Applied Surface Science*** (IF=3.150), Submitted.
5. EP Samuel†, BH Joshi†, HS Jo, **YI Kim**, S An, MT Swihart, JM Yun, KH Kim*, SS Yoon*, Carbon nanofibers decorated with FeO_x nanoparticles as a flexible electrode material for symmetric supercapacitors, ***Chemical Engineering Journal*** (IF=5.310), Submitted.
6. HS Jo†, MW Kim†, K Kim, S An, **YI Kim**, SC James, J Choi*, SS Yoon*, Effects of Capillarity on Pool Boiling Using Nanotextured Surfaces through Electrosprayed $BiVO_4$ Nanopillars, ***Chemical Engineering Science*** (IF=2.750), Accepted.
7. S An†, **YI Kim**†, S Sinha-Ray, MW Kim, HS Jo, AL Yarin*, SS Yoon*, Platinum nanofibers via electrospinning, solution blowing, and electroplating, ***Nanoscale*** (IF=7.760), Accepted.
8. S An†, BN Joshi†, JG Lee†, MW Lee, **YI Kim**, MW Kim, HS Jo, SS Yoon*, A Comprehensive Review on Wettability, Desalination, and Purification of Graphene at Water Interfaces, ***Catalysis Today*** (IF=4.312), Accepted.
9. EP Samuel†, HS Jo†, BN Joshi, S An, HG Park, **YI Kim**, WY Yoon*, SS Yoon*, Decoration of MnO nanocrystals on flexible freestanding carbon nanofibers for lithium ion battery anodes, ***Electrochimica Acta*** (IF=4.803), 231, 582-589, 2017.
10. BN Joshi†, S An†, **YI Kim**, EP Samuel, KY Song, IW Seong, SS Al-Deyab, MT Swihart, WY Yoon*, SS Yoon*, Flexible freestanding Fe_2O_3-SnO_x-carbon nanofiber composites for Li ion battery anodes, ***Journal of Alloys and Compounds*** (IF=3.014), 700, 259-266, 2017.

Conference Papers

1. **YI Kim**, S An, HS Jo, SS Yoon*, Novel platinum nanofibers via electrospinning and electroplating techniques, ***Global Photovoltaic Conference (GPVC)***, Gwangju, Republic of Korea, Mar. 15 – 17, 2017.

2. **YI Kim**, HG Park, HS Jo, S An*, Novel core-shell copper-silver microfibers based on electrospun polymer nanofibers, ***International Conference on Mechanical Design and Engineering, (ICMDE)***, Hong Kong, Jan. 20 – 22, 2017.

Patents (6 applied, 4 registered)

1. SG Yoon, S An, HS Jo, **YI Kim**, *Light-scattering plate for LED light and method of manufacturing the same*, 10-2017-0017971 (applied).

SKILLS

- **Technique:** SEM (scanning electron microscopy), EDX (energy dispersive x-ray spectroscopy), TEM (transmission electron microscopy), AFM (atomic force microscopy), XRD (X-ray diffraction), XPS (X-ray photoelectron spectroscopy), FTIR (Fourier transform infrared spectroscopy), Raman spectroscopy, UV-VIS spectrometer, DSC (Differential scanning calorimetry), TGA (thermogravimetric analysis), 4-point probe station, Optical surface profiler, Fluidic properties (viscosity, electrical conductivity, surface tension, dielectric constant)
- **Device fabrication:** electrospinning/electrospray device, electroplating device, supersonic flow nozzle, water contact angle measurement device
- **Design software program:** CATIA, Pro Engineering, AUTO CAD

REFERENCE

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