HYUNGON PARK

495 Old Turner St. #111, Blacksburg, VA 24060, Blacksburg, VA 24060 | (213) 255-8638 | hyunggon@vt.edu

EDUCATION

Doctor of Philosophy in Engineering Mechanics — **Aug 2017-**
Department of Biomedical and Engineering Mechanics, ***Virginia tech****, Blacksburg, VA*
Advisor: Dr. Jonathan Boreyko and Dr. David Schmale III — **GPA: 3.81/4.0.**

Master of Science in Mechanical Engineering — **May 2017**
Department of Aerospace and Mechanical Engineering, ***University of Southern California****, Los Angeles, CA*
Advisor: Dr. Mitul Luhar

Bachelor of Science in Mechanical Engineering — **Aug 2015**
Department of Mechanical Engineering, ***Sungkyunkwan University****, Seoul, Republic of Korea*

RESEARCH INTEREST

- Interfacial fluid mechanics
- Droplet dynamics
- Surface wettability
- Phase- change heat transfer (condensation, boiling)
- Drop impact on icy surface
- De-icing
- Pool boiling

RESEARCH EXPERIENCE

Research Assistant
Department of Biomedical and Engineering Mechanics, ***Virginia tech****, Blacksburg, VA*
Nature-Inspired Fluid & Interface (Dr. Jonathan Boreyko) — **Aug 2018 - Present**
- Experimental and theoretical fluid dynamics and phase change heat transfer
- Frost generation
- Rapid de-icing via positive bending
- Drop impacting on icy surface
- Pool boiling

Department of Biomedical and Engineering Mechanics, ***Virginia tech****, Blacksburg, VA*
Bio-inspired Fluid Mechanics lab (Advisor: Dr. Sunny Jung) — **Oct 2017 – Aug 2018**
- Experimental and theoretical study to find the mechanics of droplet impact.
- Drop impacting on particle-laden elastic beam.

Department of Biomedical Science, ***Virginia tech****, Blacksburg, VA*
Chen Research Group (Advisor: Dr. Jing Chen) — **Jan 2018 – Mar 2018**
- Studying bacterial gliding motility and control with computation method.

School of Plant and Environmental Sciences, ***Virginia tech****, Blacksburg, VA*
Schmale's lab (Advisor: Dr. David Schmale III) — **Aug 2017 – Oct 2017**
- Monitoring the splash dispersal of a plant pathogen from infected wheat leaves induced by raindrop.

Department of Aerospace and Mechanical Engineering, ***University of Southern California****, Los Angeles, CA*
Fluid-Structure Interactions lab (Advisor: Dr. Mitul Luhar) — **Oct 2015 – May 2017**
- Studying wake structure behind partially- porous circular cylinders via water channel experiments involving particle image velocimetry (PIV).

Department of Mechanical Engineering, ***Sunkyunkwan University***
New Energy System Lab (Advisor: Dr. Oh Chae Kwon) — **Aug 2014 – Nov 2014**
- Undergraduate thesis: Ammonia Substituted Hydrogen-Air Counter flow Flame Buner Design

- Designed combustion chamber for the Hydrogen-Air Counter flow flame

Senior Capstone Design Project **Mar 2014 – July 2014**

Automatic Attachable Module for Wheelchair

- Designed external geometry and internal structure of module for 'Automatic Attachable Wheelchair'
- Designed outer figure using software such as NX7.5 to modify design of the automatic module.
- Analyzed and calculated force and stress that is acting on the connecting part between attachable module and wheelchair.
- Calculated torque needed to pull wheelchair and choose the motor that is sufficient to that torque.
- Made each part of attachable module by using machine tool and welded each part of the module.

TEACHING EXPERIENCE

Graduate Teaching Assistant

Department of Biomedical and Engineering Mechanics, ***Virginia tech****, Blacksburg, VA*

ESM2104, Introduction to Statics **Spring 2020**

Department of Biomedical and Engineering Mechanics, ***Virginia tech****, Blacksburg, VA*

ESM 3234, Fluid Mechanics I – Control Volumes **Fall 2020**

- Problem solving session (discussion session).

Awards

• Daniel and Frances Frederick Fellowship awarded by Engineering Mechanics in Virginia Tech (2020)
• Liviu Librescu Memorial Fellowship awarded by Engineering Mechanics in Virginia Tech (2019)
• Outstanding Poster Award in Annual Symposium of Center for Soft Matter and Biological Physics 2019 awarded by Center for Soft Matter and Biological Physics Symposium in Virginia Tech (2019)
• Graduate Research Assistantship awarded by Biological Transport (BIOTRANS) Program in Virginia Tech (2017)
• Grand prize "Capstone Design Contest" hosted by Ministry of Education in South Korea. (2014)
• Grand Prize "University Students' Creative Ideas Business Competition" hosted by LINK SKKU. (2014)
• Gold Prize "SIIF 2014(Seoul International Inventers Fair 2014)" hosted by Korea Invention Promotion Association. (2014)

PUBLICATION

• **H. Park**, F. Ahmadi, Y. Venkata, K. Nimmakayala, J. Borekyo. "Dynamic de-icing using positive bending." (2021) in preparation

• F. Ahmadi, **H. Park**, A. Fugaro, Y. Venkata, S. Nath, J. Borekyo. "Arrested dynamics of droplets impacting icy surfaces." (2021) in preparation

• **H. Park**, F. Ahmadi, J. Borekyo. "Using frost to promote Cassie ice on hydrophilic micropillars.", (2021) Under revision.

• H. Gruszewski, **H. Park**, S. Kim, K. Somers, S. Jung, D. Schmale III. "Monitoring the splash dispersal of a plant pathogen from infected wheat leaves using highspeed video." (2021) Under revision

• **H. Park**, S. Kim, H. Gruszewski, D. Schmale III, S. Jung, J. Boreyko. "Dynamics of splashed droplets impacting wheat leaves treated with a fungicide." *J. R. Soc. Interface.* **17**, 2020337 (2020).
[Front Cover of Volume **17**, Issue 168]

•S. Kim, **H. Park**, H. Gruszewski, D. Schmale III, S. Jung. "Vortex-induced dispersal of a plant pathogen by raindrop impact." *Proceedings of the National Academy of Sciences of the United States of America.* **116**, 4917 (2019).

CONFERENCE

• F. Ahmadi*, A. Fugaro, S. Nath, H. Park, J. Borekyo. "Arrested dynamics of droplets impacting icy surfaces", 72th APS DFD Meeting, Seattle, WA (2019).
• H. Park*, S. Kim, H. Gruszewski, T. Gidley, D. Schmale III, J. Borekyo S. Jung. "Leaf-to-leaf spore dispersal of rust induced by rainsplash", 72th APS DFD Meeting, Seattle, WA (2019).
• S. Kim*, H. Park, H. Gruszewski, T. Gidley, D. Schmale III, S. Jung. "Spreading plant spores by splashes upon raindrop impacts", 71th APS DFD Meeting, Atlanta, GA (2018).
• H. Park*, S. Kim, H. Gruszewski, D. Schmale III, S. Jung. "Sickening Splashes", 71th APS DFD Gallery of Fluid Motion, Atlanta,

GA (2018).
• H. Park*, S. Kim, H. Gruszewski, D. Schmale III, S. Jung. "Dry spore-dispersal by raindrop impact", 18th U.S. National Congress for Theoretical and Applied Mechanics, Chicago, IL (2018).
• H. Park*, M. Luhar. "Wakes behind partially-porous cylinders", 11th Southern California Flow Physics Symposium, San Diego, CA (2017).

MEDIA

- Cho-sun Ilbo – People section on December 2014
- SBS Korean Public Broadcasting Station –SBS program 'SBS Economic life" October 2014

ACTIVITIES

Volunteer Experience, Community Service at "Yang-Cheon Welfare Center' **2011-2013**
Kids Tech University (KTU), An educational outreach program to inspire children between ages 9–12 years in STEM education, Blacksburg, Virginia **Spring 2018**

REFRENCES

- **Prof. Jonathan B. Boreyko**, *Associate Professor*,
  Department of Mechanical Engineering, Virginia Tech, Blacksburg, VA 24061, USA
  email: boreyko@vt.edu
- **Prof. David Schmale III**, *Professor*,
  School of Plant and Environmental Sciences, Virginia Tech, Blacksburg, VA 24061, USA
  email: dschmale@vt.edu
- **Prof. Sungwhan (Sunny) Jung**, *Associate Professor*,
  Department of Biological and Environmental Engineering, Cornell University, Ithaca, NY 14832, USA
  email: sj737@cornell.edu
- **Prof. Mitul Luhar**, *Associate Professor*,
  Department of Aerospace and Mechanical Engineering, University of Southern California, Los Angeles, CA 90007, USA
  email: luhar@usc.edu
- **Dr. S. Farzad Ahmadi**, *Postdoctoral Scholar*,
  Department Mechanical Engineering, University of California, Santa Barbara, CA 93106, USA
  email: farzad@ucsb.edu