

# Sangwon Lee

[swrlee@umich.edu](mailto:swrlee@umich.edu)

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## EDUCATION

**Dankook University, South Korea**

**March 2013 – February 2019**

*B.S. Mechanical Engineering*

**GPA:** 3.86/4.0

**Major GPA:** 3.92/4.0

**University of Michigan, Ann Arbor**

**September 2019 – December 2020**

*M.S.E Mechanical Engineering*

**GPA:** 4.0/4.0

**University of Michigan, Ann Arbor**

**January 2021 – Present**

*Ph.D. Mechanical Engineering*

**Cumulative GPA:** 4.0/4.0

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## RESEARCH EXPERIENCE

**Dankook University Research Assistant in Optomechatronics**

*Research Intern*

**March 2017 – July 2019**

- Conducted research under Professor Daekeun Kim to improve efficiency of the 3D printing process using Lissajous trajectories using juxtaposition of fabrication speed in Lissajous scanning vs. conventional raster scanning.
- Incorporate SLA-based optical system and mathematical programming to print 3D objects and verify that 3D stereolithography with Lissajous scanning has the capability to fabricate 3D structures.
- Experience about microscopic imaging and microfabrication technology using femto-second lasers.
- Biomedical imaging to explore medical and clinical applications.

**University of Michigan**

*Graduate Student Research Assistant*

**September 2019 – Present**

- Studied the underlying micromechanical processes that take place in materials in connection with their macroscopic behavior under Professor Ashley Bucsek.
- Multiple beam time experiences at Cornell High Energy Synchrotron Source (CHESS), Advanced Photon Source (APS) and European Synchrotron Radiation Facility (ESRF).
- Currently conducting studies on In-situ multiscale investigation of recovery, recrystallization and grain growth using 3D X-ray diffraction microscopy about Magnesium alloy.

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## PUBLICATIONS

S. W. Lee, and D. K. Kim, "High-Speed Printing Process Characterization using the Lissajous Trajectory Method," *Journal of the Korean Physical Society* 72, 885-889, DOI: 10.3938/jkps.72.885, 2018.

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## CONFERENCES

**10<sup>th</sup> International Conference on Advanced Materials and Devices (ICAMD)**

*Presenter (First Author)*

**December 9, 2017**

- Presented research on novel printing methods using Lissajous trajectories, commonly used in processing high-speed imaging, during the Photonics, Plasmonics and Metamaterials session at the 10th International Conference on Advanced Materials and Devices (ICAMD), Jeju Island, South Korea.

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## Korean Society for Precision Engineering 2018 Autumn Conference (KSPE)

*Presenter (First Author)*

**October 25, 2018**

- Presented research at additive manufacturing system session at Korean Society for Precision Engineering 2018 Autumn Conference (KSPE), Gunsan, South Korea.
- Research on implementing SLA-based optical systems for printing 2D sections and demonstrating the characterization of the 2D section features was presented.

## SPIE Photonics West 2019

*Presenter (First Author)*

**February 3, 2019**

- Presented research at Advanced Fabrication Technologies for Micro/Nano Optics and Photonics XII at SPIE Photonics West 2019, San Francisco, CA, USA.
- Presented research on high-speed 3D printing process using Lissajous scanning pattern.

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## PATENTS

- 3D Printing Method Using Lissajous Pattern (Application number: 10-2017-0167722) - December 7, 2017
- 3D Printing Method and 3D Printer Using Lissajous pattern (Application number: 10-2018-0097567) - August 21, 2018

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## HONORS AND AWARDS

### Academic Excellence Award

**(July 2013 - January 2019)**

Recognized for outstanding academic performance, earning a GPA of 4.0+/4.5

### Scholarship for Academic Excellence

**(July 2013- January 2019)**

Selected from the Dean's list to receive funding for tuition.

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## SKILLS AND LANGUAGES

**Software Skills:** Microsoft Office Word, Excel, PowerPoint, ANSYS, Autodesk CAD, Adams, C ++, C#, Pro-engineering, SOLIDWORKS, Mathwork MATLAB, Python, National Instrument LabVIEW, Paraview

**Languages:** Korean (Native), Proficient in English