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Multiscale Length Measurement Team  
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## EDUCATION

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2004. 3. ~ 2009. 8.

Ph.D. Mechanical Engineering, Korea Advanced Institute of Science and Technology (KAIST)  
Thesis: “Vibration-desensitized Fiber-optic Point-diffraction Interferometer for On-machine Measurement using High-speed Camera”, Advisor: Prof. Seung-Woo Kim

2002. 3. ~ 2004. 2.

M.S. Mechanical Engineering, Korea Advanced Institute of Science and Technology (KAIST)  
Thesis: “Autofocus of Optical Microscope by Confocal Principle”, Advisor: Prof. Seung-Woo Kim

1998. 3. ~ 2002. 2.

B.S. Mechanical Engineering, Korea Advanced Institute of Science and Technology (KAIST)

## PROFESSIONAL EXPERIENCE

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2019.03.01 ~ Current

Principal Research Scientist; Multiscale Length Measurement Team, Length Standards Group, Physical Metrology Division, KRISS, Republic of Korea

2015.09.01 ~ Current

UST Adjunct Professor, Associate Professor; Science of Measurement, KRISS, Republic of Korea

2013.04.15 ~ 2019.02.28

Senior Research Scientist; Center for Length, Division of Physical Metrology, KRISS, Republic of Korea

2011.10.17 ~ 2013.04.14

Postdoctoral researcher; Center for Length, Division of Physical Metrology, KRISS, Republic of Korea

2010.6.1 ~ 2011.9.30

Guest researcher; Surface and Microform Metrology Group (SMM) / Mechanical Metrology Division (MMD) / Physical Measurement Laboratory (PML) / National Institute of Standards and

Technology (NIST), United States  
2009.9.1. ~ 2010.5.31

Postdoctoral researcher; Ultrafast Optics for Ultraprecision Technology Research Center, Department of Mechanical Engineering, KAIST, Daejeon, Republic of Korea

## RESEARCH PROJECTS CAREER

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2004.8. ~ 2005.7.

“Development of interferometer system for direct measurement of protrusion defect on LCD glass substrate”, Samsung Corning Precision Glass Co., Ltd

2004.12. ~ 2008.9.

“Development of on-machine measurement technology and optimal polishing process for 12 inch silicon bare wafer”, Ministry of Knowledge Economy

2006.1.10 ~ 2006.2.18

Winter Institute program, Dimensional Standards Section/Lengths & Dimensions Division /NMIJ/AIST, Tsukuba, Japan

## PUBLICATIONS

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### *Peer Reviewed International Journal Papers*

- **J. Park**, J. You, and S.-W. Kim, “Vibration-desensitized fiber-diffraction interferometer for industrial surface measurement,” *CIRP Annals - Manufacturing Technology*, **58**(1), pp. 473-476 (2009).
- **J. Park** and S.-W. Kim, “Vibration-desensitized interferometer by continuous phase shifting with high speed fringe capturing,” *Opt. Lett.* **35**(1), 19-21 (2010).
- **J. Park** and S.-W. Kim, “Active autofocus control using source dithering technique based on fibre-optic confocal principle,” *Int. J. Precis. Eng. Manuf.* **12**(4), 733-736 (2011).
- S. Maeng, **J. Park**, B. O, and J. Jin, "Uncertainty improvement of geometrical thickness and refractive index measurement of a silicon wafer using a femtosecond pulse laser," *Opt. Express*, **20**(11), 12184-12190 (2012).
- **J. Park**, L. Chen, Q. Wang, and U. Griesmann, "Modified Roberts-Langenbeck test for measuring thickness and refractive index variation of silicon wafers," *Opt. Express*, **20**(18), 20078-20089 (2012).
- **J. Park**, J. Jin, J. W. Kim, and J.-A. Kim, “Measurement of thickness profile and refractive index variation of a silicon wafer using the optical comb of a femtosecond pulse laser,” *Opt. Commun.* **305**, 170-174 (2013).
- J. Jin, S. Maeng, **J. Park**, J.-A. Kim, and J. W. Kim, “Fizeau-type interferometric probe to measure geometrical thickness of silicon wafers,” *Opt. Express*, **22**(19), 23427-23432 (2014).
- **J. Park**, J. Bae, J. Jin, J.-A. Kim, and J. W. Kim, “Vibration-insensitive measurements of the thickness profile of large glass panels,” *Opt. Express* **23**(26), 32941-32949 (2015).
- **J. Park**, J. Jin, J.-A. Kim, and J. W. Kim, “Absolute distance measurement method without non-measurable range and directional ambiguity based on a spectral-domain interferometer using the optical comb of the femtosecond pulse laser,” *Appl. Phys. Lett.* **109**, 244103:1-5 (2016).

- H. Ahn, **J. Park**, J.-A. Kim, and J. Jin, “Optical Fiber-based Confocal and Interferometric System for Measuring the Depth and Diameter of Through Silicon Vias,” *J. Lightw. Technol.* **34**, 5462-5466 (2016).
- J. Bae, **J. Park**, H. Ahn, and J. Jin, “Total physical thickness measurement of a multi-layered wafer using a spectral-domain interferometer with an optical comb,” *Opt. Express* **25**(11), 12689-12697 (2017).
- H. Ahn, J. Bae, **J. Park**, and J. Jin, “A Hybrid Non-destructive Measuring Method of Three-dimensional Profile of Through Silicon Vias for Realization of Smart Devices,” *Sci. Rep.* **8**, 15342 (2018).
- **J. Park**, J. Bae, J.-A. Kim, and J. Jin, “Physical thickness and group refractive index measurement of individual layers for double-stacked microstructures using spectral-domain interferometry,” *Opt. Commun.* **431**, 181-186 (2019).
- **J. Park**, J.-A. Kim, H. Ahn, J. Bae, and J. Jin, “A Review of Thickness Measurements of Thick Transparent Layers Using Optical Interferometry,” *Int. J. Precis. Eng. Manuf.* **20**(3), 463-477 (2019).
- **J. Park**, H. Mori, and J. Jin, “Simultaneous measurement method of the physical thickness and group refractive index free from a non-measurable range,” *Opt. Express* **27**(17), 24682-24692 (2019).

#### *Peer Reviewed Domestic Journal Papers*

- **J. Park**, S.-W. Kim, and H. Lee, “Autofocus of Infinity-Corrected Optical Microscopes by Confocal Principle and Fiber Source Modulation Technique,” *Journal of Optical Society of Korea* **15**(6), pp. 583-590 (2004).
- S. Hong, S. Yun, B. Woo, **J. Park**, and J. Jin, “Development of a High-Speed Depth Measuring Machine for through Silicon Vias on a 300 mm Silicon Wafer,” *J. Korean Soc. Precis. Eng.* **34**(5), 311-314 (2017).
- Y. Kim, H. Ahn, **J. Park**, and J. Jin, “Development of Spectral-Domain Interferometer Having Dual Reference Paths based on Polarization for Measuring Absolute Distances,” *J. Korean Soc. Precis. Eng.* **37**(3), 181-186 (2020).
- S. Eom, **J. Park**, J. Jin, and Y. Son, “Feasibility Study on Dimensional Standard for Material Extrusion Type 3D Printed Structures,” *J. Korean Soc. Precis. Eng.* **37**(4), 241-246 (2020).

#### *Patents Published*

- S.-W. Kim, **J. Park**, and H. Lee, “Apparatus and Method for Autofocus of Optical Microscopes by Confocal Principle,” KR 2006-0602915 B1, Jul. 12, 2006. (Dead)
- S.-W. Kim, H. Kihm, and **J. Park**, “Vibration insensitive Interferometer,” KR 2006-0017143 A, Feb. 23, 2006. (Dead)
- C. Lee, T. Kim, T. Keem, K. Kim, S.-W. Kim, H. Kihm, and **J. Park**, “Apparatus for measuring a shape of a surface discontinuity in a glass substrate and method thereof,” KR 2006-0074780 A, Jul. 3, 2006.
- S.-W. Kim, H. Kihm, and **J. Park**, “Vibration-insensitive interferometer,” US 7,405,830 B2, Jul. 29, 2008. (Dead)
- **J. Park** and S.-W. Kim, “Vibration-insensitive interferometer using high-speed camera and continuous phase-scanning method,” KR 10-1085061-00-00, Nov. 14, 2011.
- **J. Park** and S.-W. Kim, “Vibration-insensitive interferometer using high-speed camera and continuous phase-scanning method,” US 8,144,335 B2, Mar. 27, 2012. (Dead)

- J. Jin, S. Lee, J. W. Kim, J.-A. Kim, and **J. Park**, “홀 형상 및 깊이 고속 측정 방법,” 10-2012-0072409, July 3<sup>rd</sup>, 2012.
- J. Jin, **J. Park**, J. W. Kim, and J.-A. Kim, “렌즈형 광섬유를 이용한 미세홀 깊이 측정 장치 및 방법,” 10-1390749, Apr. 24<sup>th</sup>, 2014.
- J. Jin, J. W. Kim, J.-A. Kim, C.-S. Kang, **J. Park**, “광섬유 패를 공진기를 이용한 스펙트럼 영역 간섭 장치 및 스펙트럼 영역 간섭 방법,” 10-1451176, Oct. 8<sup>th</sup>, 2014.
- J. Jin, **J. Park**, J. W. Kim, J.-A. Kim, C.-S. Kang, “FBG를 이용한 스펙트럼 영역 간섭 장치 및 스펙트럼 영역 간섭 방법,” 10-1456545, Oct. 24<sup>th</sup>, 2014.
- J. Lee, J. W. Kim, **J. Park**, J. Woo, “광주파수 및 강도 변조 레이저 흡수 분광 장치 및 광주파수 및 강도 변조 레이저 흡수 분광 방법,” 10-1632269, Jun. 15<sup>th</sup>, 2016.
- J. Lee, J. W. Kim, **J. Park**, J. Woo, “원격 검출용 주파수 및 강도 변조 레이저 흡수 분광장치 및 방법,” 10-1642473, Jul. 19<sup>th</sup>, 2016.
- **J. Park**, J. Jin, J. W. Kim, J.-A. Kim, “대형 유리기판의 물리적 두께 프로파일 및 굴절률 분포 측정을 위한 공간섭계 시스템,” 10-1733298, Apr. 27<sup>th</sup>, 2017.
- **J. Park**, J. Jin, J.-A. Kim, J. W. Kim, “측정 불가 구간과 방향 모호성이 없는 절대거리 측정을 위한 분광형 간섭계 시스템,” 10-1792632, Oct. 26<sup>th</sup>, 2017.
- J. Jin, **J. Park**, J. W. Kim, J.-A. Kim, “광픽셀어레이를 이용한 박막과 후막의 두께 및 삼차원 표면 형상 측정 광학 장치,” 10-1987402, Jun. 3<sup>rd</sup>, 2019.
- J. Jin and **J. Park**, “공기 부상 박막 두께 측정 장치”, 10-2039426, Oct. 28<sup>th</sup>, 2019.

## AWARD

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ASPEN 2009 General Chair Prize Best Paper Award (Nov. 12, 2009)

Prize for Encouragement, 5<sup>th</sup> Inside Edge Paper Contest (2009, SAMSUNG ELECTRO-MECHANICS)