

Woojin Jeon Ph.D

Associate Professor • Kyung Hee University

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ADDRESS 1732 Deogyong-daero, Giheung-gu, Yongin-si, Gyeonggi 17104 Rep. of Korea

EDUCATION	Seoul National University	Rep. of Korea
	Ph.D. of Materials Science and Engineering	Sep. 2011 - Feb. 2015
	Advisor: Prof. Cheol Seong Hwang	
	<ul style="list-style-type: none">• Thesis: Evaluating Dielectric Thin Film for Next-generation DRAM Capacitor using Al-doped TiO₂• 'Global Ph.D Fellowship' scholarship granted by Korean government, covering full tuition and fees and monthly allowance for first two years	
	Korea Adv. Institute of Science and Technology (KAIST)	Rep. of Korea
	M. Sci. of Materials Science and Engineering	Mar. 2005 - Feb. 2007
	Advisor: Prof. Sang-Won Kang	
	<ul style="list-style-type: none">• Thesis: A study on the TiO₂/Al₂O₃/TiO₂ thin film for DRAM capacitor dielectric by plasma-enhanced atomic layer deposition	
	Korea Adv. Institute of Science and Technology (KAIST)	Rep. of Korea
	B. Sci. of Materials Science and Engineering	Mar. 2001 - Feb. 2005
	<i>cum laude</i>	
RESEARCH EXPERIENCE	Kyung Hee University	Rep. of Korea
	Associate Professor	Sep. 2022 - present
	Assistant Professor	Sep. 2018 - Aug. 2022
	Dankook University	Rep. of Korea
	Assistant Professor	Mar. 2018 - Sep. 2018
	LTM-CNRS / CEA-LETI / Grenoble Alpes Univ.	Grenoble, France
	Postdoctoral Fellow	Jan. 2017 - Dec. 2017
	Advisor: Prof. Christophe Vallée, Prof. Patrice Gonon	
	Seoul National University	Rep. of Korea
	Postdoctoral Fellow	Jul. 2016 - Dec. 2016
Advisor: Prof. Cheol Seong Hwang		
Samsung Advanced Institute of Technology (SAIT)	Rep. of Korea	
Research Staff Member	Apr. 2015 - May 2016	
Device & System Research Center		
Korea Institute of Science and Technology (KIST)	Rep. of Korea	
Research Scientist	Mar. 2010 - Aug. 2011	
Polymer Hybrid Materials Center		
SK Hynix (former Hynix Semiconductor Inc.)	Rep. of Korea	
Assistant Research Engineer	Jan. 2007 - Feb. 2010	
R&D for Flash Memory Process		

RESEARCH AREA & INTEREST

- **Semiconductor device physics** especially on dielectric and ferroelectric materials and interface of dielectric and metal
- **Atomic layer deposition process development** for various high-*k* materials, and large-area deposition for the 2-dimensional materials
- Novel materials and devices development by the **organic-inorganic hybridization**
- Thin films technology for **next-generation memory** applications (DRAM, Flash memory, ReRAM, Memristor...)

SERVICE

Materials Research Society of Korea (MRS-K)
Committee Member of Editorial Board

Jan. 2019 - present

PUBLICATION

- ORCID: 0000-0002-8477-9124 (<https://orcid.org/0000-0002-8477-9124>)
- ResearcherID: P-7914-2016 (<http://www.researcherid.com/rid/P-7914-2016>)
- Google Scholar: https://scholar.google.co.kr/citations?user=Wx_4c4EAAAAJ&hl=en

Selected Publications

- Ye Won Kim, Ae Jin Lee, Dong Hee Han, Dae Cheol Lee, Ji Hyeon Hwang, Youngjin Kim, Songyi Moon, Taewon Youn, Minyung Lee, and **Woojin Jeon***
"Reliable high work-function molybdenum dioxide synthesis via template-effect-utilizing atomic layer deposition for next-generation electrode applications"
***Journal of Materials Chemistry C* 10, 12957 (Sep. 2022) /**
Highlighted in Inside Front Cover Article
- Yeonchoo Cho, Sanghyeon Kim, Byung Seok Kim, Youngjin Kim, and **Woojin Jeon**
"Modulation of the adsorption chemistry of precursor in atomic layer deposition to enhance the growth per cycle of TiO₂ thin film"
***Physical Chemistry Chemical Physics* 23(4), 2568 (Jan. 2021) /**
Highlighted in Back Cover Article
- **Woojin Jeon***,
[REVIEW] "Recent advances in the understanding of high-*k* dielectric materials deposited by atomic layer deposition for dynamic random-access memory capacitor applications"
***Journal of Materials Research* 35(7), 775 (Apr. 2020)**
- **Woojin Jeon**, Yeonchoo Cho, Sanghyun Jo, Ji-Hoon Ahn, and Seong-Jun Jeong,
"Wafer-Scale Synthesis of Reliable High-Mobility Molybdenum Disulfide Thin Films via Inhibitor-Utilizing Atomic Layer Deposition"
***Advanced Materials* 29(47), 1703031 (Dec. 2017) /** **Highlighted in Front Cover Article**
- Dong Hee Han, Seungwoo Lee, Ji Hyeon Hwang, Youngjin Kim, Marceline Bonvalot, Christophe Vallée, Patrice Gonon, and **Woojin Jeon***,
"An Empirical Investigation on the Effect of Oxygen Vacancy in ZrO₂ Thin Film on the Frequency-Dependent Capacitance Degradation in the Metal-Insulator-Metal Capacitor"
***IEEE Transactions on Electron Devices* 68(11), 5753-5757 (Sep. 2021)**
- Ae Jin Lee, Byung Seok Kim, Ji Hyeon Hwang, Youngjin Kim, Hansol Oh, Yong Joo Park, and **Woojin Jeon***,
"Controlling the crystallinity of HfO₂ thin film using the surface energy-driven phase stabilization and template effect"
***Applied Surface Science* 590 153082 (July 2022)**
- Youngjin Kim†, **Woojin Jeon†**, Minsung Kim, Jong Hyuk Park, Cheol Seong Hwang*, and Sang-Soo Lee*,
"Modulated filamentary conduction of Ag/TiO₂ core-shell nanowires to impart extremely sustained resistance switching behavior in a flexible composite"
***Applied Materials Today* 19, 100569 (Jun. 2020) †These authors are equally contributed to this work.**

SHORT BIO

Professor Woojin Jeon received his bachelor's and master's degrees from the Department of Materials Science and Engineering at KAIST in 2005 and 2007, respectively, and his Ph.D. degree in the Department of Materials Science and Engineering at Seoul National University in 2015.

His current research interests focus on semiconductor materials, devices, and processing including high-k dielectrics, electrode film, 2D materials, ALD process, DRAM, RRAM, etc. from his various research experiences in domestic and foreign research institutes such as KIST and CNRS/CEA-LETI as well as industries such as SK Hynix and Samsung Advanced Institute of Technology.

He is currently serving as an associate professor in the Department of Advanced Materials Engineering for Information and Electronics at Kyung Hee University. His research has also been focusing on fostering semiconductor talent through industry-academia cooperation along with a strong collaboration with semiconductor companies such as Samsung Electronics, SK Hynix, and LG Display, as well as equipment companies such as Wonik IPS, Jusung Engineering, and Eugene Tech, and material companies such as SK Trichem and UP Chemical.