

#ICMolTalks

**Dr. Tae-Woo Lee****Dept. Materials Science and Engineering,  
Seoul National University, Korea.**March 6<sup>th</sup> - 11:30h

📍 Assembly Hall - ICMol

**Abstract****Halide Perovskites as Next-Generation Light Emitters**

Metal halide perovskites have gained prominence as light emitters for next-generation optoelectronics. In particular, perovskite nanocrystals (PNCs) exhibit quantum confinement, which enhances radiative recombination. Here, we highlight key materials strategies for achieving highly efficient and stable PNCs, including lattice stabilization and defect passivation, grain-size and morphology control coupled with core-shell formation, and a pseudo-emulsion-based cold-injection synthesis method. Additionally, we introduce multilayer-shelled PNCs that enable thermally and humidity-robust color-conversion displays, addressing critical commercial stability requirements.

**Biography**

**Tae-Woo Lee** is a professor in the Department of Materials Science and Engineering at Seoul National University, Korea, and the CEO of SN Display Co., Ltd., a display technology startup. He received his Ph.D. in Department of Chemical & Biomolecular Engineering from KAIST in 2002 and conducted postdoctoral research at Bell Laboratories, USA. He later worked at Samsung Advanced Institute of Technology and was a faculty member at POSTECH until 2016. His research focuses on organic semiconductors, metal halide perovskites, and carbon-based materials for displays, neuromorphic electronics, bioelectronics, and energy devices. He has published over 328 papers in leading journals including Science, Nature, Nature Photonics, Nature Nanotechnology, and Advanced Materials, and holds more than 466 patents. His work bridges fundamental science and commercialization, leading to high-performance optoelectronic technologies. He has received major awards such as the Korea Young Scientist Award (Presidential Award, 2008), the Korean Engineering Award (Presidential Award, 2021), and the Kyung-Ahm Prize (2023). He is elected Fellow of the Korean Academy of Science and Technology (2021), Materials Research Society (MRS) (2020), and SPIE (2024). His company, SN Display, received a CES Innovation Award in 2026. He served as a Meeting Chair of the 2023 MRS Spring Meeting and currently serves as President of the Korean Graphene Society (2026-) and Vice President of the Korea Flexible & Printed Electronics Society. He also serves on editorial boards of journals including Advanced Materials, EcoMat, and Organic Electronics.