



Prof. Jae-Hyun Lee

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Jae-Hyun Lee received his B.S. in 2002 from Korea University and his Ph.D. in 2011 from Seoul National University, both in Materials Science and Engineering. Then he worked as a post-doctoral fellow in Institut für Angewandte Photophysik (IAPP) at Technische Universität Dresden (TU Dresden). He is currently a professor in the Department of Creative Convergence Engineering at Hanbat National University.

Current research in Jae-Hyun Lee's team focuses on three main topics:

1. Charge dynamics and interfacial physics in organic devices.

Charge injection, transport, and accumulation processes in organic light-emitting diodes (OLEDs), with particular emphasis on interfacial charge effects. Using impedance spectroscopy, they elucidate degradation mechanisms and efficiency losses, including exciton-polaron quenching, spectroelectrochemistry and related interfacial phenomena.

2. Advanced device physics.

Sin-dependent emission and energy-level modulation in organic semiconductors. Using techniques such as magneto-electroluminescence (magneto-EL) and magneto-photoluminescence (magneto-PL), they demonstrate that electric fields and magnetic interactions can control emission characteristics, providing insight into fundamental OLED operation.

3. Optical and protective functional films.

Parylene films for light extraction, flexible substrates, and device encapsulation. These include fast-deposited transparent parylene substrates for flexible OLEDs, micro-lens-array-patterned parylene films for enhanced light outcoupling, and parylene-inorganic multilayer passivation structures that significantly improve device lifetime and environmental stability.