세미나 초록

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발표 주제	Defect engineering of perovskites for next-generation optoelectronics
발표 내용	Metal-halide perovskites have emerged as a highly promising material for next-generation optoelectronic devices such as light-emitting diodes (LEDs) and solar cells. Over the past decade, significant progress has been made in terms of device performance, but the issue of internal defects still poses a challenge for their practical application. Defects in perovskites can result in quenching of charge carriers via non-radiative recombination channels, leading to degraded optoelectronic performance. Besides, the defects migrate to lead to peculiar electronic and optical behavior of the devices such as current-voltage hysteresis and luminance overshooting, which may seriously impact the stability of the perovskite optoelectronic devices accelerating their degradation. To address these challenges, various strategies using different classes of materials have been proposed and investigated. In this talk, we discuss various approaches for defect passivation in metal-halide perovskites, including the use of organic chemical reagents and the incorporation of low-dimensional perovskites. We particularly focus on incorporating perovskite polytypes such as a corner-sharing 6H phase to achieve coherent intervention at halide position effectively suppressing halide defect formation. Our results demonstrate that these defect engineering strategies improve optoelectronic characteristics and stability of LEDs and solar cells.