

세미나 초록

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발표 주제	Elucidating improved optoelectronic properties in mixed-perovskite thin films through multiple time-resolved spectroscopy
발표 내용	<p>Recently, the power conversion efficiency of perovskite solar cells (PSCs) has been achieved by over 26%. One of the most effective strategies for achieving high-efficiency PSCs is compositional engineering. However, the photo-physics of mixed perovskite thin films and the origin of improved device performance have not yet been fully understood. In this work, we deeply explored the role of an additive in the mixed perovskite thin film. The inherent crystalline disorder of perovskite was effectively compensated by the counteraction of the additive, resulting in reduced Urbach energy, uniform PL intensity, and smooth Raman spectra. Moreover, by combining transient absorption spectroscopy with optical pump-THz probe spectroscopy, we elucidated various optoelectronic properties, including trap density, charge carrier loss, carrier lifetime, as well as charge transport properties such as effective mobility and diffusion length. By comprehensively understanding the dynamics, we revealed the cross-correlation between crystallinity, optoelectronic properties, and performance of PSCs.</p>