**Towards Stable and Ubiquitous Perovskite Optoelectronics**

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Metal halide perovskite materials have shown versatile functionality for a variety of optoelectronic devices. Remarkable progress in device performance has been achieved for last few years. In particular, a power conversion efficiency of perovskite solar cells has exceeded 24% while an external quantum efficiency of perovskite light emitting diodes (LEDs) has reached 20%. Their high performance in combination with low production cost put the perovskite optoelectronics under serious consideration for possible commercialization. A fundamental question remain unanswered is whether these materials can sustain their optoelectronic properties during harsh and prolonged operational conditions of the devices. A major concern stems from an unprecedented and unique feature of perovskite materials, which is active migration of ionic species (or charged defects). Recent studies have indicated the ion migration might be a limit factor for long-term operational stability of the devices. In this talk, I will present possible approaches to mitigate the issue by crystal growth and structural engineering. I will also briefly discuss the potential routes to realize flexible and stretchable optoelectronic devices towards integrated future electronics such as wearable devices and electronic skins.