

## Synthesis of Cesium Lead Halide Perovskite Nanocrystal using Droplet-based Modular Microfluidic system

강성민, 박범준, 곽철환, 허윤석<sup>†</sup>  
인하대학교  
(yunsuk.huh@inha.ac.kr<sup>†</sup>)

In this study we study the droplet-based modular microfluidic system for the step-wise synthesis and in-situ anion-exchange in highly luminescent perovskite nanocrystals of cesium lead halide. Importantly, microreactor provide small reaction volumes that are more homogeneous with correspond to concentration, temperature, and mass transport, resulting to a better control of the reaction parameters. By introducing the halide ions (i.e.,  $\text{Cl}_3^-$  and  $\text{I}_3^-$ ) in the primary generated  $\text{CsPbBr}_3$  colloidal solution, the bright photoluminescence can be changed over the entire visible spectral region simultaneously. Furthermore, we demonstrate that fast anion-exchange can be generated various types of perovskite nanocrystals with uniform morphology and high monodispersity. We believe that the broad accessible emission range and in-situ anion exchange make various forms of perovskite an ideal platform for fundamental optoelectronic researches and the investigation of future devices.