

Temperature-dependent cation exchange reaction in colloidal II-VI core/shell nanoplatelets

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Colloidal II-VI core/shell nanoplatelets have excellent optical properties such as narrow emission linewidth, suppressed Auger recombination and polarized emission. However, most research has been focused on Cd chalcogenide core based NPLs due to the synthetic limitation, and thus their emission wavelength is limited from red-to-green. In this study, we synthesized CdZnSe core based core/shell NPLs by using cation exchange reaction which is a useful method for synthesizing the complex heterostructured nanocrystals. We systematically investigated the temperature dependence of cation exchange reaction and the resulting changes in the composition, structure and optical properties. Based on this, we successfully extend the emission wavelength range of II-VI core/shell NPL to blue.