

CdSe Nanoplatelets with Controlled Morphology and Their Polarized Emission

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CdSe Nanoplatelets (NPLs) under one dimensional quantum confinement effect along their thickness direction have unique optical properties such as giant oscillator strength, narrow full width at half maxima (FWHM) around 10 nm and polarized emission. Because of these properties CdSe NPLs have received the attention.

In this study, we controlled the lateral growth of CdSe nanoplatelets (NPLs) by varying the ratio of precursors. The aspect ratio of plane is changed from 1 : 3.8 to 1 : 1.2 by precise control. We systematically investigated the factor which can affect the lateral growth of CdSe NPLs and their mechanism. Also, we studied about the property changes caused by morphology control. Normally, the optical properties (absorption, emission, etc.) are depends on thickness of NPLs but we found that their polarized emission is affected by morphology. We measured fluorescence anisotropy of CdSe NPLs with different morphology and high aspect ratio showed high anisotropy value. Based on this result, we have been studying correlation between morphology of CdSe NPLs and their polarized emission.