Cs_4PbBr_6-$CsPbBr_3$ Nanoheterostructures

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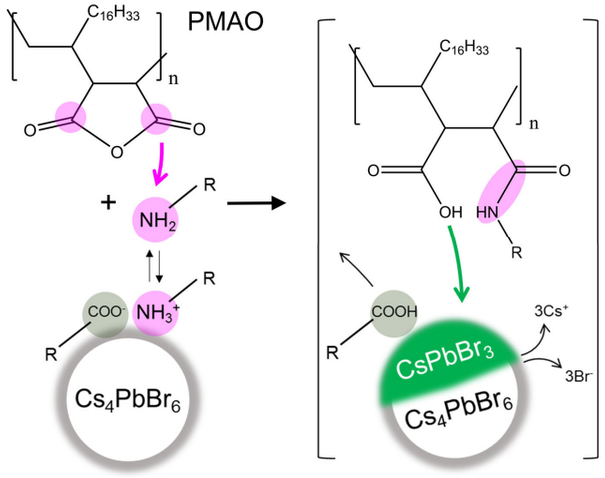
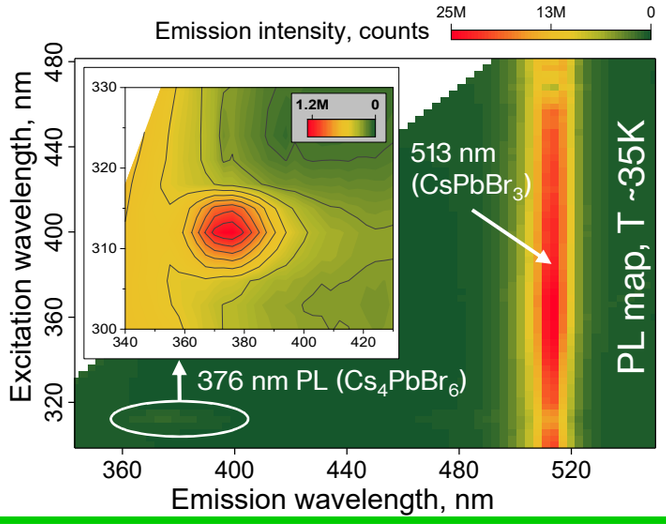
Chemistry



Oleylamine ligands from the surface of Cs_4PbBr_6 nanocrystals react with a co-polymer of maleic anhydride (PMAO), causing nanocrystal transformation: $Cs_4PbBr_6 \rightarrow CsPbBr_3$

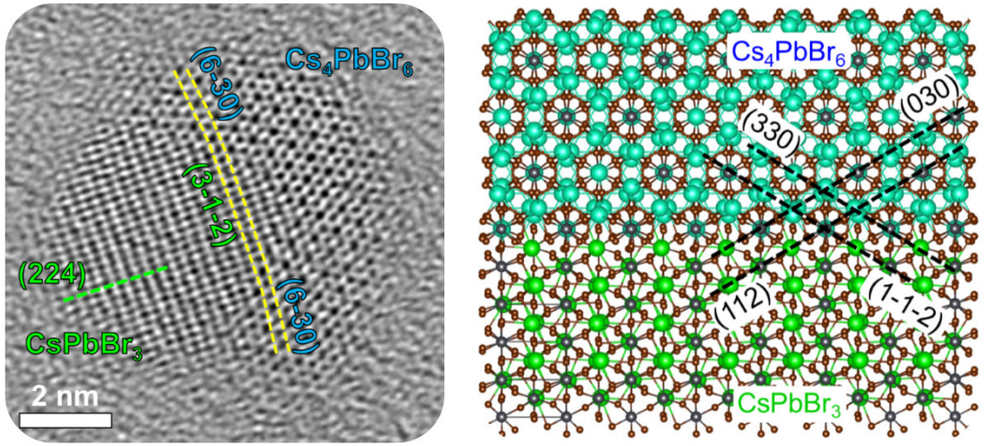
Properties



Cs_4PbBr_6-$CsPbBr_3$ nanocrystals show dual emission at T~35 K under ~312 nm excitation with an indication of the energy transfer (see paper for additional details).

Structure

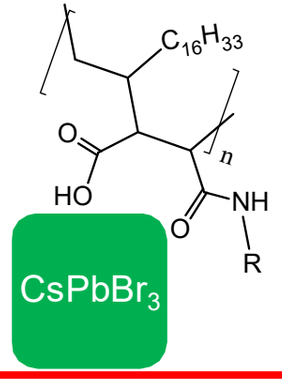
High-Resolution Electron Microscopy (HRTEM)



Significance

1) Transformation $Cs_4PbBr_6 \rightarrow CsPbBr_3$ under mild conditions provides access to heterostructures, which could be model systems for, e.g., green-emitting [or wide-gap] defects in Cs_4PbBr_6 [in $CsPbBr_3$].

2) At low T, both components of Cs_4PbBr_6-$CsPbBr_3$ nanocrystals emit, creating opportunities for spectroscopic studies of the energy transfer between them, and novel single particle devices.



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