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Photoluminescence properties of CdTe/CdSe core-shell type-II quantum dots CHUN-HSIUNG WANG, TZUNG-TE CHEN, Department of Physics, National Taiwan University, Taipei 106, Taiwan, KEE-WEE CHEN, YANG-FANG CHEN, Department of Physics, National Taiwan University, Taipei 106, Taiwan — We report investigations on the optical properties of type-II CdTe/CdSe core-shell quantum dots. By varying the core size, we provide an elegant way to verify that the detected emission signal indeed arises from type-II band alignment. The photoluminescence (PL) peak energy increases with a third root of the excitation power. Both of the PL peak energy and linewidth exhibit unique temperature dependence. All these observations can be rationalized by the band bending effect resulting from the spatially separated photo-excited carriers in a type-II band alignment.

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