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Competition between applied and exchange magnetic fields in (Zn,Mn)Se/ZnTe quantum dots[1] BIPLOB BARMAN, Y. TSAI, T. SCRACE, I. ZUTIC, B.D. MCCOMBE, A. PETROU, SUNY Buffalo, W-C CHOU, M-H TSOU, National Chiao Tung University, Taiwan, C-S YANG, Graduate Institute of Electro-Optical Engineering, Tatung University, Taiwan, I.R. SELLERS, University of Oklahoma, R. OSZWALDOWSKI, South Dakota School of Mines and Technology , SUNY BUFFALO COLLABORATION, NATIONAL CHIAO TUNG UNIVERSITY, TAIWAN COLLABORATION, GRADUATE INSTITUTE OF ELECTRO-OPTICAL ENGINEERING, TATUNG UNIVERSITY, TAIWAN COLLABORATION, UNIVERSITY OF OKLAHOMA COLLABORATION, SOUTH DAKOTA SCHOOL OF MINES AND TECHNOLOGY COLLABORATION — We have measured the peak energy of the photoluminescence (PL) emission and its circular polarization from type II (Zn,Mn)Se/ZnTe Quantum Dot structures in the Faraday and Voigt geometries. In the Faraday geometry the PL energy shows a 6 meV red shift at B=6 tesla. This result verifies that the holes are confined in the non-magnetic ZnTe QDs, while the electrons move in the magnetic (Zn,Mn)Se matrix. The PL circular polarization saturates at 45%. In the Voigt geometry, the circular polarization is near-zero and the red shift is 2 meV. These results are discussed using a model that takes into account that electrons are influenced by the combination of the externally applied magnetic field and the exchange field due to the interaction between the Mn-spins and the carriers.

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