Abstract Submitted
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Magnetization studies of II-VI semiconductor columnar quantum dots with type-II band alignment[1] M. EGINLIGIL, I.R. SELLERS, B.D. MCCOMBE, University at Buffalo, W-C CHOU, National Chiao Tung University, Taiwan, Republic of China, I.L. KUSKOVSKY — We report SQUID magnetization measurements of MBE-grown type-II, II-VI semiconductor quantum dot (QD) samples, with and without Mn incorporation. In all samples, the easy axis is out-of-plane, possibly due to columnar QD formation that arises from strain interaction between adjacent *thin* dot-containing layers. In addition, both types of QDs display a non-zero spontaneous magnetic ordering at 300 K. One set of samples consists of five-layers of (Zn,Mn)Te/ZnSe with a nominal (Zn,Mn)Te thickness of 3 nm, and ZnSe spacer thickness of 5 nm and 20 nm. These *magnetic* QD samples show magnetization vs. temperature behavior that can be interpreted in terms of two independent FM phases characterized by transition temperatures $T_{C1} < T_{C2}$. A sample containing no Mn consists of 130 ZnTe/ZnSe layers, which forms Zn(Se,Te) QD layers separated by ZnSe spacers. Evidence of ferromagnetism is also seen in this structure, but the spontaneous magnetization is much weaker. For this sample only *one phase* is seen with T_C above 300 K. Results will be discussed in terms of magneto-polaronic effects and defect-level induced ferromagnetism.

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