Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Robust Ferromagnetism in type-II (ZnMn)Te Quantum Dots I.R. SELLERS[1], V.R. WHITESIDE, M. EGINLIGIL, R. OSZWALDOWSKI, I. ZUTIC, A. PETROU, B.D. MCCOMBE, University at Buffalo, W.C. CHOU, National Chiao Tung University, Tawian — Temperature dependant magneto-photoluminescence studies of type-II diluted magnetic semiconductor (ZnMn)Te/ZnSe quantum dots (QDs) will be presented. As expected, the exchange interaction between the Mn spins and charge carriers results in a strong optical polarization of the luminescence at low temperature in a magnetic field. In addition, however, a zero magnetic field optical polarization degree of 7% is observed in the photoluminescence (PL). This polarization is shown to be independent of temperature until 180 K, and is only quenched by the loss of PL intensity as the type-II QDs are ionized. In this submission, we will present continuous wave and temporal PL measurements which indicate that the finite polarization, at zero magnetic field results from the formation of exciton magneto polarons (EMPs). Furthermore, we will show that these EMPs are remarkably robust with binding energies in excess of 40 meV, far larger than any previously studied EMP system. The origin of this behavior will be discussed. Work supported in part by CSEQuIN and the Office of the Provost at the U. Buffalo.

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Date submitted: 25 Nov 2008 Electronic form version 1.4