

Abstract Submitted
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Efficient injection of spin-polarized electrons from MnAs contacts into GaAs quantum well LEDs¹ EVERETT FRASER, SHRIDHAR HEGDE, LARS SCHWEIDENBACK, ANDREAS RUSS, ATHOS PETROU, HONG LUO, University at Buffalo, The State University of New York, GEORGE KIOSEOGLU, University of Crete — Recent studies of ferromagnetic MnAs have revealed a wide range of properties desirable for spintronic applications. In this work, ferromagnetic MnAs contacts have been used to inject spin polarized electrons into AlGaAs(n)/GaAs(i)/AlGaAs(p) light emitting diodes. The band-edge electroluminescence emitted from these devices has a saturation circular polarization of 26% at 7K. The circular polarization was found to track the out of plane magnetization of MnAs, confirming spin injection. Using optical pumping measurements, the corresponding electron spin polarization was determined to be 52%. Emission persists up to room temperature, with a saturation circular polarization of 6%. The improved performance over similar structures is attributed to the use of MnAs/AlGaAs Schottky barrier tunneling and minimal interdiffusion of Mn ions near the materials interface.

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