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**Tunneling Magnetoresistance in Magnetic Tunnel Junctions with a (Zn,Cr)Te electrode.**[1] WEIGANG WANG, Physics and Astronomy, University of Delaware, CHAOYING NI, Materials Science and Engineering, University of Delaware, TAKAHIRO MORIYAMA, JUN WAN, ED NOWAK, JOHN XIAO, Physics and Astronomy, University of Delaware — Tunnel magnetoresistance (TMR) of 21% is observed at low temperature in hybrid magnetic tunnel junctions composed of a magnetic semiconductor (Zn,Cr)Te and Co electrodes separated by a Al2O3 barrier. The MTJs were deposited in a magnetron sputter system with structure as Si / (Zn,Cr)Te(50)/ Al (0.75 – 2.75)+oxidation / Co (15) / Cu (70), where the numbers in parentheses are layer thickness in nanometers. The Cr atomic concentration in the (Zn,Cr)Te layer is controlled to be at 20%. The TMR value decreases with increasing temperature but sustains up to 250K, which is a considerable improvement over the MTJs with semiconductor electrodes in previous studies. The temperature and bias dependence of TMR are understood in the context of spin polarized tunneling and spin independent hopping through impurity states. The observed zero bias anomaly in the dI/dV curve is correlated to the existing of a soft coulomb gap at the $E_F$ in the (Zn,Cr)Te electrode which leads to $T^{-1/2}$ dependence of logarithmic resistance, logR, at low temperature. The TMR characteristic can be significantly improved by optimizing the interface and barrier quality

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