Magnetic field induced Raman excitations in $Zn_{1-x}Cr_xTe$, $Cd_{1-x}Cr_xTe$ and $Cd_{1-x}Cr_xSe$[1] X. LU, S. TSOI, I. MIOTKOWSKI, S. RODRIGUEZ, A.K. RAMDAS, Purdue Uni., H. ALAWADHI, Sharja Uni., T.M. PEKAREK, Uni. of North Florida — Raman electron paramagnetic resonance(Raman-EPR) of the transitions due to the $\Delta m_s = \pm 1$ spin-flip of the 3d electrons of Cr^+ in $Zn_{1-x}Cr_xTe$ and $Cd_{1-x}Cr_xTe$ are observed at ω_{PM}=g(Cr^+)μ_BB, g(Cr^+)=2.0041$\pm$ 0.0095 and 2.0039 $\pm$ 0.0093, respectively. Raman lines appear at $\omega_{LO}\pm$ nω_{PM}, n=1,2 and 3, resulting from the strong FrÖhlich interaction with LO phonon. The intensity of ω_{PM} can be enhanced through the photo-generation process $Cr^{2+} \rightarrow Cr^+$; photoluminescence spectra reveal signatures of excitons bound to Cr^+ acceptors in $Zn_{1-x}Cr_xTe$. The resonance profile of ω_{PM}shows that the strong resonant enhancement is mediated via an exciton bound to a neutral acceptor. Spin flip Raman scattering (SFRS) at ω_{SFR} from donor-bound electrons in $Cd_{1-x}Cr_xSe$, as well as in pure CdSe, are observed, in turn yielding the s-d exchange energy. The magnetization of $Cd_{1-x}Cr_xSe$ is intermediate between van Vleck and a B_2 Brillouin paramagnetism. The linear dependence of the s-d exchange energy as a function of magnetization yields the s-d exchange constant in $Cd_{1-x}Cr_xSe$, αN_0=(213.7 $\pm$13) meV.

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