Electromagnons in multiferroic RMn$_2$O$_5$ compounds$^1$ ANDREI SUSHKOV, ROLANDO VALDES AGUILAR, DENNIS DREW, University of Maryland, SOONYONG PARK, SANG-WOOK CHEONG, Rutgers University — Electromagnons, or magnons with electric dipole activity, were observed so far only in some multiferroic RMnO$_3$ and RMn$_2$O$_5$ compounds. Electromagnons in these two systems have essentially different properties. We try to take a systematic look at electromagnons in the whole RMn$_2$O$_5$ family. In this talk, we report the results of detailed infrared study$^*$ of YMn$_2$O$_5$ and TbMn$_2$O$_5$ as well as some results on other RMn$_2$O$_5$ compounds. We found that electromagnons in the RMn$_2$O$_5$ family is a property of the manganese sublattices. The electromagnon spectrum consists of a set of well defined far infrared (3-80 cm$^{-1}$) modes which are just slightly broader than uncoupled magnons. No obvious changes in the phonon spectrum have been observed. Polarization of electromagnons is in agreement with the dominating symmetric exchange. * A. B. Sushkov, R. Valdes Aguilar, S. Park, S-W. Cheong, and H. D. Drew, cond-mat/ 0608707.

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