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Magnetodielectric coupling in Mn_3O_4 and MnCr_2O_4 R. TACKETT, Wayne State University, E. TOBERER, R. SESHADRI, UC Santa Barbara, G. LAWES, Wayne State University — We have investigated the temperature and magnetic field dependent dielectric constants of the ferrimagnetic insulators Mn_3O_4 and MnCr_2O_4 . We have also measured the heat capacity and AC magnetic susceptibility through the multiple spin ordering transitions in these materials. At the zero field $T = 42$ K and $T = 35$ K magnetic transitions in Mn_3O_4 we observed sharp drops in the dielectric constant. In an applied field of 5 kOe, Mn_3O_4 shows a positive shift in dielectric constant at the intermediate $T = 40$ K transition in addition to the features observed at zero field. MnCr_2O_4 also shows features in the dielectric constant at the magnetic transitions at $T = 40$ K and $T = 20$ K, though these shifts were approximately 100 times smaller than those observed in Mn_3O_4 . These results will be discussed in the framework of models for coupling the dielectric constant to non-collinear long-range magnetic order.

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