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MAGNETIZATION  
OF  
A SPINEL FERRITE

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### Abstract

A molecular field theory for mixed spinel ferrites is developed which takes into account the disorder caused by the random arrangement of the two types of magnetic ions both of the sublattices of the spinel structure. The case of the mixed state being caused by the incomplete inversion of the two types of ions and the case of the mixed state being caused by the replacement of some of the magnetic ions by nonmagnetic ions are treated separately. It is seen that the expressions for the Curie points of the mixed spinel ferrites are the same for both cases. The expressions for the local field fluctuations are, however, different for the two cases. The temperature behaviors of the configuration averages of the four different spins in  $\text{CoFe}_2\text{O}_4$  are determined. The spontaneous magnetization curve for cobalt ferrite is presented.