# MAGNETOELECTRIC EFFECT OF $Cr_2O_3$

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A formula for the temperature despendent magnetoelectric susceptibility of $Cr_2O_3$ is obtained using the method of Nagai. The three coefficients $a^g$, $a^{LS}$ and $a^J$ which represent respectively the change in the $g$ factor, in the crystal field splitting and in the exchange integral due to the electric field parallel to the easy axis, are determined by comparing the theoretical with experimental susceptibility curves.
The exchange parameters are taken from the low temperature spin wave measurements corrected for the interaction of spin waves according to the theory of Nagai. The obtained values for the dimensionless parameters are: $a^g = 0,0344$, $a^{LS} = -0,240$, $a^J = -0,207$
The RPA calculation repeated using the known exchange parameters gives a quite similar result. From the electric shift in AFMR measured at 4.2K one obtains $a^{LS} = 0,0036$. This great discrepancy may be caused by the temperature dependence of the coefficients.

9.7 cm

13.4 cm

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3. Transition Metals, Alloys and Compounds

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