Abstracts

Ferromagnetic Resonance in Some Polycrystalline Rare Earth Garnets

G.P. Rodrigue, J.E. Pippin, W.P. Wolf and C.L. Hogan. "Ferromagnetic Resonance in Some Polycrystalline Rare Earth Garnets." 1958 Transactions on Microwave Theory and Techniques 6.1 (Jan. 1958 [T-MTT]): 83-91.

Ferromagnetic resonance measurements have been carried out on a series of polycrystalline garnets of composition 5Fe/sub 2/O/sub 3/ · 3M/sub 2/O/sub 3/ with M=Y, Sm, Gd, Dy, Ho, Er, and Yb. These measurements were made over a temperature range from 20°C to the Curie points (approximately 280°C). The variations of line widths and effective g values over this temperature range are reported. Y, Yb, and Sm garnets have g values of approximately 2.0 at room temperature while those of Dy, Ho, and Er are appreciably less than 2.0. High-density yttrium garnet has a line width of approximately 50 oersteds at room temperature; line widths of other members of this series were found to vary from 400 to greater than 3000 oersteds. The effective g value and line width of the gadolinium garnet tend to very high values as its compensation point (17°C) is approached. The narrow line width of the yttrium garnet is found to depend strongly on the density of the sample. When the density decreases from 96 per cent to approximately 92 per cent of the theoretical value, the line width increases from 50 to about 150 oersteds. Several technical applications in which these materials might be particularly advantageous are discussed briefly.

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