Abstract Submitted
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The Origin of Secondary Hematite Phase in Non-stoichiometric Co-ferrite Prepared by Ceramic Method[1] DAVID JILES, Electrical and Computer Engineering Department, Iowa State University, Ames, IA 50011, USA, CA-JETAN NLEBEDIM, Ames Laboratory, US Department of Energy, Ames, IA 50011, USA, ANTHONY MOSES, Wolfson Centre for Magnetics, School of Engineering, Cardiff University, Cardiff CF24 3AA, UK, MAGNETICS RESEARCH GROUP TEAM, MAGNETICS RESEARCH GROUP TEAM, WOLFSON CENTRE FOR MAGNETICS TEAM — Surprising results have shown the formation of a secondary phase of hematite in co-ferrite. Co-ferrite based materials have been increasingly studied for magnetoelastic and magnetoelectric applications. Enhancement of the properties for such applications can be made by cation substitution, heat treatment or processing. Often, samples whose compositions deviate from stoichiometry or targeted compositions are made. It is not yet known, how far from stoichiometric composition one would go to create other phases; which would also affect the properties. This study shows that, when samples are made by the ceramic method, a secondary hematite phase forms with the spinel Co-ferrite phase. The origin of the hematite phase is related to the processing temperature, sintering environment and deviation from stoichiometric composition. Consequently, deviation from targeted or stoichiometric compositions may explain why properties of co-ferrite reported in literature vary.

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