

Supplementary Information

S. H. Oh *et al.* "Incorporation of cobalt ions into magnetoelectric gallium ferrite epitaxial films: tuning of conductivity and magnetization".

Figure S1 shows the X-ray diffraction patterns for Co-doped and undoped GFO with different composition ratios. For GFO:Co (6.9%), additional peaks can be observed at $2\theta = 59$ and 80° . They correspond, respectively, to the (333) and (444) reflections of a spinel phase (ICDD PDF#01-074-2229).

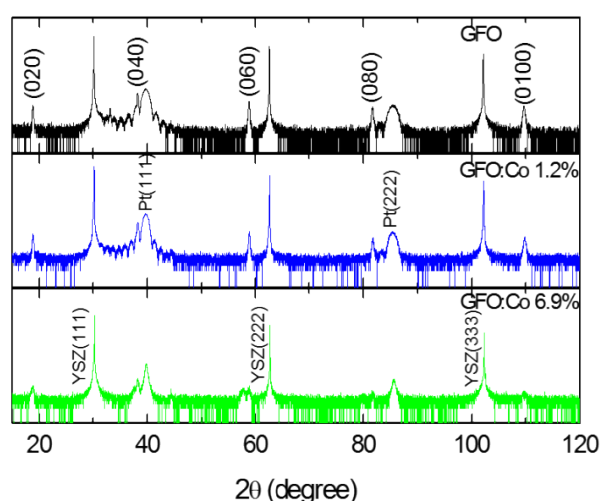


Figure S1. X-ray diffraction patterns of the GFO:Co thin films on Pt/Ti/YSZ(111).

The lattice parameters of Co-doped and undoped GFO, obtained by reciprocal space mapping (RSM), are shown in Table S1. They are not meaningful for the 6.9% composition, because it contains a parasitic phase. The exact composition of the GFO phase in the mixture is therefore not known in this case.

Table S1. Lattice parameters of Co doped GFO with different composition ratios.

Co %	b by θ - 2θ scans (\AA)	b by RSM (\AA)	c by RSM (\AA)	a by RSM (\AA)	Unit cell volume (\AA^3)
0.0	9.424(1)	9.424(1)	5.088(1)	8.788(1)	421.38
1.2	9.418(1)	9.412(1)	5.081(1)	8.774(1)	419.59
6.9	9.404(1)	9.404(1)	5.089(1)	8.783(1)	420.33