

Co₂Fe_{1.25}Ge_{0.75}: Single-Phase, Highest Magnetic Moment, Highest Curie Temperature

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Supplemental Material

Bulk sample synthesis and characterization

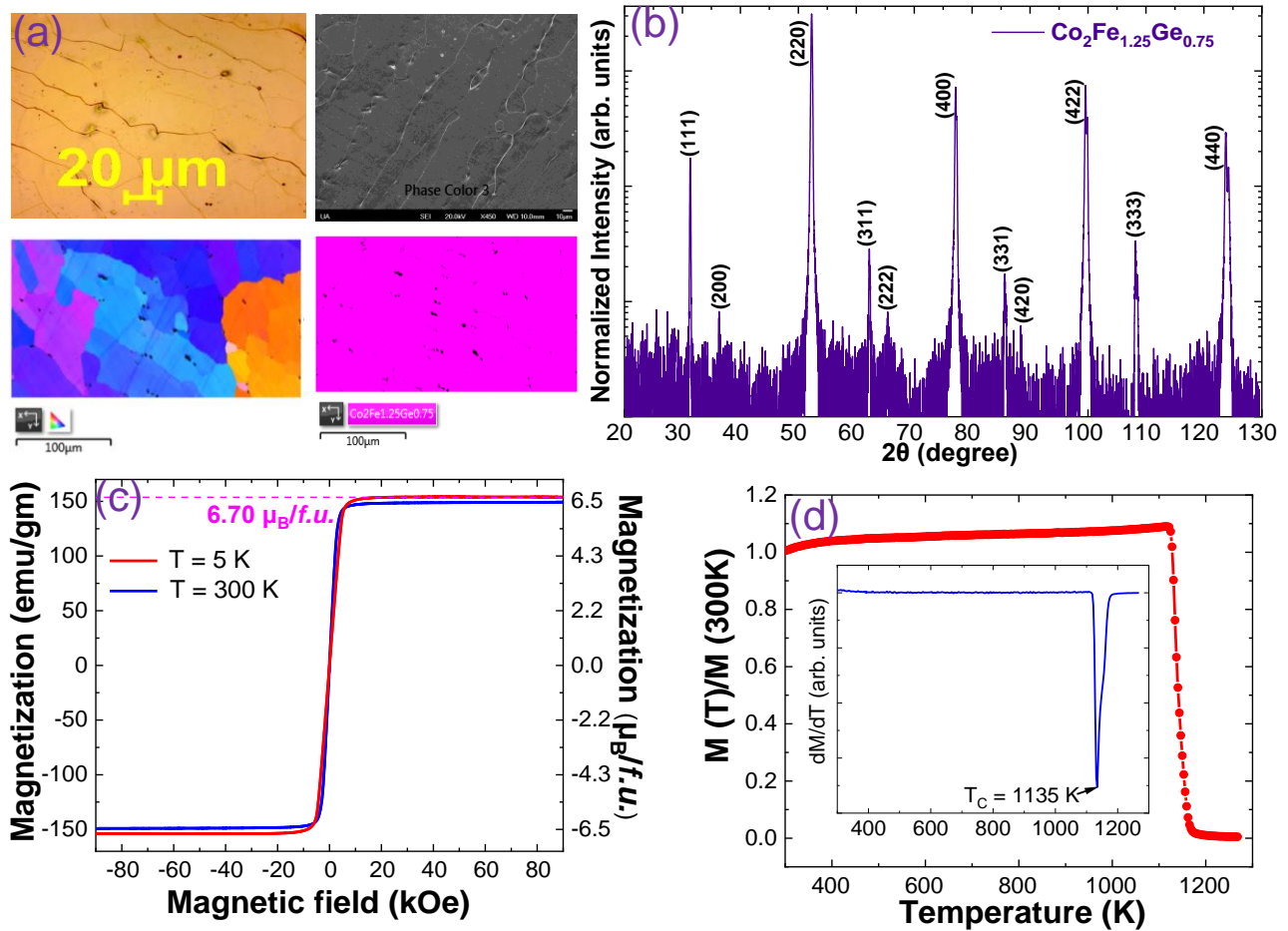


Figure 1: (a) Microstructure and EBSD suggesting Co₂Fe_{1.25}Ge_{0.75} is single-phase. (b) XRD pattern exhibiting L₂₁ structure. (c) M-H hysteresis loops at 5 K and at 300 K. (d) Temperature dependent magnetization curve, which suggests a Curie temperature of 1135 K.

Thin-film preparation and characterization

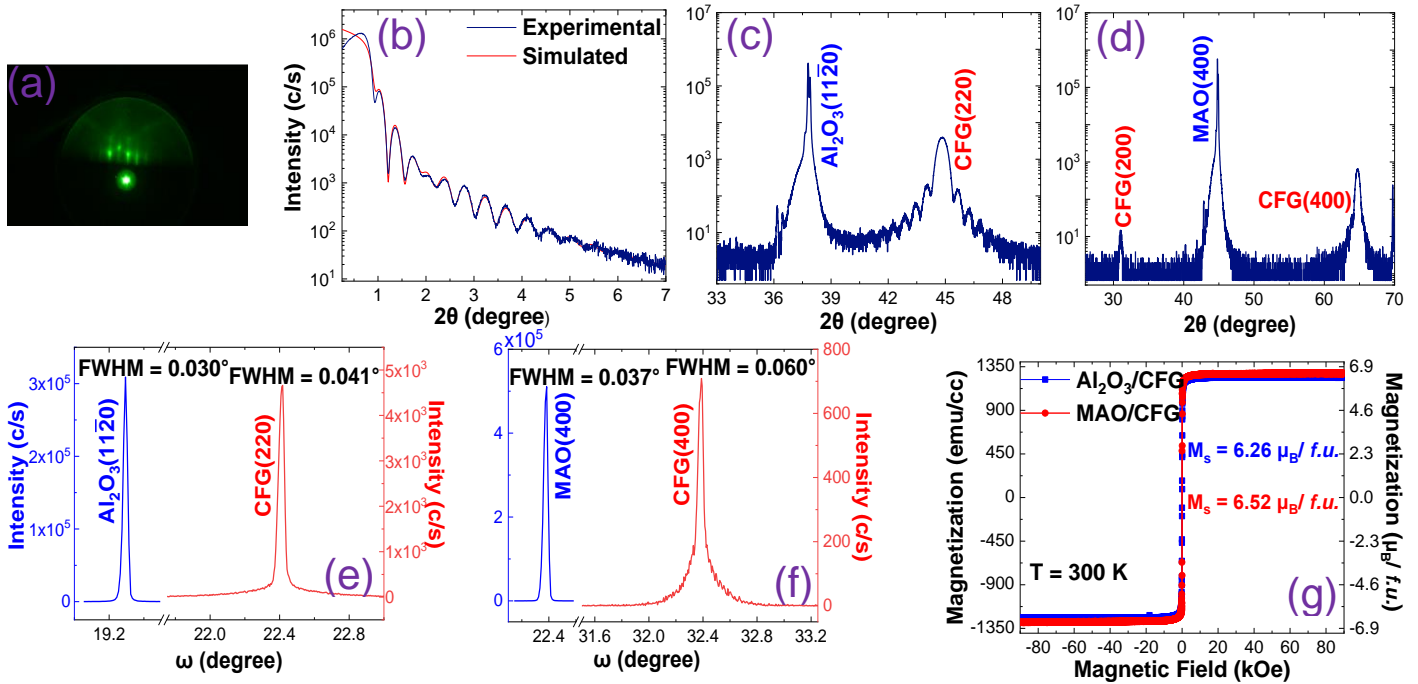


Figure 2: (a) RHEED; (b) X-Ray reflectivity; (c) and (d) X-ray diffraction; (e) and (f) Rocking curves; (g) M-H loop all suggesting excellent film quality with properties matching with bulk.

Theoretical Calculation

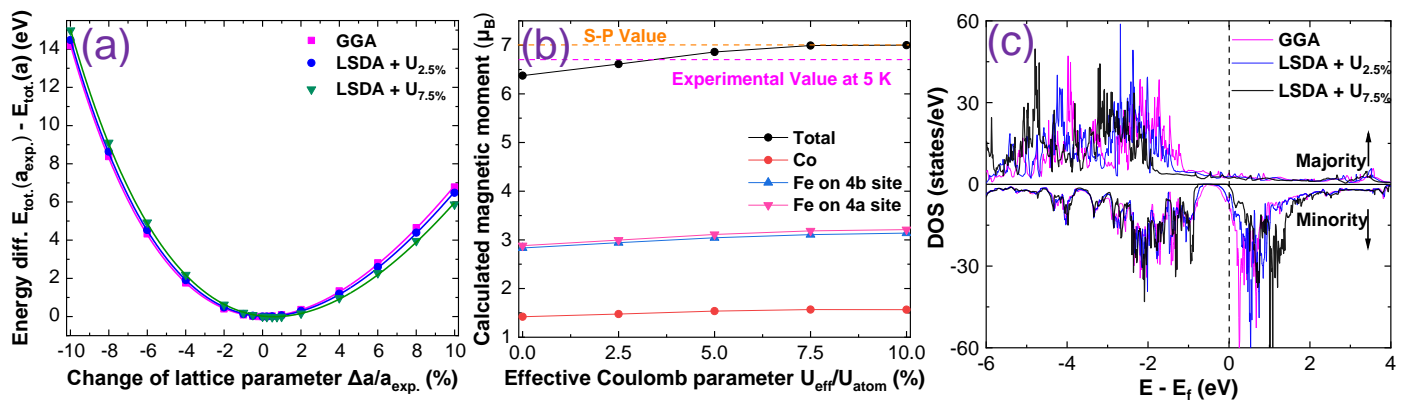


Figure 3: (a) Structure magnetization; (b) calculated moments, which match experimental results. (c) Density of states plot showing gap in the minority channel.