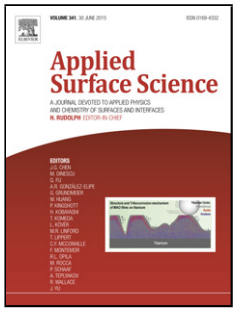

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Ferromagnetic MnCoGe thin films produced via magnetron sputtering and non-diffusive reaction

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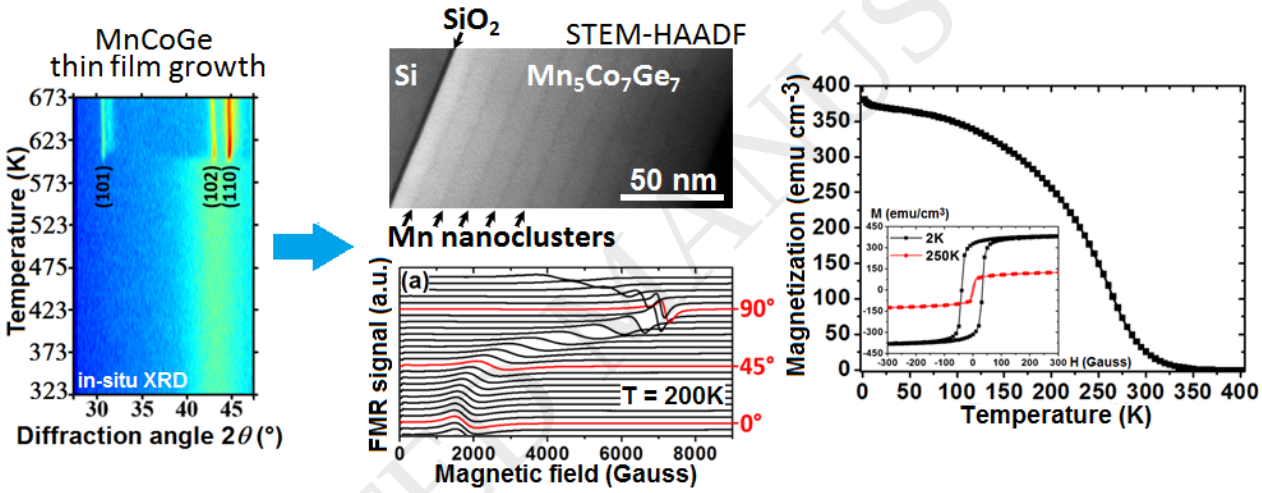
Graphical abstract



Highlights

- MnCoGe thin films were produced by magnetron sputtering and non-diffusive reaction
- The usual hexagonal/orthorhombic structural transition was not observed in the films
- Mn clusters form planar distributions parallel to the sample surface
- Mn cluster formation leads to a $Mn_5Co_6Ge_6$ stoichiometry
- The films display very good magnetic properties similar to bulk stoichiometric MnCoGe

ABSTRACT

MnCoGe thin films were produced using simultaneous magnetron sputtering of Mn, Co, and Ge on SiO_2, followed by non-diffusive reaction. The MnCoGe compound begins to form at ~ 588 K, and structural characterizations show that the obtained MnCoGe film is polycrystalline with the hexagonal Ni_2In-type structure. This structure is found to be stable from 873 K down to