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【254】The role of an AlN stopping barrier on the structure and properties of GaδFeN / $Al_{0.1}Ga_{0.9}N$ heterostructures

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Hybrid material systems combining semiconductors and magnetic nanostructures are prospective building-blocks for the next generation of high-density recording media. In phase-separated (GaδFeN) layers grown epitaxially on $Al_xGa_{1-x}N$ buffers, the specific concentration of Al determines the density of strain-related dislocations, which allow controlling the preferential formation of either ε-Fe_3N or γ'-$Ga_yFe_{4-y}N$ nanocrystals.

In this work, the influence of an AlN stopping barrier on the structural properties of GaδFeN / $Al_{0.1}Ga_{0.9}N$ heterostructures is systematically studied *via* transmission electron microscopy. Through the addition of the AlN stopping barrier, the strain-related dislocations in the buffer layer can be adjusted to stabilise the specific nanocrystal phases that determine the magnetic properties of the system.

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