

UHV magnetic-force microscopy on in situ grown iron-thin films

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Ultrahigh vacuum (UHV) scanning tunneling microscopy (STM) and magnetic force microscopy (MFM) were used to investigate the topography and the magnetic domain structure of epitaxial Fe/Ag thin films. Ten-nanometer thick Fe films were grown on in situ prepared Ag(1 0 0)/Fe/GaAs(1 0 0) substrates. STM images revealed smooth terrace-step structures for the Ag(1 0 0) and the Fe(1 0 0) layers. The domain structure mainly consists of 90° domain walls. The density of domains increases significantly close to the sample edges and an echelon pattern is formed.