

J.K. Furdyna, M. Dobrowolska and X. Liu

Ferromagnetism and spin dynamics in $\text{III}_{1-x}\text{Mn}_x\text{V}$ alloys

ABSTRACT. We describe the physical properties of ferromagnetic (FM) III-Mn-V semiconductor alloys, using GaMnAs as an example. We discuss the mechanism that causes these alloys to be FM, along with their method of fabrication; and we show how growth procedures affect the Curie temperature of these alloys. We then focus on selected new developments in FM semiconductors, including recent achievements in magneto-optics in GaMnAs; in the formation of multiple domains in this material during magnetization reversal; and in spin dynamics. All these features shed important light on the prospects of using III-Mn-V FM semiconductors as active components in spin-electronic devices.

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