AT03

The Motion of Ferromagnetic Domain in $Ge_{0.7}Mn_{0.3}$ Semiconductors

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We report that ferromagnetism of $Ge_{0.7}Mn_{0.3}$ films persist up to 400 K. By investigating a series of $Ge_{0.7}Mn_{0.3}$ films grown at various growth temperatures (T_G), we established the close relationship between the structural and magnetic properties. Specifically we found that the $Ge_{0.7}Mn_{0.3}$ thin films start to crystallize when they were grown above 350 ^{0}C and ferromagnetism is enhanced according to T_G. We argue that our report suggests interesting implications for another room temperature (RT) ferromagnetic semiconductor for its spintronic applications.

AT04

Tunable Electron *g* Factor and High Asymmetrical Stark Effect in InAsN Dilute Nitride Quantum Dots

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Abstract

The electronic structure, electron g factor and Stark effect of InAsN quantum dots are studied by using the ten-band k.p model[1-3]. It is found that the g factor can be tuned to be zero by the shape and size of quantum dots, N doping, and the electric field. Fig. 1 shows (a) Electron g factor of $InAs_{1-x}N_x$ quantum spheres at $F = 0$ as a function of R and x. (b) $R = 3$nm, as a function of x.The Stark effect in quantum ellipsoids is high asymmetrical, and the asymmetry factor may be 319, see Fig. 2 [3].

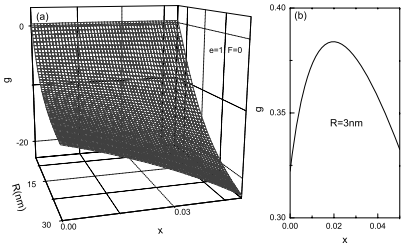

Fig. 1. (a) Electron g factor of InAs1-xNx quantum spheres at $F = 0$ as a function of R and x. (b) $R = 3$nm, as a function of x.

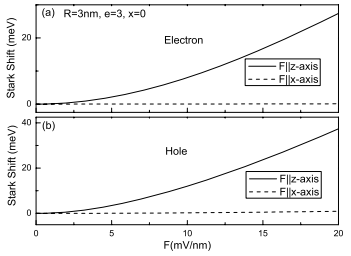

Fig. 2. Stark shifts of InAs1-*x*N*x* quantum ellipsoids with $R = 3$nm, $e = 3$ and $x = 0$ as functions of F. (a) Electron. (b) Hole.

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