Thematic area: Nanotechnology and Nanomaterials

Conductivity Measurements of 2D Electrons in GaInNAs/GaAs Quantum Well Structure Under IR Light Illumination

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Abstract:

I have present a study of electronic transport properties of 2D carriers in n type modulation doped GaInAsN/GaAs quantum well structures at very low nitrogen concentration. I have used conductivity measurement under 950 nm IR light illumination between the temperature range of 40 - 300 K and conventional I-V measurement to investigate the free electron transport properties. Conductivity results shows that the illumination caused a sudden increment in conductivity at around 90 K temperature which is coincide with e2-hh2 transition in quantum well structure. Because of the resonant transition, high mobility 2D carriers have increased in the conduction band of the quantum well. I also indicate the negatively differential resistance from the I-V measurement at the same critical temperature.