Growth of Mn doped Germanium Nanowires on Silicon (111) Substrate By Molecular Beam Epitaxy

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In this study, the germanium NWs were grown by MBE on Si(111) substrates from gold seeds using the so-called VLS process. We performed ex-situ HF etching and in-situ annealing steps until we obtained the 7x7 reconstruction on Si substrate. Then 1 nm thick gold film was deposited at room temperature. After that, thermal annealing was carried out inside the UHV chamber and following this, well ordered gold nanostructures placed on Ge pedestal were formed. After cooling the substrate, the Ge nanowire growth was carried out. After the growth of nanowires, a thin Mn layer growth was performed at room temperature and annealed at different temperatures. The grown nanowires were characterized by the XRD to optimize the growth rate and improve quality of the crystal. Electron microscopy (SEM,EDX) studies were carried out to determine the structure of the Au – Ge nano systems.