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Iridium silicide nanowires on Si(110) surface[1] NURI ONCEL, RASIKA MOHOTTIKE , SOUMYA BANERJEE, University of North Dakota, KARREN MORE, Oak Ridge National Laboratory, DENIZ CAKIR, University of North Dakota — As continuous miniaturization challenges lithography techniques in electronics, self-assembly based processes become more attractive. One particularly important self-assembled component is metal-silicide nanowires. These type of nanowires can function as low-resistance interconnects, as fins in FinFET devices and as plasmonic interconnects in optoelectronics applications. We studied physical and electronic properties of Iridium (Ir) silicide nanowires grown on the Si (silicon) (110) surface with the help of various experimental and theoretical techniques such as Scanning Tunneling Microscopy and Spectroscopy, High Resolution Transmission Electron Microscopy (HR-TEM), X-ray Photoelectron Spectroscopy and ab-initio Density Functional Theory. The nanowires grow along the [001] direction with an average length of about 100 nm. They have a band gap of ˜0.5 eV. Analysis of the HR-TEM images showed that Ir-silicide nanowires are made out of $IrSi_2$ lattice and they exhibit endotaxial growth. Reference: 1- Iridium-silicide nanowires on Si(110) surface, R. N. Mohattige, N. Oncel, Surf. Sci. 641, 237, 2015

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