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Epitaxial growth of YSi_2 nanowires the on Si(110) surface SABAN HUS, HANNO WEITERING, The University of Tennessee — High-aspect-ratio YSi_2 nanowires have been grown epitaxially on the Si (110) surface. In contrast to epitaxial growth on the Si (100) surface, YSi_2 nanowires on Si (110) grow in a single orientation and show a clear preference of nucleating at terrace edges, thus providing a promising method for fabricating regular nanowire arrays with controlled wire separation. The thinnest YSi_2 nanowires have a cross section of $\sim$ 0.5 x 2.8 nm^2 with wire lengths of up to a few hundred nm, while thicker nanowires can grow up to several μm long. Scanning tunneling spectroscopy measurements on individual nanowires indicate that the nanowires have metallic properties while the surface between the nanowires has a band gap of $\sim$ 1eV. These nanowires thus represent an ideal platform for studies of quasi one-dimensional electrical transport. Such studies are currently underway in our laboratory.

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