

**[S-08]**

## **Formation of hexagonal Gd disilicide nanowires on Si(100)**

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The growth of hexagonal Gd disilicide nanowires on Si(100) surfaces was studied by scanning tunneling microscopy. Gd disilicide nanowires can be grown on Si(100) by submonolayer Gd deposition on the substrate at 600 °C. Anisotropic lattice mismatches between hexagonal Gd disilicide and bulk terminated Si(100) results in the growth of nanowires. The resulting dislocation-free nanowires have widths of several nanometers and lengths up to micrometer length scales. The top of the nanowires has a  $c(2 \times 2)$  structure, indicating that the crystalline structure is Si-deficient Gd disilicide. The nanowires were shown to have metallic properties using scanning tunneling spectroscopy.