

Synthesis and Superconducting Properties of NbSe₂ Nanowires

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We have synthesized from a few μm to several tens nm size superconducting NbSe₂ nanowires by vapor transportation method. The composition, structures and crystallinity of these nanowires were investigated by using scanning electron microscopy (SEM) imaging, x-ray diffractometer (XRD), transmission electron microscopy (TEM). The four probe metal (Au) contacts of the single nanowire were prepared on a Si substrate by photo- and E-beam lithography techniques. The temperature dependence of electrical transport was measured as a function of temperature. The residual resistivity ratio (RRR), anisotropy ratio, and upper critical field, H_{c2} were obtained from the transport measurements.

Keywords : NbSe₂, nanowire, superconductivity, transport properties