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Electrical transport in YSi_2 nanowires V. IANCU, Department of Physics, University of Tennessee, P.R.C. KENT, T.-H. KIM, A.-P. LI, Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, L.D. MENARD, J.M. RAMSEY, Department of Chemistry, University of North Carolina, Chapel Hill, H.H. WEITERING, University of Tennessee — When a small amount of yttrium is deposited onto a gently heated Si(100)2x1 surface in ultrahigh vacuum, the yttrium atoms self-assemble into highly uniform silicide nanowires with dimensions of the order of 0.4x1.1x1000 nm^3. These YSi_2 nanowires are among the thinnest silicide structures fabricated to date. Their electrical properties have been explored using a four-probe scanning tunneling microscope (STM). The wires exhibit ohmic conductance at room temperature but the conductance decreases at lower temperature. STS measurements [1] indicated a small gap opening at low temperature in the thinnest YSi_2 wires, which appears to be associated with the charge-order fluctuations seen in STM. The YSi_2 nanowires not only represent an interesting model system for exploring 1D quantum transport, but they can also be used as electrodes or interconnects in nanoscale electronic devices on a silicon platform. The research at Oak Ridge National Laboratory's Center for Nanophase Materials Sciences was sponsored by the Scientific User Facilities Division, U.S. DOE. [1] C. Zeng *et al.* Nat. Mat. 7, 539 (2008)

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