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STM of Gold-Induced Chains on the Si(775) Surface. LAURA PEDRI, LAURA TOPPOZINI, MARK GALLAGHER, Lakehead University, CANADA — Atomic scale wires on semiconductor surfaces are an attractive system to study the novel physics of one-dimensional (1D) metallic conduction. Recently, quasi-1D chains have been produced by depositing small amounts of Au onto vicinal Si(111) surfaces. The gold-induced chains run parallel to step edges, and photoemission from these surfaces reveals highly 1D metallic bands. The Si(775)-Au surface exhibits 1D chains running along $[1\bar{1}0]$ spaced 2.13 nm apart. It has been previously reported that the (775) surface is prepared by depositing 0.25 $\pm$ 0.07 ML of gold onto a silicon surface tilted 8.5^o towards $[11\bar{2}]$ [1]. Furthermore, it has been argued that the unit cell contains two Au atoms per-unit cell similar to the on axis Si(111)5x2-Au reconstruction. We have used scanning tunneling microscopy to further investigate the atomic structure and the electronic properties of the (775)-Au surface. In particular, we have used STM with Auger spectroscopy, and LEED to examine the stochiometry of the chain structure. [1] Crain et al., *Phys. Rev. B* **69**, 125401 (2004).

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