

Abstract Submitted
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Atomic Co Wires: Room and Low Temperature STM/STS Measurements NADER ZAKI, Columbia University, DANDA ACHARYA, Brookhaven National Lab, DENIS POTAPENKO, Columbia University, PETER JOHNSON, PERCY ZAHL, PETER SUTTER, Brookhaven National Lab, RICHARD OS-GOOD, Columbia University — We recently reported [1] on a new surface phase of the Co-vicinal-Cu(111) system which exhibits self-assembled uniform Co quantum wires that are stable at 300K. STM images show that the wires form along the leading edge of the step rise, differentiating it from previously theoretically predicted atomic-wire phases as well as experimentally observed step-island formation. Our observations allow us to comment on the formation kinetics of the atomic-wire phase and on the fit of our data to a recently developed lattice-gas model. LT-STS measurements, taken on self-assembled Co chains, reveal a resonance at the Fermi energy. While it has been shown that single Co atoms and Co clusters [2] exhibit a Kondo effect, a Co chain at a Cu step may exhibit a different many-body effect that is the cause for our Fermi-energy resonance observation.

[1] N. Zaki et al, Phys. Rev. B 80, 155419 (2009)

[2] N. Néel et al, Phys. Rev. Lett. 101, 266803 (2008)

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