

Abstract Submitted
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STM study of stereoselective oligomeric chains on cobalt oxide templates DAEJIN EOM, HUI ZHOU, KWANG T. RIM, MICHAEL LEFENFELD, COLIN NUCKOLLS, GEORGE W. FLYNN, TONY F. HEINZ, Columbia University — Stereoselective oligomeric chains of cis-1,4-poly(2,3-dimethyl-1,3-butadiene) have been grown using the cobalt oxide surface as a template. The chains were formed by vacuum deposition of the monomer on an oxidized Co(0001) surface held at room temperature. The geometric structure of the 1-dimensional chains and their relationships to the structure of the surface were probed using scanning tunneling microscopy (STM). The typical chains were more than 10 monomer units in length and were highly linear in structure. When the chains were annealed to a temperature of 480 K, however, their morphology abruptly changed to irregularly shaped curves. We interpret this transformation as the result of scission of the methyl side groups of the oligomers. In addition to comprehensive STM topography data, we have investigated the chains using scanning tunneling spectroscopy (STS). The STS spectra show features with an energy spacing of 0.17 eV. We interpret this response as arising from an inelastic tunneling channeling involving excitation of the symmetric deformation mode of the methyl side groups.

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