

Abstract Submitted  
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**Scalable patterning of one-dimensional dangling bond chains on hydrogenated Si(001) surfaces** FRANCOIS BIANCO, MARIA LONGOBARDI, University of Geneva, DPMC - MaNEP Quai Ernest-Ansermet 24, 1211 Geneva 4, DAVID R. BOWLER, University College London, London Centre of Nanotechnology, JAMES H.G. OWEN, CHRISTOPH RENNER, University of Geneva, DPMC - MaNEP Quai Ernest-Ansermet 24, 1211 Geneva 4 — Silicon dangling bonds exposed on monohydride silicon (001) surface are highly reactive, and enable site selective absorption of atoms and single molecules into specific patterns designed into Si(001):H surfaces through the controlled removal of hydrogen atoms. Current implementations of such hydrogen lithography rely on painstaking removal of hydrogen atoms using the tip of a scanning probe microscope. Here, we present a scalable thermal process that yields very long chains of dimer wide silicon dangling bonds to self-assemble atoms and molecules into one-dimensional structures of unprecedented length on Si(001):H.

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