

Abstract Submitted
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Atom-by-atom extraction by controlling a scanning tunneling microscope tip-cluster interaction APARNA DESHPANDE, DANDA ACHARYA, JOEL VAUGHN, KAI-F BRAUN, SAW-W HLA, Nanoscale and Quantum Phenomena Institute, Physics & Astronomy Department, Ohio University, Athens, OH 45701, HANDAN YILDIRIM, ABDELKADER KARA, TALAT RAHMAN, Department of Physics, Cardwell Hall 116, Kansas State University, Manhattan, Kansas 66506, TALAT RAHMAN COLLABORATION¹ — We present a novel atom-by-atom extraction scheme using scanning tunneling microscope (STM) manipulations on a Ag(111) surface at 6K under an ultra-high-vacuum condition. At the initial step, a silver nanocluster is deposited on the surface by gently touching the silver coated tip onto the surface. Individual silver atoms from the cluster are then extracted by precisely controlling the tip-cluster interactions. The recorded STM tip height signals reveal atomistic details of the atom extraction dynamics. The experimental findings are corroborated by total energy calculations based on interaction potentials using the embedded atom method.

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