Abstract Submitted
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Electron Transport in Gold Nanowires: Stable 1-, 2- and 3-Dimensional Atomic Structures and Non-Integer Conduction States DOUGLAS SMITH, FRANCESCA TAVAZZA, LYLE LEVINE, JON PRATT, ANNE CHAKA, National Institute of Standards and Technology — We report experimental conductivity measurements made during highly stable tensile deformation of Au nanowires showing a rich variety of behaviors, including non-integer quantum conductance plateaus, transitions and slopes. Using tight binding conductance calculations on simulated nanowires previously deformed using density functional theory calculations, we demonstrate that all of these phenomena can arise from structural transitions between highly stable ordered atomic configurations that self-organize during tensile deformation.

Douglas Smith
NIST

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