Abstract Submitted
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In situ characterization of crystal structure and physical properties of individual nanostructures in as-fabricated devices[1] MARCEL LUCAS, School of Physics, Georgia Institute of Technology, ZHONG LIN WANG, School of Materials Science and Engineering, Georgia Institute of Technology, ELISA RIEDO, School of Physics, Georgia Institute of Technology — Nanostructures have potential applications as electronic components, catalysts, sensors, biomarkers, and energy harvesters. Control over their morphology and structure is essential, since their physical properties depend on their dimensions and crystallographic structure. Although in situ transmission electron microscopy can correlate the structure and physical properties of individual one-dimensional nanostructures, it usually damages the sample and is unable to recover the characterized nanostructure for next-step device fabrication and application. Here, we demonstrate a method combining atomic force microscopy and polarized Raman spectroscopy to characterize in situ the morphology, crystal structure and physical properties of individual nanostructures that can be as-fabricated devices without sample damage. Based on scanning probe microscopy, our method can be extended to study the electronic, mechanical, and tribological properties of inorganic/biological nanostructures.

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