Abstract Submitted
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X-ray Reflectivity Study of a Highly Rough Surface: Si Nanowires Grown by Ag Nanoparticle Etching[1] JESSE KREMENAK, Univ of Missouri - Columbia, CHRISTOPHER ARENDSE, FRANSCIOUS CUMMINGS, University of Western Cape, YIYAO CHEN, PAUL MICELI, Univ of Missouri - Columbia — Vertically oriented Si nanowires (SiNWs) formed by Ag-assisted wet chemical etching of a Si(100) substrate was studied by X-ray reflectivity (XRR) in combination with electron microscopy. Si(100) wafers coated with Ag nanoparticles, which serve as a catalyst, were etched for different durations in a HF/H_2O_2/DI-H_2O solution. Because of the extreme roughness of these surfaces, there are challenges for using XRR methods in such systems. Therefore, significant attention is given to the analysis method of the XRR measurements. This sample-average information presents a valuable complement to electron microscopy studies, which focus on small sections of the sample. The present work shows—for the first time—the amount and distribution of Ag during the formation of SiNWs fabricated by Ag-assisted wet chemical etching, which is vital information for understanding the etching mechanisms.

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