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Formation of SiOx nanoflowers during the VLS growth of silicon nanowires JOONHO BAE, REBECCA THOMPSON-FLAGG, MICHAEL MARDER, Physics Department, University of Texas, JOHN EKERDT, Department of Chemical Engineering, University of Texas, CHIH-KANG KEN SHIH, Physics Department, University of Texas — We report the formation of SiOx nanoflowers at the tip of the VLS grown silicon nanowires. The morphology and complexity of the flowers can be reproducibly controlled by varying the growth conditions. Structural and compositional analysis of the nanoflowers formed at different stages (from open geometry to close geometry) using TEM and SEM with energy dispersive spectroscopy reveal that the flower results from selective oxidation of silicon at the interface between nanowire and the gold catalyst. There is no detectable oxidation in the wire region. The underlying mechanism and the intriguing pattern formation will be discussed.

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