

Abstract Submitted  
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**Superstructured tungsten oxide photoanodes** ROBERT CORIDAN, Division of Chemistry and Chemical Engineering, California Institute of Technology, KEVIN ARPIN, PAUL BRAUN, Department of Materials Science and Engineering, University of Illinois, Urbana-Champaign, NATHAN LEWIS, Division of Chemistry and Chemical Engineering, California Institute of Technology — Tungsten oxide is a robust and stable semiconductor for photoanodic applications in aqueous solutions. Typical deposition techniques like electroplating or sputtering produce granular films which increase interfacial recombination of minority carriers. This has a deleterious effect on the photovoltaic performance of these materials. Using a variety of templating methods, we explore multiscale structuring strategies for increasing the surface area of the photoanode while maintaining significant light absorption. We describe photoelectrochemical and reflectivity measurements on structured and templated tungsten oxide photoanodes and consider how these results guide future photosynthetic electrochemical device design.

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