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Nanoporous platinum: synthesis via dealloying[1] NATHAN ABRAMS, Department of Physics, Whitman College, ADITYA ABBURI, W.J. YEH, Department of Physics, University of Idaho — Nanoporous structures with high active surface areas are critical for a variety of applications. We demonstrate the synthesis of nanoporous platinum thin films by dealloying. Dealloying is a corrosion process in which one or more elements are selectively removed from an alloy leading to a 3-dimensional porous structure of the more noble element. $Cu_{80}Pt_{20}$ films ($\sim$100–250 nm thick) are formed by cosputtering and dealloyed in aqueous H_2SO_4 solutions to selectively remove copper while allowing self-assembly of platinum into a nanoporous structure. The platinum nanoporous layers have a pore size of 20–100 nm, a surface area enhancement >20 times. Applications for these structures range from high surface area electrodes for biomedical sensors to use as skeletal structures for fundamental studies (e.g. low temperature heat exchangers or sensitivity of surface diffusivity to chemical environment). In this work we will review our current method of synthesis of the alloy thin film and include our most recent results demonstrating porosity in Pt.

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