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Metallic Nanoporous Films Fabricated by Etching[1] W.J. YEH, SHILPA CHAVA, JULIA TILLES, University of Idaho — Nanoporous metal films are of interest in a wide range of applications such as catalysis, sensing, microfluidic control and filtration. In this presentation we will report our preliminary experimental results of metallic porous materials obtained from dealloying. Two different systems have been investigated. One is gold nanoporous films obtained from etching out the silver component from the silver-gold alloy. Another is lead porous material obtained by etching out tin from tin-lead alloy. It is found that after etching out the silver component, the continuously and homogenously silver-gold films were transferred to rigid nanoporous gold films with gold forming continuous network. The size of the opening part of the films can be tuned by changing the etching time. We are able to change the porous size from about 10 nm up to a few hundreds of nanometers. When the tin was etched off from tin-lead sheets, different microstructures were found for etching at different times. When it was etched for a short time, needle shaped structures with length size about a few hundreds of nanometer were found. As the etching time increased, sponge nanoporous structures were formed.

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