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Electrochemical Deposition of Lanthanum Telluride Thin Films and Nanowires SU (IKE) CHI, STEPHEN FARIAS, ROBERT CAMMARATA, Department of Materials Science and Engineering, Johns Hopkins University, Baltimore, Maryland 21218, USA — Tellurium alloys are characterized by their high performance thermoelectric properties and recent research has shown nanostructured tellurium alloys display even greater performance than bulk equivalents [1-2]. Increased thermoelectric efficiency of nanostructured materials have led to significant interests in developing thin film and nanowire structures. Here, we report on the first successful electrodeposition of lanthanum telluride thin films and nanowires. The electrodeposition of lanthanum telluride thin films is performed in ionic liquids at room temperature. The synthesis of nanowires involves electrodepositing lanthanum telluride arrays into anodic aluminum oxide (AAO) nanoporous membranes. These novel procedures can serve as an alternative means of simple, inexpensive and laboratory-environment friendly methods to synthesize nanostructured thermoelectric materials. The thermoelectric properties of thin films and nanowires will be presented to compare to current state-of-the-art thermoelectric materials. The morphologies and chemical compositions of the deposited films and nanowires are characterized using SEM and EDAX analysis. References: [1] D. M. Rowe, *CRC Handbook of Thermoelectrics*, CRC Press (1995). [2] A. May *et al.*, *Phys. Rev. B* **78**, 125205 (2008).

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