Fabrication of self-forming silver network as transparent conductive electrode with photoresist

CHAOBIN YANG, JUAN M MERLO, MICHAEL J BURNS, KRZYSZTOF KEMPA, MICHAEL J NAUGHTON, Boston College — It has been reported that a metal wire network, obtained by sputtering with a self-cracking gel film mask, can function as a TCO replacement, perhaps reducing end device cost [1]. Toward further process simplification and cost reduction, we are investigating various electroless deposition schemes to template a wire network electrode. We report here that a conventional photoresist film can be prepared with a network of microcracks and can be used as a mask to electrolessly deposit metal, e.g. silver. With this method, no vacuum chambers are required, and undeposited metal can even be recycled for additional depositions. [1] B. Han, K. Pei, Y. Huang, X. Zhang, Q. Rong, Q. Lin, Y. Guo, T. Sun, C. Guo, D. Carnahan, M. Giersig, Y. Wang, J. Gao, Z. Ren, and K. Kempa, Adv. Mater. 26, 873 (2014).