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**The Utilization of Chloroform Post-Treatment to Improve the Adhesion of Au Thin Films onto PMMA** KATHLEEN KRIST[1], CHRIS HUGHES, XIAOFENG HU, James Madison University, BRIAN AUGUSTINE, High Point University — The metallization of Au onto plastics is an important processing step in the fabrication of microfluidic devices. While its corrosion resistance and excellent electrical and thermal conductivity make Au a good choice, its inertness results in poor adhesion to polymer surfaces. Previous studies have indicated that exposing commercially available Poly(methyl methacrylate) (PMMA) sheets to chloroform vapor following Au deposition significantly improves adhesion. In this study, we deposited 6 nm of Au onto 1.50 mm thick PMMA and exposed the samples to vapor released from chloroform heated on a hot plate set at 70 °C. The force required to remove the Au thin films was determined by placing samples on a polisher spinning at 150 rpm and utilizing UV-VIS spectroscopy to measure the transmittance of 700 nm light through the films to quantify their removal as a function of applied polishing force. The Au thin films were also characterized using AFM. AFM images demonstrated a progressive roughening of the surface corresponding to an increase in applied force. Additionally, these images support a model in which the chloroform treatment softens the PMMA surface, producing a softened layer that the polisher removes simultaneously with the Au thin film.

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