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**Functionality of Chloroform Treatment to Improve Adhesion of Deposited Au Thin Films on PMMA** LUIS ROYO ROMERO, Student, YVONNE KINSELLA TEAM, BRIAN AUGUSTINE TEAM, WM. CHRISTOPHER HUGHES TEAM — The deposition of Au thin films onto polymer surfaces is a crucial step in the fabrication of a variety of microfabricated devices including displays, microelectronics, biomedical and microfluidic devices. Au is characterized by having high electrical and thermal conductivity making it a good choice for microelectrodes. However, due to its relative chemical inertness, it is difficult to fabricate on polymeric substrates due to the low adhesion to polymer's surface. Previous experiments have studied various methods to improve the adhesion of vapor-deposited Au thin films onto poly (methylmethacrylate) (PMMA). In this study, we deposit 14 nm of Au onto 1.50 mm thick PMMA via magnetron sputter deposition and exposed the samples to a chloroform vapor in a chamber at 70C using a hot plate. The force required to remove the Au thin film is quantified as a function of the polishing force and the transmittance acquired using UV-VIS spectroscopy. Conducive of data confirming the effectiveness of chloroform post-treatment, we conducted a study on selective pattering by isolating regions using PDMS masks and attaining quantitative data by pixel counting using a Matlab script. Both methods demonstrate a similar inverse relation, the reduction of Au on the PMMA as incremental of applied force, displaying the potency of chloroform exposure.

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