

Abstract Submitted
for the SES16 Meeting of
The American Physical Society

Adhesion of of Au thin Films on PMMA and Other Substrates

YVONNE KINSELLA, WM. CHRISTOPHER HUGHES, James Madison University, Department of Physics Astronomy, LUIS ROYO-ROMERO, High Point University, Department of Physics, BRIAN AUGUSTINE, High Point University, Department of Chemistry, XIAOFENG (HARRY) HU, James Madison University, Department of Chemistry Biochemistry — The adhesion of Au onto polymer surfaces has important applications in the aerospace and automotive industries, microelectronics, and the fabrication of microfluidic devices. Au is desirable for such applications due to its corrosion resistance as well as its excellent conductivity of heat and electricity. Unfortunately, the inertness of gold results in a poor adhesion to polymer surfaces such as PMMA. In previous work in our lab we have developed a method to quantify exactly how well Au adheres to PMMA. Thin layers (approx. 10-20nm) of Au are deposited onto 1in square pieces of PMMA and then polished with increasing amounts of pressure until the Au is removed. After each polishing step, the transparency of the Au film is determined by using a UV/Vis spectrophotometer or by counting the pixels after scanning a photo of the sample. In this study we have expanded to apply this method to Au thin films on glass, as well as Au/Cr thin films on glass. Testing glass is the first step towards testing other polymer substrates than PMMA, which will be equally as useful to the aforementioned applications.

Yvonne Kinsella
James Madison University

Date submitted: 07 Oct 2016

Electronic form version 1.4