Supplemental Information

Chemical Transformations Mediated by Low-Energy Electrons within Vapor Phase Synthesized Al-based Hybrid Thin Films for Advanced Resist Applications: An In-Situ Investigation

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Session – EM1: Molecular Layer Deposition of Organic Materials and Organic-Inorganic Hybrid Materials

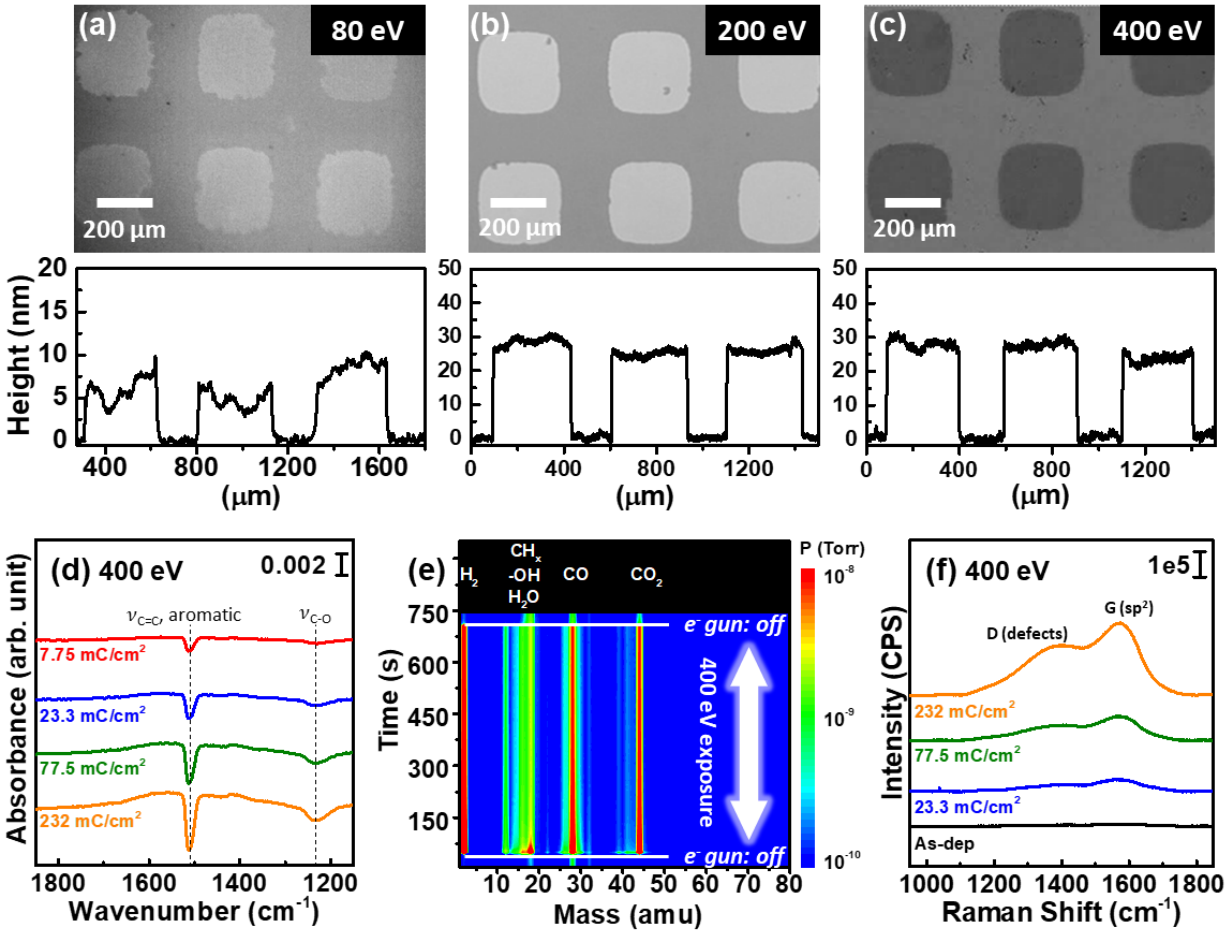

Figure 1. Optical images and height profiles of 300×300 µm² patterns (post-development) achieved with Al-based inorganic-organic hybrid thin films using (a) 80 eV, (b) 200 eV, (c) 400 eV. (d) *In-situ* FTIR spectra of hybrid material when exposed to 400 eV at different exposure doses. The negative features indicated a loss/deformation of bonds in the organic component of the hybrid thin films. (e) *In-operando* RGA spectrum during electron exposure at 400 eV, suggesting H_2, CH_x, -OH, H_2O, CO, and CO_2 as byproducts. (f) *ex-situ* Raman spectra of Al-based hybrid thin films after being exposed to 400 eV at different electron exposure doses. As the exposure dose increased, the feature related D and G of graphitic carbon also increased.