

Supporting Information:

Deposition pressure-induced microstructure control and plasmonic property tuning in hybrid ZnO-Ag_xAu_{1-x} thin films

Robynne L. Paldi^a, Xing Sun^a, Xin Li Phuah^a, Juanjuan Lu^a, Xinghang Zhang^a, Aleem Siddiqui^c, Haiyan Wang^{a,b,*}

^a School of Materials Engineering, Purdue University, West Lafayette, Indiana 47907, United States

^b School of Electrical and Computer Engineering, Purdue University, West Lafayette, Indiana 47907, United States

^c Sandia National Laboratory, Albuquerque, New Mexico, United States

*Corresponding author

hwang00@purdue.edu

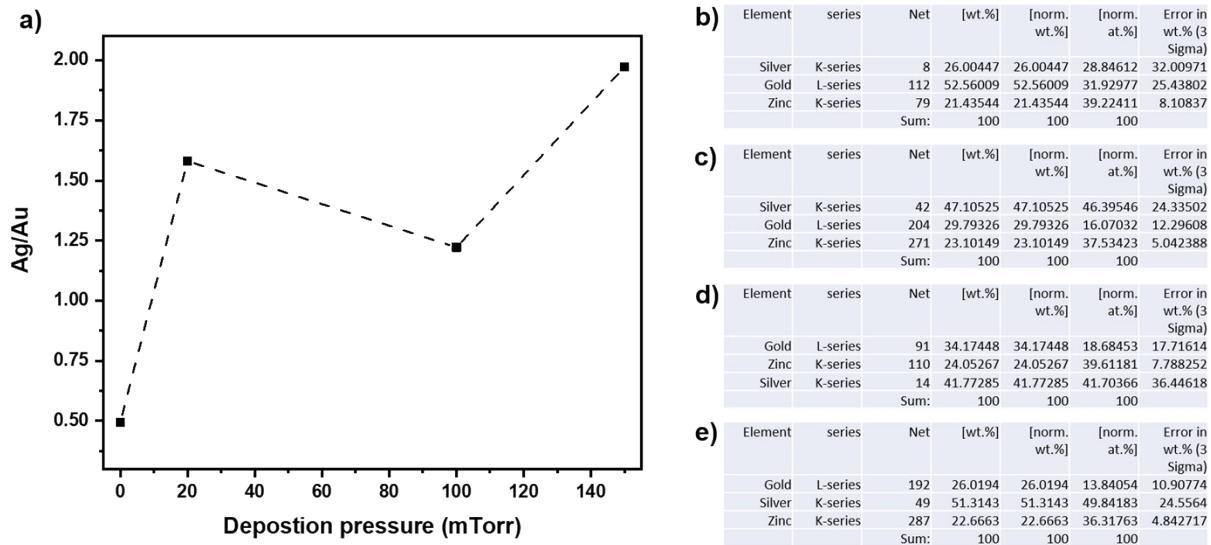


Figure S1. Ag/Au ratio for $\text{ZnO}-\text{Ag}_x\text{Au}_{1-x}$ calculated from EDS-spectra. Table showing composition from EDS-map for b) vacuum, c) 20 mTorr, d) 100 mTorr, e) 150 mTorr.

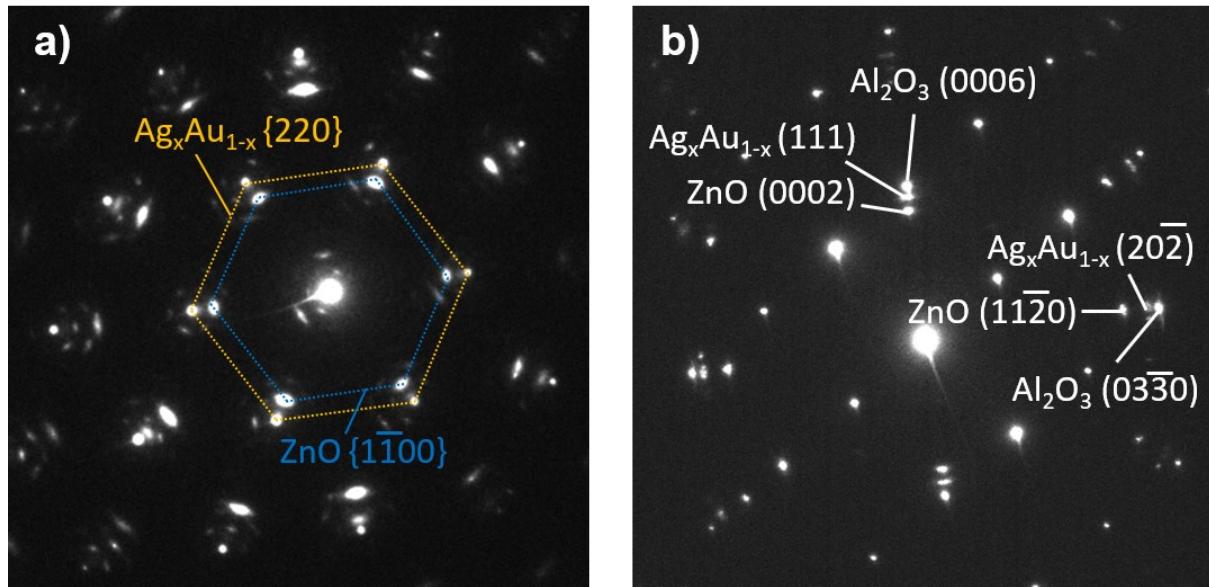


Figure S2. Selective area electron diffraction (SAED) pattern for a) plan-view and b) cross-section.

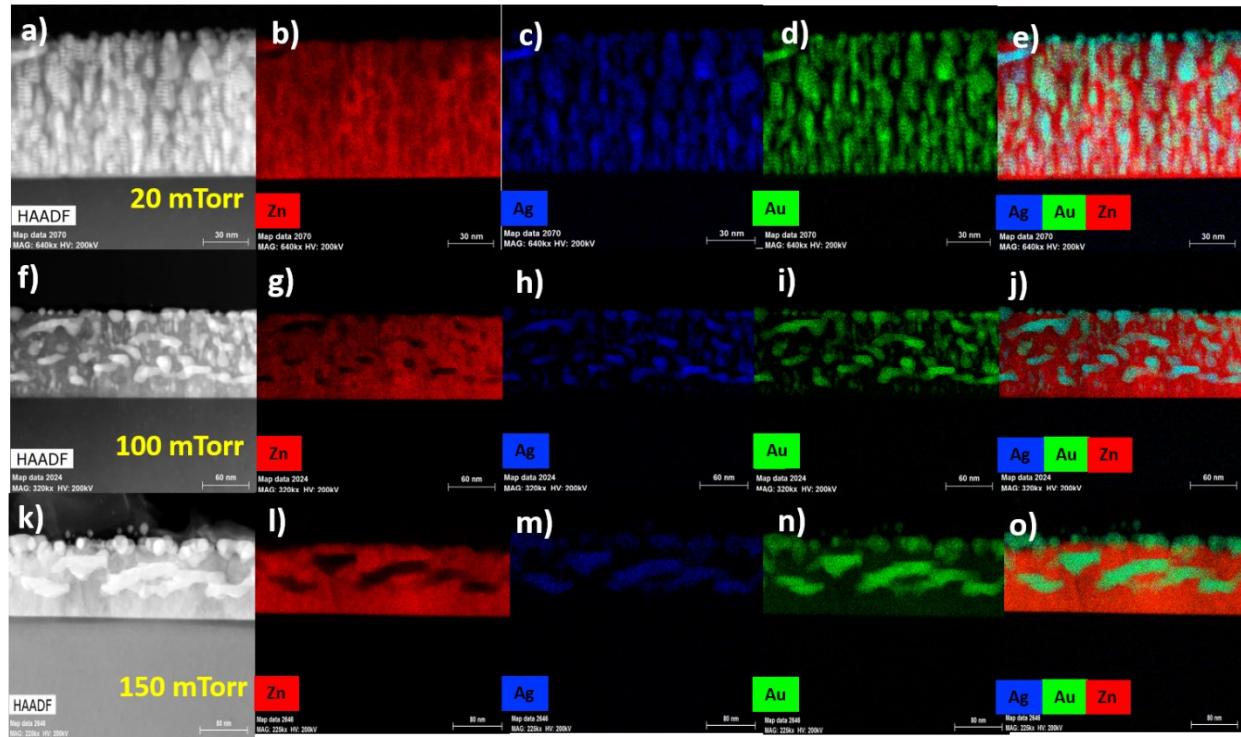


Figure S3 EDS mapping of different films and corresponding HAADF. a-e) mapping for 20 mTorr. f-j) mapping of 100 mTorr. k-o) mapping of 150 mTorr.

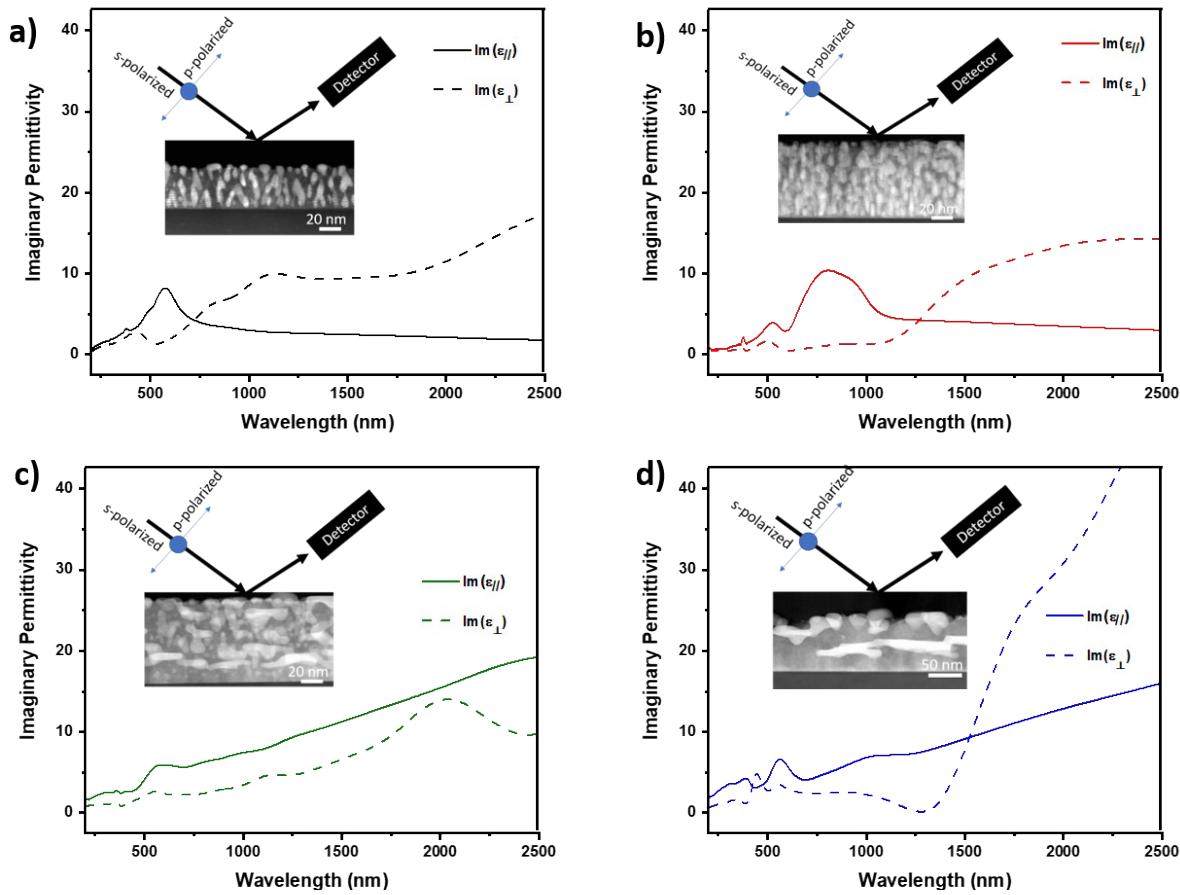
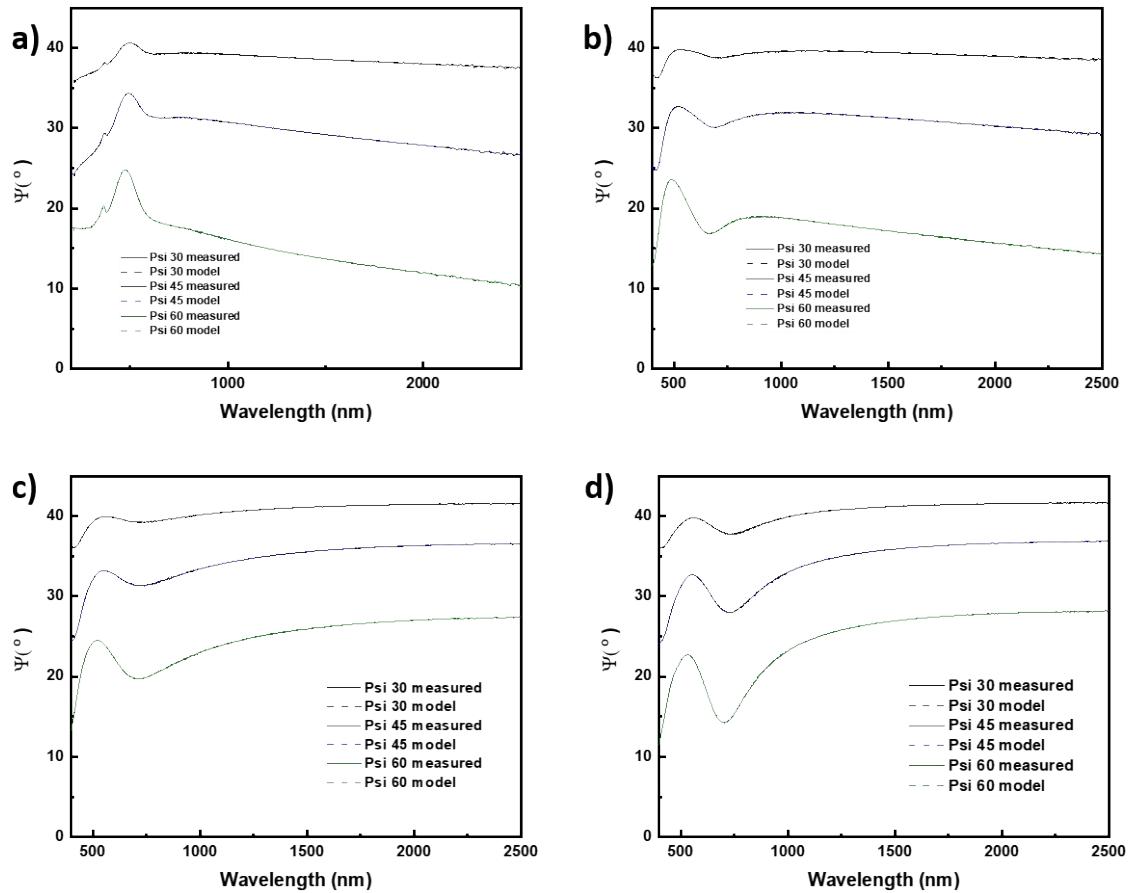


Figure S4 Dielectric function tuning. In-plane and out-of-plane imaginary permittivity for films deposited under a) vacuum, b) 20 mTorr, c) 100 mTorr, and d) 150 mTorr. Inset is the experimental setup.



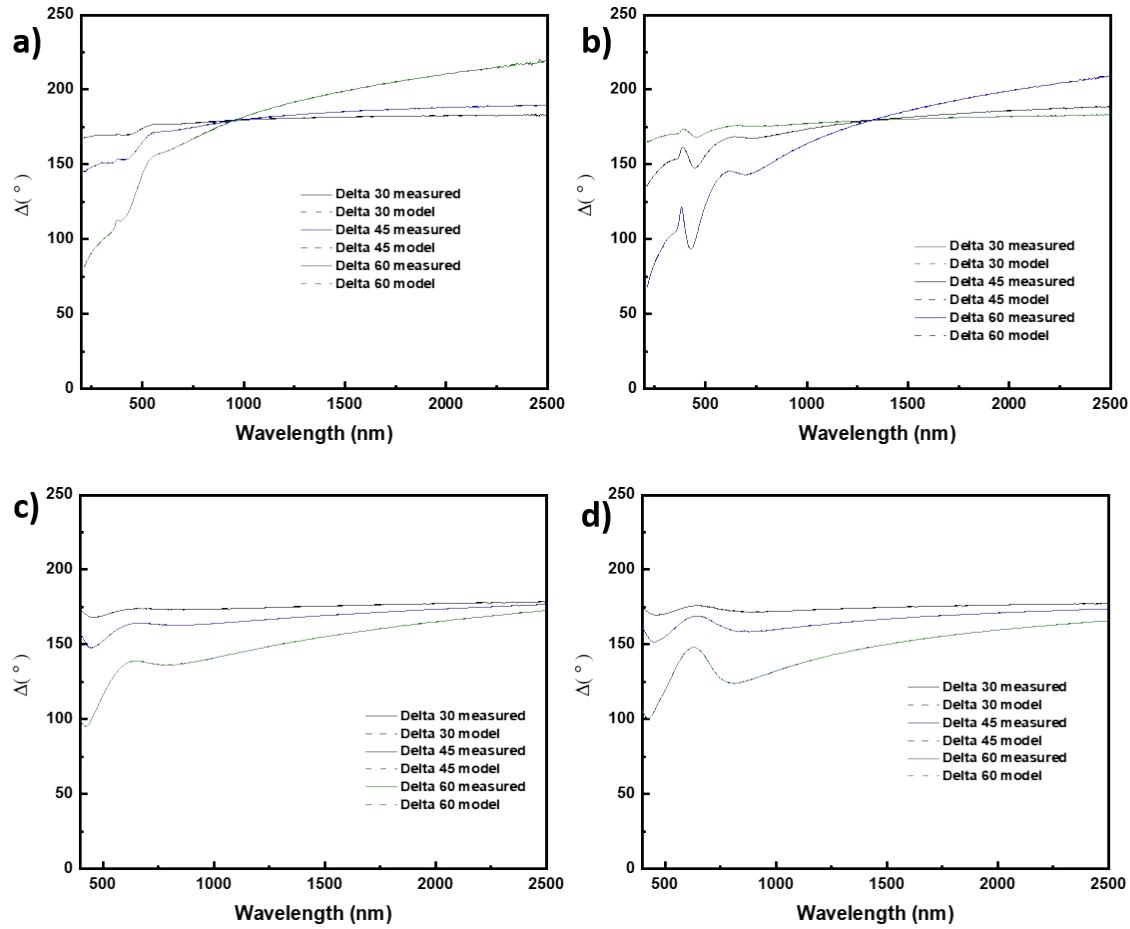


Figure S6 Delta. Measured and model data for films deposited at a) vacuum, b) 20 mTorr, c) 100 mTorr, d) 150 mTorr.