Influences of Silver Nanostructures on Organic Thin-film Growth

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Aromatic organic molecules often interact with silver nanoparticles (SNP) in distinctive ways in both the mono- and multilayers. With surface-enhanced Raman spectroscopy (SERS), surface-enhanced infrared absorption (SEIRA) spectroscopy, and density functional theory (DFT) calculation, the phenomena such as solute ionization, solvent incorporation, and solute-metal interaction can be explained. The chemical systems such as 4-fluorobenzoic acid and aminobenzonitirle isomers deposited onto SNP from both polar and nonpolar solvents (namely acetone, methanol, CCl_4, and *n*-heptane) will be used for the demonstrations. This work is expected to have an impact in the fields of biomedical and nanotechnology and synthetic and biochemistry.