Cu Surface Modification by Nanofilm Deposition

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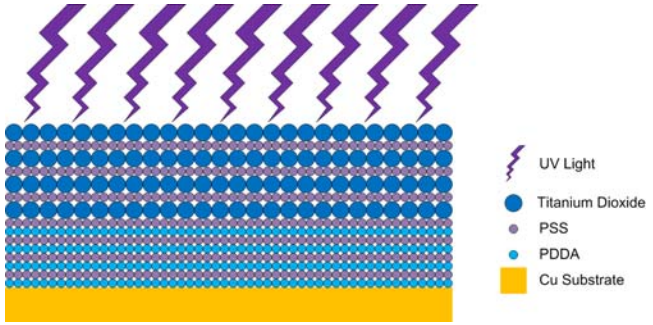
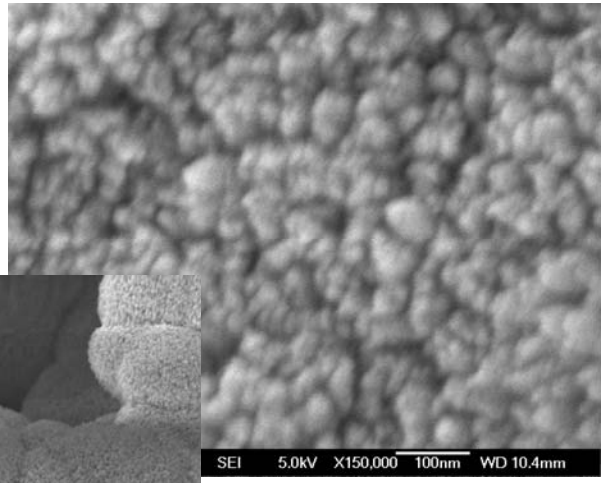
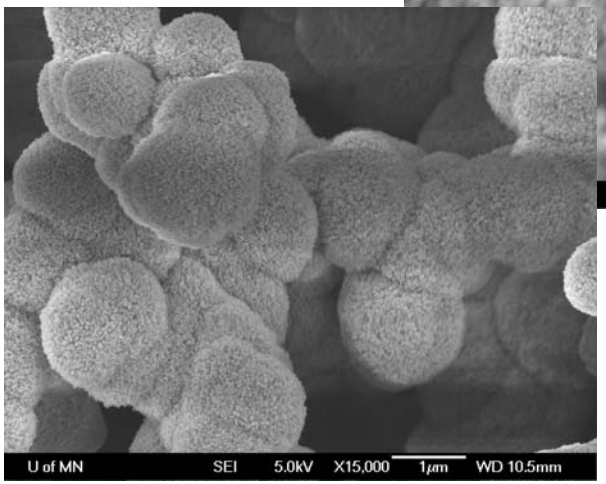
NNIN Facilities utilized: Characterization Facility & Nanofabrication Center

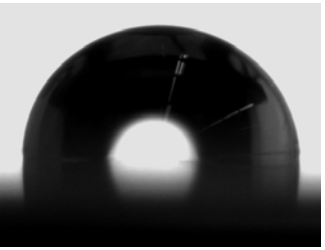
Layer-by-Layer Self Assembly

- Electrostatic adhesion is used to build thin films from nanoparticles.
- TiO_2 is especially useful due to its tunable properties.
- Hydrophilicity of TiO_2 films can be altered in several ways, including by exposure to heat or UV radiation.









High contact angle on raw copper

Low contact angle on copper coated with TiO_2 nanofilm

Liquid Phase Deposition

- Break Ti from $(NH_4)_2TiF_6$, TiF_4, or other precursor molecules.
- Form TiO_2 nanoparticles through chemical reactions in the liquid phase.
- Deposit TiO_2 nanoparticles on surface according to self-assembly techniques.