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CP-AFM Study of Current Transport Through Porphyrin Based Molecules RAGHU RAMACHANDRAN, KIM LEWIS, SATHISH THIRUVENGADAM, ROYSTON SIOW, THEDA DANIELS-RACE, Louisiana State University — Conductive Probe Atomic Force Microscopy (CP-AFM) is used to study current transport through dithiolated porphyrin based molecules. Porphyrin molecules are inserted at defect sites into an alkanethiolate SAM on Au (111), and the exposed top terminal end of the porphyrin with thiol is attached to a gold nanoparticle. These gold nanoparticles (d_{CORE} = 1 nm to 5 nm) stabilized by phosphine ligands are introduced into solution where ligands are displaced by thiol groups of the porphyrin bound to Au surface. I(V) measurements are done with nanoparticles of varying sizes to determine the effect on transport properties. Measurements are done using CP-AFM, and contamination is reduced by immersing the sample in toluene. Complementary work from our group will also be presented as "Characterization of Porphyrin as an Electronic Component" at this meeting.

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