

Abstract Submitted
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Infrared Spectroscopy of Metallic Nanoparticles MELANIE PIERCE, University of Portland, OANA MALIS, Purdue University — Research into metallic nanoparticles is a growing field in the sciences because of high value in catalysis and cancer treatment. Since it has increasing importance, it is valuable to have distinct characterization on wide ranges of particles. While metallic nanoparticles are synthesized with organic molecules encapsulating them, it is difficult to observe how the metallic particles are behaving without obstructive interference from the organics. Over the summer we characterized metallic nanoparticles using infrared spectroscopy. We developed methods of producing uniform thin films to enable accurate repetition of experiments, and explored methods of removing the organic capping agents surrounding the metallic particles in order to get an IR spectrum of the metallic particles themselves. We examined changes to the spectrum as a function of quantity of solution. Two methods of thin film deposition were studied on a silicon substrate, spin-casting and micro-contact printing with distinct results for both. We investigated how to remove the organics and a thermal method was utilized. Heating the samples with a hot plate using varied temperatures resulted in unique data that concluded that thermal activation did change the composition of the nanoparticle samples, and the resulting samples provide new information about the characterization of the original samples.

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