replacing TSS16-2016-000057 Abstract Submitted

for the TSS16 Meeting of
The American Physical Society

Spectroscopic Analysis of Doped Metal Nanoclusters[1] VANESSA ESPINOZA, Texas Lutheran Univ, DOUGLAS KAUFFMAN, National Energy Technology Laboratory — A variety of metal-doped gold nanoclusters that were studied using photoluminescence and absorption spectroscopy, so that optical properties could be examined. The nanoclusters were also compared at liquid nitrogen temperature and room temperature. All nanoclusters had emission peaks that were also significantly different than one another at liquid nitrogen temperature. The shifts of the emission spectras when looking at composition and temperature change have lead to the proposed idea that the florescence of gold nanoparticles ˜2nm in size are composition and temperature dependent. A difference in the emission and excitation energy leads to the indication that an additional source of energy transfer as the electron relaxes back to ground has to occur in order for the electron to reach ground state. We hypothesize that vibrational transitions make up for the change in energy that is occurring and these pathways may a result of the vibrations of the ligand shells on the nanoparticles. Different dopants and temperatures affect the amount of constriction that is being placed on these ligands and this is a possible explanation for the change in florescence that was observed. Overall, this experimentation allows for better understanding as to how the manipulation of these nanoparticles can be done in order to modify and tailor particles, so it may be implemented in a variety of desired applications.

[1]Mickey Leland Energy Fellowship

Vanessa Espinoza
Texas Lutheran Univ

Date submitted: 03 Mar 2016 Electronic form version 1.4