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**Opto-electronic Properties of Monolayer-Protected Clusters of Au functionalized with a New Fluorescent Ligand** THOMAS KOUNTZ, Towson University, VIRAJ THANTHIRIGE, Western Michigan University, KEITH REBER, MARY SAJINI DEVADAS, Towson University — Metal nanoclusters are the focus of intense study due to their interesting optical, electronic, and catalytic properties; specifically gold clusters. The applications of gold monolayer-protected clusters (MPCs) are being researched by a series of optical spectroscopic and voltammetric analyses to determine core size, atom-level composition, charge states, and optical/electrical properties. Understanding these fundamental properties is critical for both expansion of applications and creation of new MPCs. The purpose of this study is to expand the applications of gold MPCs, with the attachment of a new coumarin surface ligand - synthesized specifically for this experiment. Our focus in this research is on quantum clusters – specifically  $\text{Au}_{25}(\text{C}_6\text{S})_{18}$ . This MPC is researched particularly because of its inherent stability being a magic number cluster. It is created by means of a modified Burst-Schiffirin method. The applications that are influenced include but are not limited to: catalytic activity, solar energy conversion, size-tunable fluorescence, sensors, and optical electronics.

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