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Quantum dots are fluorescent nanoparticles that exhibit unique and tunable optical properties due to their small size. Quantum dots can be used for a variety of applications, including LED displays and in medical diagnostics, because of their high brightness, stability, and efficiency. My project focuses on using nanoparticles as contrast agents for deep tissue imaging. Deep tissue imaging has historically been done using ionizing radiation such as x-rays, but this method poses significant health concerns to both patients and health care workers. Visible light is unsuitable for deep tissue imaging because it is scattered and absorbed by tissue and water. Quantum dots, however, can be tuned to emit light in the near-infrared spectrum; this allows for deep tissues to be imaged safely and without radiation scattering. To use quantum dots for deep-tissue imaging, the nanoparticles must be non-toxic, stable, and emit light with high quantum yield in the near-infrared region. The toxicity of quantum dots is determined by the composition of the particles. The stability of quantum dots may be enhanced by a synthesizing a shell around the particle. The fluorescence quantum yield and emission wavelength of a quantum dot are dependent on its composition, morphology, and size. By altering one of these variables, the fundamental optical properties of the quantum dots can be controlled. My project focuses on synthesizing Ag_2S quantum dots that emit light in the near infrared region, from 1100 to 1400 nm. Afterwards, a ZnS shell is generated around the quantum dot to enhance the particle's stability. The Ag_2S nanoparticle is synthesized by heating silver and sulfur precursors in a favorable solvent. To prevent oxidation, the quantum dots have been stored in airfree conditions. This inert environment has caused a unique self-assembly of the nanoparticles in dendric structures, which may be the subject of future research.