

Abstract Submitted  
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**Properties of protein-based ferrihydrite nanoparticles** STEPHEN ERICKSON, JOHN COLTON, TREVOR SMITH, RICHARD WATT, Brigham Young University — Absorption spectroscopy was used to optically measure the band gaps of ferrihydrite nanoparticles within ferritin protein shells. These band gaps were measured accurately to within .01 eV and the nanoparticles were shown to be indirect gap semiconductors. The effects of anions in solution, nanoparticle size, and aging were examined. Orderly variations in band gap due to these conditions show the potential for selectively tuning that gap. Band gaps increased with time as the ferritin worked to crystallize the ferrihydrite, with stronger trends for larger nanoparticles. Nanoparticle size was shown to be inversely proportional to band gap. Evidence of a second indirect absorption edge suggests the possibility of a second local minimum in the conduction band.

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