Band gap variations in ferritin-templated nanocrystals

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Brigham Young University — Ferritin is a 12 nm diameter protein shell with an
8 nm “cage” inside that can be used as a template for nanoparticle formation. The
native particle is an iron oxide, ferrihydrite, but can be altered or replaced. We
have used optical absorption spectroscopy to study the band gap of the ferrihydrite
nanoparticles as they age (and become more crystalline), and as they respond to
surface interactions with ions in solution. We will also present results of particle
composition variations due to incorporation of oxo-anions into the interior of the
nanoparticles and substitution of iron with other metals such as cobalt and man-
ganese.