Abstract Submitted
for the 4CF17 Meeting of
The American Physical Society

**Magnetic Ordering of Magnetite Nanoparticles (Fe3O4)** BRITTNI NEWBOLD, KARINE CHESNEL, DALTON GRINER, DALLIN SMITH, KAMDEN JONES, Brigham Young University — We are studying the magnetic ordering in magnetite (Fe3O4) nanoparticle assemblies. Samples of these nanoparticle assemblies were put through x-ray resonant magnetic scattering which produced scattering images. These images provide information about the magnetic ordering of the particles. The scattering patterns are reduced to 1D scattering profiles. By fitting these scattering profiles with a model, we are determining specific magnetic orderings present in the assemblies and their associated weights. We analyze such scattering images to determine the weight of each magnetic order in the nanoparticle assemblies as a function of magnetic field and temperature. Specifically, I analyze samples at 300 K and at 280 K to determine the amount of anti-ferromagnetic contribution as the field value approaches 0 Oe. This research can have application in the medical field.

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Date submitted: 20 Sep 2017 Electronic form version 1.4