

Abstract Submitted  
for the TSF06 Meeting of  
The American Physical Society

**Novel Approaches for the Synthesis of FeCo Nanoparticles<sup>1</sup>**

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— FeCo alloys are an important soft magnetic material because of their unique magnetic properties including large permeability and very high saturation magnetization. FeCo nanoparticles have attracted great interests recently because of their potential applications as building blocks of advanced nanomagnets and applications in biomedical technologies. However, preparation of monodisperse FeCo nanoparticles remains a challenge due to the poor chemical stability of the nanoparticles. In this poster, we report two novel routes of preparation of monodisperse FeCo nanoparticles with controllable particle size and size distribution. First method involves the synthesis of FeCo nanoparticles by high temperature solution phase method. In our second approach, FeCo nanoparticles were prepared by salt matrix annealing of the  $\text{CoFe}_2\text{O}_4$  nanoparticles in forming gas (7%  $\text{H}_2$  + 93% Ar). The formation of the alloy nanoparticles were confirmed by X-ray diffraction (XRD) and transmission electron microscopy (TEM). It is also found that the bcc FeCo nanoparticles are stable under ambient condition. The magnetization of the FeCo nanoparticles is found to be size dependent.

<sup>1</sup>US DoD/DARPA through ARO grant No. DAAD19-03-1-0038 and DoD/MURI grant N00014-05-1-0497.

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Date submitted: 12 Sep 2006

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