Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

A study on Bidispersed Magneto rheological fluids using Magnetite and Cobalt Ferrite nanoparicles in FeNi Alloy[1] RAJINI KANTH BHOGOJU, VENKATESWARLU MANDA, LSMS, Department of Humanites and Sciences, T.K.R. College of Engineering and Technology, Medbowli, Meerpet, Hyderabad-97 — Magneto rheological (MR) fluids are a class of smart materials which exhibits fast, reversible and tunable transition from a free flowing state (liquid) to semisolid state on the application of an external magnetic field in a few milliseconds. They offer an outstanding capability of active control of mechanical properties, because they provide a simple and fast response interface between electronic control and mechanical devices/systems. Generally these MR fluids contain micron size magnetically soft particles (Fe, Co) dispersed in a non-magnetic carrier fluid. Here an attempt is made to make the MR fluids with the FeNi based alloys and the nano particulate magnetite and Cobalt ferrite(bi-dispersed) mixed to enhance the yield stress and reduce the particle settling rate. Nanosized Magnetite and Cobalt ferrite particles were synthesized using simple wet chemical method. There is a measurable predictable variation of rheological properties on the wt% of the nanometer sized particles is increased relative to the wt% of the micron sized particles, while maintaining a constant solids loading in the MR fluids samples. As the field is picking-up, we undertake present study.

[1]The authors acknowledge the support extended by DST, NEW DELHI, for the Young Scientist Scheme SR/FTP/PS-108/2009.

Rajini Kanth Bhogoju
LSMS, Department of Humanites and Sciences, T.K.R. College of Engineering and Technology, Medbowli, Meerpet, Hyderabad-97

Date submitted: 31 Dec 2013 Electronic form version 1.4