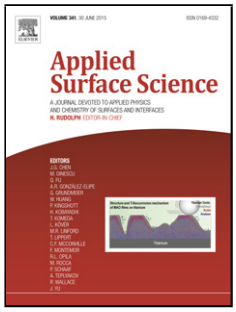

Title: Ferrofluids based on Co-Fe-Si-B amorphous nanoparticles

Author: Tianqi Wang Xiufang Bian Chuncheng Yang Shuchun Zhao Mengchun Yu

PII: S0169-4332(16)32884-7
DOI: http://dx.doi.org/doi:10.1016/j.apsusc.2016.12.145
Reference: APSUSC 34692

To appear in: *APSUSC*

Received date: 5-9-2016
Revised date: 13-12-2016
Accepted date: 18-12-2016

Please cite this article as: Tianqi Wang, Xiufang Bian, Chuncheng Yang, Shuchun Zhao, Mengchun Yu, Ferrofluids based on Co-Fe-Si-B amorphous nanoparticles, Applied Surface Science http://dx.doi.org/10.1016/j.apsusc.2016.12.145

Ferrofluids based on Co-Fe-Si-B amorphous nanoparticles

Tianqi Wang, Xiufang Bian*, Chuncheng Yang, Shuchun Zhao, Mengchun Yu

Key Laboratory for Liquid-Solid Structural Evolution and Processing of Materials, Ministry of Education,
Shandong University, Jinan 250061, China

∗Corresponding author. Tel.: +86 0531 88392748; fax: +86 0531 88395011.
E-mail address: xfbian@sdu.edu.cn (X. Bian).

Highlights:

Ferrofluids based on metal-boride amorphous alloy nanoparticles were prepared.

Magnetic Co-Fe-Si-B amorphous nanoparticles were successfully synthesized by chemical reduction method.

The ferrofluids have good stability and good magnetoviscous properties.

Abstract

Magnetic Co-Fe-Si-B amorphous nanoparticles were successfully synthesized by chemical reduction method. ICP, XRD, DSC, and TEM were used to investigate the composition, structure and morphology of Co-Fe-Si-B samples. The results show that the Co-Fe-Si-B samples are amorphous, which consist of nearly spherical nanoparticles with an average particle size about 23 nm. VSM results manifest that the saturation magnetization (Ms) of Co-Fe-Si-B samples ranges from 46.37 to 62.89

∗ Corresponding author. Tel.: +86 0531 88392748; fax: +86 0531 88395011.
E-mail address: xfbian@sdu.edu.cn (X. Bian).