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

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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 (M_s) of Co-Fe-Si-B samples ranges from 46.37 to 62.89

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