

STRUCTURAL INVESTIGATIONS OF WATER-BASED FERROFLUIDS WITH ISOMETRIC AND ANISOMETRIC NANOPARTICLES

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At present, ferrofluids continue to be widely explored for engineering and biomedical applications, including water purification, energy harvesting and transmission, magnetic electromagnetic wave absorption, vibration control, energy storage applications, magnetic drug delivery, hyperthermia, enzyme immobilization, DNA separation and purification, biocatalysis, and magnetic resonance imaging (non-invasive magnetic resonance imaging), etc.

Small-angle scattering of neutrons and X-ray are well known as successful methods used for the investigations of ferrofluids.

The present work reviews several of our results on the structural investigation of water-based ferrofluids with isometric and anisometric nanoparticles (cobalt ferrite, copper ferrite and barium hexaferrite) synthesized for new applications [1,2].

[1] M. Balasoiu, S. Astafeva, S. Lysenko, D. Yakusheva, E. Kornilitsina et al., J. Surf. Invest.: X-Ray, Synchrotron Neutron Tech. 17(3), 730-737 (2023).

[2] M. Balasoiu, S. Astafeva, S. Lysenko, D. Yakusheva, E. Kornilitsina et al., J. Surf. Invest.: X-Ray, Synchrotron Neutron Tech. 18(3), 736-744 (2024).

Section

Energy and materials science (Section 2)

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