

Colloidal stability of aqueous ferrofluids with iron oxide nanoparticles obtained by means of laser pyrolysis

Authors: Anca Criveanu¹; Florian Dumitrache¹; Iulia Lungu¹; Ladislau Vekas²; Vlad Mircea Socoliuc²

¹ National Institute for Laser, Plasma and Radiation Physics

² Romanian Academy-Timisoara Branch, Center for Fundamental and Advanced Technical Research, Laboratory of Magnetic Fluids

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Anca Criveanu¹, Iulia Lungu¹, Florian Dumitrache¹, Ladislau Vekas², Vlad Mircea Socoliuc^{2,3}

¹National Institute for Laser, Plasma and Radiation Physics, 409 Atomistilor St., 077125 Magurele, Romania;

²Romanian Academy-Timisoara Branch, Center for Fundamental and Advanced Technical Research, Laboratory of Magnetic Fluids, 24 Mihai Viteazu Ave., 300223 Timisoara, Romania

³Politehnica University of Timisoara, Research Center for Complex Fluids Systems Engineering, 1 Mihai Viteazu Ave., 300222 Timisoara, Romania

Iron oxide nanoparticles (IONPs) were obtained by means of laser pyrolysis (Fig.1.a) 1, using three different sensitizers: acetylene, ethanol and isopropanol. The IONPs were coated with L-dopa and with cytosatic for future biomedical applications. Aqueous ferrofluids (Fig.1.b) were obtained by dispersing the ~8nm average diameter hydrophilic IONPs in pH neutral distilled water at different solid volume fractions. All ferrofluid samples are colloiddally stable against gravitational sedimentation. Spontaneous and synthesis process induced IONP clustering was investigated by means of Dynamic Light Scattering. Magnetically induced clustering was investigated by means of Static Light Scattering and Optical Microscopy. The colloidal stability of the ferrofluid samples will be discussed in correlation with the synthesis factors and the IONP volume fraction.

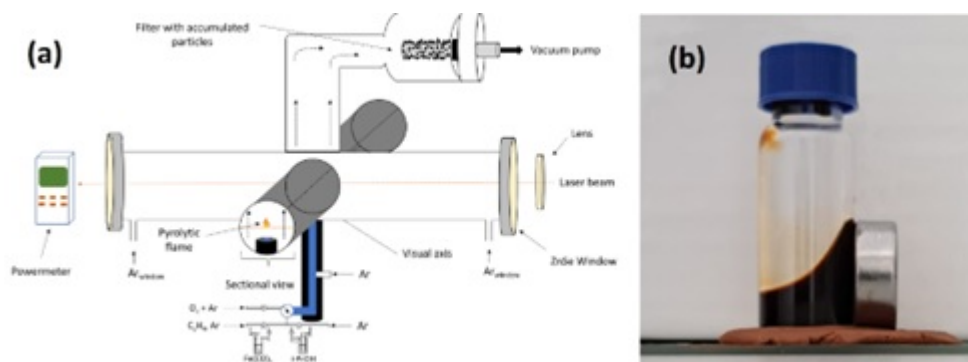


Figure 4: a) Laser pyrolysis installation, and b) aqueous ferrofluid.

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References:

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