## SUBMICRON STRUCTURE IN BIOCOMPATIBLE FERROFLUIDS

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This paper was intended as a comparative study between the microstructural features of two water-ferrofluids intended for biological applications. In both cases the ferrophase was prepared by auto-catalytic reaction between ferrous and ferric salts resulted in magnetite and some maghemite precipitates. The difference is given by the stabilizer molecule: tetramethyl ammonium hydroxide and, respectively citric acid. Transmission electron microscopy (TEM) and atomic force microscopy (AFM) (fig.1) have been utilized as ferrophase size investigation. Histograms of ferrophase diameter distribution have been drawn. Comparative analysis was accomplished by means of box-plot graphical technique.



The evidence of short chains and large aggregates was made done mainly by AFM analysis (the tip diameter being equal to 5 nm). Their role in the ferrofluid rheological properties was searched by carrying out comparative measurements of viscosity and superficial tension. Complementary investigation on the ferrofluid composition was done by means of DTA measurement and IR absorption spectra. The presence of small amounts of supplementary reactives was detected by means of these tests. The suitability of the prepared ferrofluids for biological goals was proved by their convenient ferrophase diameter as well as by their stability in time. Further investigation are planned by means of RES and X-ray diffractometry.

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