

Interaction of human serum blood with spinel ferrite nanoparticles

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Abstract

Magnetic ferrite based nanoparticles (MFNPs) are becoming an interesting candidate for nanomedicine development and found application in drug delivery and diagnostics. In the present work, we have synthesized various spinel ferrite nanoparticles (NPs) by hydrothermal technique (a simple and cost effective technique). Different divalent metals, namely Ni, Zn, Cu and Co, were used for spinel ferrite preparation. Since these NPs are injected directly to the blood for therapeutic or diagnostic purpose their influence on the composition of human blood serum once in contact were investigated. The blood serum was analyzed by means of Fourier transform infrared (FTIR) and UV- Visible absorption spectroscopies. The results indicated the formation of protein-corona with all studied MFNP's. Small amount of metal oxides were found to be released from the MFNP's to the serum. Based on our study, ZnFe₂O₄ has been suggested as the most suitable spinel ferrite NPs for Nano medicine applications.

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