

High-Gradient Magnetic Capture of Ferrofluids: Implications for Drug Targeting and Tumor Embolization

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One of the perspective methods of cancer chemotherapy is magnetic targeting of drugs to tumors. This task is usually accomplished using small permanent magnets attached near the desired sites. In this study a new much more effective approach is proposed which is based on a strong magnetic gradient using a ferromagnetic wire placed in a strong magnetic field. Feasibility of this approach has been evaluated by the formation of ferrofluid seals and measurement of maximum pressure the formed seal can resist. Using this method it is possible to capture even superparamagnetic particles with nanosize dimensions, therefore the method may have an interesting applications in biomedical sciences.