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Magnetic Localization of Maghemite Nanoparticles in Simulated Blood Vessels for Focused Therapy[1] NATALIE LAPP, Manhattan College, CHRISTOPHER BRAZEL, The University of Alabama — Magnetic nanoparticles (MNPs) can easily be administered to patients intravenously for use in therapies such as hyperthermia or localized drug delivery. The MNPs are collected within the blood vessel by an externally applied magnet. The capture of maghemite nanoparticles was studied in blood vessels as a function of fluid velocity, vessel diameter, magnetic field strength and fluid viscosity. Nanoparticles were captured most easily in small blood vessels with applications of higher magnetic fields. Higher viscosity fluids cause a reduction in the effective capture of nanoparticles. By studying localization in water and simulated blood plasma, the importance of studying flow behavior in complex fluids for further development of medical therapies is evident.

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