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Advanced Design of Ferrofluids

Guest Editor:

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Message from the Guest Editor

Dear Colleagues,

Ferrofluids, also known as magnetic liquids, are smart materials that have had many applications since their discovery in the 1960s. These dispersions of ferromagnetic nanoparticles in various liquids associate the properties of the nanoparticles with the liquid, conferring—to the combined system—numerous properties that can be modulated by homogeneous or nonhomogeneous and static or oscillating magnetic fields. While the first ferrofluids were obtained by grinding iron oxide in oil in the presence of surfactants, many other combinations have subsequently emerged: various magnetic materials, different sizes and shapes of nanoparticles, surface functionalization of nanoparticles, different types of dispersing liquids, etc. The initial applications were then extended to a very wide range of fields, including biomedical, microfluidics, composite materials, sensors, patterning, and soft robots; however, this probably marks only the beginning of the even wider use and increasing richness and variety of these systems.

Dr. Emmanuelle Dubois
Guest Editor



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Message from the Editor-in-Chief

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