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Research into the fascinating properties and applications of magnetic fluids - also called ferrofluids - is rapidly growing, making it necessary to provide at regular intervals a coherent and tutorial account of the combined theoretical and experimental advances in the field. This volume is an outgrowth of seven years of research by some 30 interdisciplinary groups of scientists: theoretical physicists describing the behaviour of such complex fluids, chemical engineers synthesizing nanosize magnetic particles, experimentalist measuring the fluid properties and mechanical engineers exploring the many applications such fluids offer, in turn providing application-guided feedback to the modellers and requests for the preparation of new fluid types to chemists, in particular those providing optimum response to given magnetic field configurations. Moreover, recent developments towards biomedical applications widens this spectrum to include medicine and pharmacology. Consisting of six large chapters on synthesis and characterization, thermo- and electrodynamics, surface instabilities, structure and rheology, biomedical applications as well as engineering and technical applications, this work is both a unique source of reference for anyone working in the field and a suitable introduction for newcomers to the field.

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