

S. Odenbach (Ed.)

Ferrofluids

**Magnetically Controllable Fluids
and Their Applications**



Springer

Table of Contents

Part I Synthesis and Characterization

The Preparation of Magnetic Fluids	
<i>S.W. Charles</i>	3
Magnetic Spectroscopy as an Aide in Understanding Magnetic Fluids	
<i>P.C. Fannin</i>	19
Magnetic and Crystalline Nanostructures in Ferrofluids as Probed by Small Angle Neutron Scattering	
<i>A. Wiedenmann</i>	33

Part II Basic Theory

Basic Equations for Magnetic Fluids with Internal Rotations	
<i>R.E. Rosensweig</i>	61
Ferrohydrodynamics: Retrospective and Issues	
<i>M.I. Shliomis</i>	85
Ferrofluid Dynamics	
<i>H.W. Müller and M. Liu</i>	112
Heat and Mass Transfer Phenomena	
<i>E. Blums</i>	124

Part III Rheological Properties

Statistical Physics of Non-dilute Ferrofluids	
<i>A. Zubarev</i>	143
Magnetic Fluid as an Assembly of Flexible Chains	
<i>K.I. Morozov and M.I. Shliomis</i>	162
Magnetoviscous Effects in Ferrofluids	
<i>S. Odenbach and S. Thurm</i>	185

VIII Table of Contents

Magnetorheology: Fluids, Structures and Rheology
G. Bossis, O. Volkova, S. Lacis, and A. Meunier..... 202

Part IV Applications

**Targeted Tumor Therapy with “Magnetic Drug Targeting”:
Therapeutic Efficacy of Ferrofluid Bound Mitoxantrone**
*Ch. Alexiou, R. Schmid, R. Jurgons, Ch. Bergemann,
F.G. Parak, and W. Arnold* 233

Magnetic Unit System 255