

## INTRODUCTION,

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Magnetic fluids are a new class of engineering materials. With the coexistence of magnetic and liquid properties, magnetic fluids provide opportunities to create innovative products and solve complex technical problems. To date, the materials have been used for engineering solutions in such diversified industries as semiconductor, audio, bearing, damping, medical and instrumentation. The scope of applications, however, is much greater and one envisions a rapid growth both in basic research and commercial products.

The objective of this handbook is to provide a working guide to magnetic fluids. Several books have been written on the subject of magnetic fluids but these books assume a graduate level engineering/science education for reader. Therefore, these books are of limited use for practicing engineers in industrial environments who are seeking a rapid working knowledge of this area, and to beginning students who are interested in entering this field.

In the handbook, the concepts and basic principles have been explained in a simple manner, but the significance fully described; and sufficient examples are presented in regard to the use of the theory in practical situations. The liquid and magnetic phenomena, the core of magnetic fluid technology, are described in an easy-to-understand format. The fundamental characteristics of magnetic fluids along with measurement techniques are discussed. The design and operational principles of magnetic fluid devices are explained in detail with a view towards assisting the user with an in-depth understanding of the technology.

The handbook is user friendly. Magnetic fluids and related topics are presented in such a manner that the engineer quickly learns about this field and becomes effective in the use of the technology. Students in the academics should also find the book to be valuable because of its basic nature and broad subject matter.