

PREFACE

Amorphous magnets were first fabricated in 1967 from their liquid states by means of a rapid-quenched technique. A tremendous number of advances in this field has mainly been directed in the discovery of new magnetic materials and effects, in order to widen the application to technology. The subject is now a current topic in solid state physics and is of interest to physicists, materials scientists, and electrical or electronic engineers; the materials are regarded to be important for various technological applications as well as academic researches. In fact, amorphous magnets exhibit a wide range of new phenomena, in contrast with those of crystalline magnets where the periodicity of constituent atoms plays the essential part. Atoms in an amorphous magnet are distributed randomly, taking a topologically disordered structure, and the attraction is directed in seeing how the absence of crystal structure modifies collective magnetic and electric phenomena.

About ten years ago I published a book on the subject; Amorphous Magnetism (CRC Press, U.S.A.,1984). However, the frontiers of our knowledge in the field are always on move. About a decade we have had a lot of new information on the subject. Now, it seems so reasonable to rewrite the monograph completely into the textbook, although it may be still worth for graduate students and research workers interested in the theoretical works. In particular, there is a profound distinction between a treatise and a textbook. In a textbook we must know the general

theoretical principles as well as the basic experimental facts.

Even so, magnetic and electric properties of amorphous magnets are so complex and become deeper in the contents that no single individual is able to comprehend them completely. In this monograph, therefore, I attempt to present the fundamental concepts of the subject in simple forms as far as possible, in order to keep the length of this book within reasonable bounds. I have not referred in detail to the papers and reviews, but they can easily be traced through literature given in the bibliography of this book. Especially, the present book is aimed to design for students early in their formative period of this subject, so as to have some notion of what an amorphous magnet is.

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