PREFACE

The Physics of disordered systems has been an extremely active and fruitful area for research in the past decade and it is very likely that this will continue to be the case well into the future. In Condensed Matter Physics, the manifestations of disorder are very diverse and affect a wide range of materials and processes. The most common type is typified by the random structure of insulating and semiconducting glasses; somewhat more subtle is the disorder introduced by compositional mixing and that encountered in phase transitions. Much of the early work has centered in establishing the static bulk and structural aspects of amorphous systems; more recently, attention has shifted to dynamical aspects which characterize disorder and it is this area that this volume is addressed to.

Dynamical processes such as those which lead to relaxation and the diffusion and propagation of energy are expected to be fundamentally affected by the disorder encountered in amorphous solids. In glassy materials, for example, this is partially because new elementary excitations are present in them; the latter appear to be characteristic of structural disorder and are the so–called two level systems of TLS. On the other hand and to date, developments in other areas of study such as those concerned with magnetic spin glasses have proceeded independently from those in which structural disordered is involved and, indeed, striking advances have been noted in this area. It is our general opinion that these apparently diverse areas must, in fact, be connected by a common thread. One of the principal purposes of this volume is to encourage the discovery of these common interests.

In organizing this volume, we have sought to expose the reader only to a sampling (hopefully, not random) of the diversity which has characterized the study of disorder and of disordered systems. We have successfully sought out contributors who have made seminal contributions to their respective topics of interest; we have insisted that the reviews include a tutorial component so as to allow smooth entry to those with lesser acquaintance with the topic. By and large, we believe we have been successful in compiling a series of reviews which will be useful for some time to come.

As the editor of this volume, I am thankful to my distinguished colleagues who so generously agreed to take time to participate in this venture and by producing their manuscripts more or less within our agreed schedule. Special thanks go to Dr. Fred Wohlbier of Trans Tech for his encouragement and patience in seeing this project through.

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