Characterization and Failure Analysis of PLASTICS

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Comments, criticisms, and suggestions are invited and should be forwarded to ASM International.

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Preface

This book is collection of *ASM Handbook* articles on how engineering plastics are characterized and understood in terms of properties and performance. It approaches the subject of characterization from a general standpoint of engineering design, materials selection, and failure analysis. These basic activities of the engineering process all require clear understanding of plastics performance and properties by various methods of physical, chemical, and mechanical characterization.

The first section introduces the fundamental elements of engineering plastics and how composition, processing, and structure influence their properties and performance. The second section contains articles on material selection and design, where the requirements of a plastic part are synthesized and analyzed in terms of function, shape, process, and materials. The next sections then cover the important physical, chemical, and mechanical properties of plastics.

The last section covers failure analysis, which is the ultimate stage of characterization in the life of a part, but really only the penultimate stage in the overall engineering process. Failure analysis, in a broad sense, is another iteration of the design process, as it can provide important information on product and process improvements. Thus, it closely ties together with the characterization of properties and performance plastics during design and materials selection.

This book would not have been possible without the original contributions from the authors of the Handbook articles. Thanks are extended to them.

Steve Lampman
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