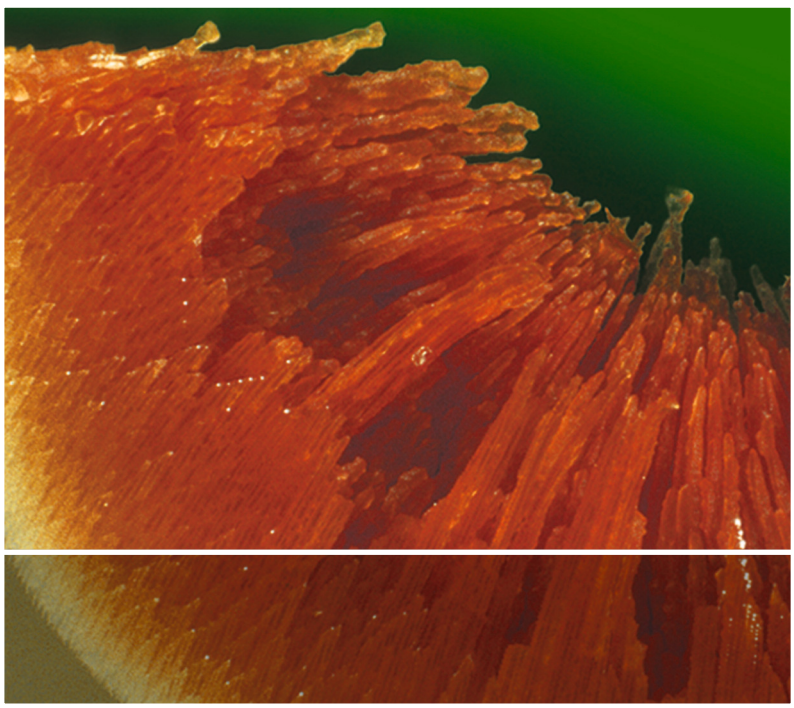
Gottfried Ehrenstein
Sonja Pongratz

Resistance and Stability of Polymers



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Dedicated to our families —
without their patience and understanding
we would not have been able to compile this book

Preface

The resistance of polymeric materials to chemicals and other environmental influences has been covered in a large number of research articles that are typically focused on the behavior of a specific material with regard to a given medium and load. Raw material manufacturers, testing institutions, and users collected vast amounts of singular data both from tailored experiments and from practical experiences.

In 1978, the first comprehensive book covering this topic was published by Dr. Dolezel, supported by C.-M. Meysenbug. Their goal was to provide a comprehensive overview of the behavior of this (then) novel class of materials, including both polymeric materials and elastomers. Although the following years brought numerous new developments, in particular for polymeric materials, this book was never published in an updated, second edition. After many years of extensive research in the field of polymer resistance we came to the conclusion that careful consideration of processing conditions, design, and in particular use and application conditions is necessary before meaningful statements regarding the resistance and stability of polymers can be made. Determining the resistance of polymers is not an exclusively a material science related problem but rather involves all life cycle aspects of a plastic part - from the manufacturing of its raw materials to its end of service life.

With the complexity of this topic, the evaluation of more than 1200 literature references, and our effort to take different perspectives into account, it took 10 years of intensive work to compile this comprehensive and voluminous book. It is great pleasure to see that after more than 30 years, the groundbreaking book by Dolezel and Meysenbug is now available in a current and comprehensive version. However, being well aware of the diversity and complexity of the topic we do not claim completeness. It is our goal for the future to close all existing gaps in the current compilation of data and would like to encourage our readers to provide comments and/or to point out missing information.

The authors wish to express their appreciation to several individuals who provided valuable support and advice during the preparation of this book. Our particular thanks is owed to Prof. Dr.-Ing. Dietmar Drummer and his highly qualified and

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Erlangen/Wolfsburg, Summer 2013

Sonja Pongratz
Gottfried W. Ehrenstein

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