

Preface

This book is a distillation of our long collective experience as students, teachers, and researchers in the field of crystallographic textures and its applications, both in academic and industrial settings. Analysis of texture currently finds widespread use in several industries as a crucial input toward development of new materials and products. As such, there has been rapid growth in the need to understand and use texture analysis, and the user base of this area has seen a concurrent growth. This has resulted in a need for organized basic learning material to introduce new and established users to this field.

Why this book at this time? There are already several well-known, recognized excellent texts in texture analysis, including seminal works by Bunge, Kocks et al. and Randle and Engler. However, almost all of these are advanced level texts that delve into the details of texture analysis. The only introductory monograph, by Hatherley and Hutchinson, is almost 40 years old and certainly does not cover the advances in the field that have occurred in the intervening time. This has resulted in a large unmet demand for introductory learning materials in crystallographic texture analysis. This book aims to meet that demand. This book is influenced by many years of teaching texture analysis to many batches of students both at IIT Kanpur and Indian Institute of Science, Bangalore. We hope that this effort provides the reader with an accessible, detailed, and applicable introduction to the field of texture analysis.

The first three chapters of this book introduce the essentials of texture analysis to a novice reader. The next three chapters ([Chaps. 4–6](#)) deal with the essence of existing knowledge on texture of metallic materials. The [Chaps. 7 and 8](#) are dedicated to some of the relatively recent topics in texture research, that is, texture in thin films and nonmetals. Obviously these chapters provide mostly the information available in the literature and hence are not rigorous. [Chapter 9](#) deals with the dependence of material properties on texture, and the last chapter ([Chap. 10](#)) provides a brief account of texture control as practiced in some of the engineering materials.

This book can be used as a reference for researchers and users of texture analysis in fields as diverse as Metallurgy, Materials Science and Engineering, Physics and Geology. This book can also serve as a text book for one-semester undergraduate and postgraduate courses in texture analysis by using the content selectively. We hope that this book will prove useful to anyone who wishes to learn about

textures and will find a place on the bookshelves of researchers in both academic and industrial settings.

Writing a book such as this is never an isolated experience, but depends on the contributions of many to come to fruition. This book would not be possible without contributions and discussions from team members in our respective research groups. We specially acknowledge K. S. Suresh and R. Madhavan for their material inputs and for organizing the manuscript into appropriate format; Nataraj B. R., Narendra Babu N., and Ms. Naina for drawing the figures. We also thank our professional colleagues Prof. V. Subramanya Sarma (IIT Madras), Dr. Nilesh Gurao (IIT Kanpur), Prof. Indradev Samajdar (IIT Bombay), Dr. Pinaki Bhattacharjee (IIT Hyderabad), Prof. Rajesh Prasad (IIT Delhi), and late Prof. K. S. Sree Harsha (St. Jose University, USA) for their suggestions after reading early versions of the manuscript. We extend a special thanks to Prof. Tony Rollett (Carnegie Mellon University, USA) for access to his excellent teaching materials. The lecture notes of Prof. Olaf Engler (RWTH Aachen and Hydro Aluminium, Bonn, Germany) have proved of great help in guiding this manuscript. We have also benefited from professional interactions with our esteemed colleagues Profs. W. B. Hutchinson (SWEREA, Sweden), T. Leffers (Risoe, Denmark), J. J. Jonas (McGill, Canada), L. S. Toth and J. J. Fundenberger (Metz, France), G. Gottstein (RWTH Aachen, Germany), J. Hirsch (Hydro Aluminium, Bonn, Germany), and W. Skrotzki (TU Dresden, Germany).

We have been fortunate to have, and continue to have, many students pass through our courses and our labs at different institutions and organizations over the years, some of whom have become very successful in their own right. The opportunity to interact with these fresh minds and receive their feedback, on the material we have included in this book, has been infinitely valuable, and we thank them individually and collectively for their contribution to this manuscript. Last but not the least, we acknowledge the support of our wives and families for their patience and cooperation while preparing the manuscript.

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<http://www.springer.com/978-1-4471-6313-8>

Crystallographic Texture of Materials

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2014, XIII, 260 p. 157 illus., 5 illus. in color., Hardcover

ISBN: 978-1-4471-6313-8