

Preface

The publication of this book is a culmination of high level interest evinced by the industrial, scientific, and academic communities worldwide in the subject of brake friction material composite. It provided the stimulus to publish the monograph of the second edition of the first volume. This monograph is intended to support beginners with the basic insight into the essentials of friction material composite, with a broader sense of evolution of brake friction material formulation from the materials point of view. This second edition of the First Volume which is an introductory volume of the five volumes has been written and brought out from the author's experience and expertise with wide ranging friction material manufacturers, brake manufacturers, vehicle manufacturers, researchers, and testing labs with whom the author has been associated worldwide for the last 28 years. Recent work by the author in North America on copper-free, non-metallic BFMC with ceramic replacement finds an interesting place in this volume with solutions in hand excelling any other BFMC systems currently in vogue as it addresses various terrain requirements with sound techno-commercial value.

This monograph does not cater to any specific process/product formulations as each industry operates with its own manufacturing setup with process variables and other operating variables and none of the information provided is proprietary. In this monograph, automotive brake pads have been dealt with under the class of friction materials group. Although friction materials find wide ranging applications in domestic appliances, industrial appliances, automotive, rail brake friction pads, composition brake blocks, liners, and clutch part members, brake pads for automotive applications have been selected by the author for easy understanding. For the friction material group by virtue of its high volume content, the author has plans to present core issues of design, development, test procedures in detail and sequentially in the subsequent volumes to come. The environmental issues arising out of copper inclusion in the formulations and the legislation banning its usage have led the author to design and develop copper-free, non-metallic ceramic brake pads, which has been dealt with in this volume.

The author would like to express his sincere gratitude to all colleagues engaged in the brake friction material composite discipline who assisted with valuable

advice and suggestions. The support provided for developing and implementing copper-free, non-metallic ceramic substitutes from New World Friction, Canada is acknowledged. The author wishes to acknowledge research support from NSW, Canada which deserves a strong mention in this volume.

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