PREFACE

Advanced high temperature materials are a key part of the emerging new enabling technologies for structural-aerospace, propulsion systems, defense, nuclear, thermal and chemical industries. Accelerating efforts have been directed towards increasing the temperature capability of existing material systems and developing new material formulations such as advanced ceramics, UHTCs, intermetallics and CMCs. The understanding of the materials' behavior and control of the microstructure and properties have become the key elements of such research activities. Since the processing itself may manifest various microstructural configurations and properties, the processing routes to obtain optimum structures is also important to record in detail.

In this special volume, an attempt has been made to present a large number of the more well-known ultra-high-temperature ceramics, refractory borides, oxides, including their composites, intermetallics, and CMCs. The collection provides a potpourri of valuable past experiences as well as a comprehensive portfolio of the state-of-the-art processing, written by experts in their respective fields. For each system chosen, the synthesis, processing, and microstructure-property interrelationships have been explored.

The editors wish to thank the referees for their effort in reviewing the manuscripts. Special thanks are due to all the authors for their invited contributions.

Yashwant Mahajan

&

J. A. Sekhar

June 6, 2008