PREFACE

The objective of this book is to discuss the current status of research and development of boron-rich solids as sensors, ultra high temperature ceramics, thermoelectric, and armor. Novel biological and chemical sensors made of stiff and light weight boron-rich solids are very exciting and efficient for application in medical diagnoses, environmental surveillance and pathogen and biological/chemical terrorism agent detection. Ultra high temperature ceramic composites exhibit excellent oxidation and corrosion resistance for hypersonic vehicles' application. Boron-rich solids are also promising candidates for high temperature thermoelectric conversion. Armor is another very important application of boron-rich solids since most of them exhibit very high hardness, which makes them perfect candidates with high resistance to ballistic impact.
The following topic areas are presented:

- boron rich solids: science and technology;
- synthesis and sintering strategies of boron rich solids;
- microcantilever sensors;
- screening of the possible boron based thermoelectric conversion materials;
- ultra high temperature ZrB_2 and HfB_2 based composites
- magnetic, transport and high-pressure properties of boron rich solids;
- restrictions of the sensor's dimensions for chemical detection;
- armor

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