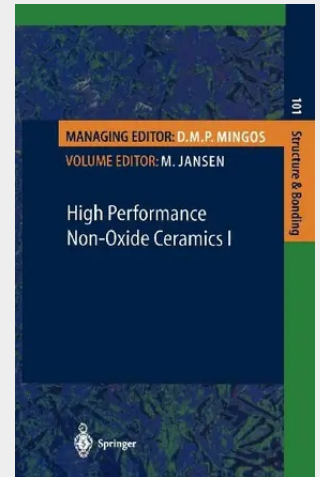


High Performance Non-Oxide Ceramics I

The nitrides and carbides of boron and silicon are proving to be an excellent choice when selecting materials for the design of devices that are to be employed under particularly demanding environmental and thermal conditions. The high degree of cross-linking, due to the preferred coordination numbers of the predominantly covalently bonded constituents equalling or exceeding three, lends these non-oxidic ceramics a high kinetic stability, and is regarded as the microscopic origin of their impressive thermal and mechanical durability. Thus it does not come as a surprise that the chemistry, the physical properties and the engineering of the corresponding binary, ternary, and even quaternary compounds have been the subject of intensive and sustained efforts in research and development. In the five reviews presented in the volumes 101 and 102 of "Structure and Bonding" an attempt has been made to cover both the essential and the most recent advances achieved in this particular field of materials research. The scope of the individual contributions is such as to address both graduate students, specializing in ceramic materials, and all scientists in academia or industry dealing with materials research and development. Each review provides, in its introductory part, the chemical, physical and, to some extent, historical background of the respective material, and then focuses on the most relevant and the most recent achievements.

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