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# Sintering of Boron Carbide Powders Derived from Organic Precursors

Boron carbide is an advanced ceramic material of great interest for structural and functional applications due to its low density, high hardness, and chemical stability. Nevertheless, its covalent character represents an issue for sintering and densification which are also strongly affected by impurities and surface oxides presence. In this context, the use of $B_4C$ powders obtained from organic precursors could represent a promising strategy for improving sinterability, thanks to the enhanced control of chemical composition, stoichiometry, and particle size.
The present work has been carried out to investigate the densification mechanisms of boron carbide powders synthesized from organic precursors, focusing on microstructural evolution and the influence of residual precursor impurities on active sintering processes. Both conventional sintering methods and advanced techniques featuring extremely high heating rates, such as Ultrafast High-temperature Sintering (UHS), are considered.
A comparative characterization of the obtained materials is performed, aiming at correlating the process parameters with densification, microstructural features and phase stability. The comparison between the different sintering paths is intended to clarify the potential advantages and limitations of unconventional processes for the densification of $B_4C$, thus providing useful information for the development of high-performance ceramic materials.

## Professional Status of the Speaker

Doctoral or Master Student

## Interest in submitting a paper in a special issue of

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## Invitation letter for visa

Yes

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