Contribution ID: **135** Type: **2. Invited speaker (by invitation only)**

Production of ceramic components via ultra-rapid sintering

Ultra-rapid high-temperature sintering has recently been proposed as a technique that enables the densification of ceramic materials in extremely short timeframes, thereby saving a considerable amount of energy. The process is based on the rapid heating of a carbon felt—in which the sample is placed—via Joule heating generated by an electric current. This approach is highly attractive for industrial applications, as it relies solely on electrical energy and avoids direct carbon dioxide emissions.
Nevertheless, several aspects must be investigated to scale up the process effectively. In the present work, fundamental processing parameters—such as felt configuration, sample size, current, and dwell time—were analyzed during the consolidation of alumina ceramics using a prototype furnace designed to resemble industrial equipment. The resulting materials were characterized in terms of microstructure, density, and porosity, and subsequently compared to specimens produced via conventional sintering. The results highlight the advantages of the UHS technique while identifying challenges related to surface contamination and the maximum processable dimensions of the samples.

Professional Status of the Speaker

Senior Scientist

Interest in submitting a paper in a special issue of

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Invitation letter for visa

No

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