Contribution ID: **195** Type: **2. Invited speaker (by invitation only)**

In situ analysis of solid-liquid interfaces during Cold Sintering Process through impedance spectroscopy

Tuesday, 1 September 2026 13:40 (30 minutes)

The Cold Sintering Process has emerged as a breakthrough in sintering science. Related to the chemical mechanisms leading to densification, new concerns about the composition/nature/behavior of grain boundaries (GB) emerged, different than what is usually observed in high temperature solid-state diffusion sintering techniques. This leads to widely affected properties of sintered materials, and is of huge importance in the case of electroceramics, sensitive to GB properties. To better control this aspect, a first step is to highlight and track these GBs evolutions. An in situ impedance analysis, during the sintering process of ceramics, was developed and used to measure the evolution of electronic/ionic conductivity of GB and liquid phase present in the process. Applying this to various ceramic materials allowed to shed light on unique GB evolution phenomena, but also highlighted the role and behavior of liquid phases used during sintering. The use of ionic liquids, often used for materials facing incongruent dissolution, was also explored and will be presented. The discussion will focus on the major trends, lessons learned from the use of in operando impedance analyses during CSP, offering opportunities to widely tune the properties of electroceramics.

Professional Status of the Speaker

Senior Scientist

Interest in submitting a paper in a special issue of

Journal of the European Ceramic Society (Elsevier)

Invitation letter for visa

No

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