SEMINAR

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Sintering data and connections: challenges and opportunities

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Sintering, as a central step in ceramic processing, generates a wide spectrum of datasets, ranging from detailed dilatometry curves to sparse or final-density-only information from non-conventional techniques. This heterogeneous "big–medium–low" sintering data landscape makes it difficult to identify dominant densification mechanisms in a systematic way, but at the same time opens opportunities for data-driven approaches. In this contribution, strategies are discussed in which experimental data treatment and modeling are combined to extract mechanistic insight from sintering data and to support the design of new experiments. Flash sintering experiments on ceramics with distinct starting microstructures and electrical profiles are discussed as examples of how datasets can be structured, shared and reused across groups. These cases illustrate how sintering data, when organized in open and interoperable formats, can foster collaborations, link communities working with conventional and non-conventional techniques, and contribute to a more connected understanding of sintering phenomena.

Kindly invited.