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TMS 2017
146th Annual Meeting & Exhibition



February 26 – March 2, 2017
San Diego, California, USA

FUNDAMENTAL ASPECTS AND MODELING POWDER METAL SYNTHESIS AND PROCESSING

This symposium joins the communities interested in fundamental aspects of powder metallurgy, both modeling and experimental. It represents the TMS Powder Materials Committee initiative to bring together the individuals specializing in basic research on powder synthesis and consolidation, fulfilling the goal of TMS annual conferences of creating an interdisciplinary and fruitful research environment. The related modeling application topics include conventional and field assisted powder consolidation processes (powder compaction, pressureless sintering, spark-plasma and microwave sintering, hot isostatic pressing, and novel consolidation techniques), nano-sintering, grain growth, interface effects, in-situ measuring techniques at various scale levels, modeling of die filling and powder spreading, modeling of sintering phenomena in additive manufacturing, and simulation of powder synthesis. The modeling techniques (including physics-based, phenomenological, and empirical) or fundamental experimentation are expected to cover multiple scale levels, starting from atomistic dimensions up to the scale of real world macroscopic components.

Potential session topics include:

- Modeling of powder compaction under ambient and elevated temperatures
- Fundamental aspects of conventional, microwave, spark-plasma, and flash sintering
- Grain boundary and interface energy effects on sintering and grain growth
- Modeling of die filling and powder spreading
- Modeling of sintering phenomena in additive manufacturing
- Modeling and fundamental experimentation on powder synthesis
- Consolidation of multi-layered materials
- Fundamental aspects of fabrication of powder-based electronic and bio-materials
- In-Situ measurements of powder synthesis and consolidation

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TMS Powder Materials Committee

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