

Thermodynamics of Sintering: Grain Boundary Energy, Surface Energy, and Pore Stability

Monday, 31 August 2026 13:40 (30 minutes)

The lecture emphasizes the importance of solid–solid interface energy, or grain boundaries, in the thermodynamics of interfaces during the sintering of ceramic materials. Three chemical potentials are identified: the difference in chemical potential between grain boundaries and surfaces emerges as a crucial factor for pore elimination. However, once this equilibrium is attained, a second chemical potential related to grain size differences becomes dominant, driving grain growth and producing a new microstructural configuration that can restart the sintering process. The third chemical potential is linked to edges, contributing to the rounding of the neck region between grains and to neck formation without significantly changing pore stability. Modifications in chemical composition resulting from adsorption or segregation processes play a vital role in pore stability during sintering by altering the energy balance of the interfaces.

Professional Status of the Speaker

Senior Scientist

Interest in submitting a paper in a special issue of

No interest

Invitation letter for visa

No

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