

Photonic Sintering of Fe-doped SrTiO₃: Impact on sintering, microstructure evolution and functional grain boundary properties

Monday, 31 August 2026 15:20 (20 minutes)

Conventional sintering methods are costly, energy intensive and rather inefficient processes. Photonic sintering (illuminating ceramic samples with high intensity light) has been proven to be an effective method for sintering ceramics. The process readily works for many material systems, yet the fundamental understanding on how the process can be controlled, or how it impacts the ceramics properties is lacking.

The current study investigates the impact of different ultra-high heating rates on the sintering rates, grain growth rates and grain boundary properties of doped and undoped SrTiO₃ material systems.

Sintering rates are determined by video documentation data and grain growth rates are determined by SEM imaging. The grain boundary properties are investigated using electrochemical impedance spectroscopy. All data of samples thermally treated by photonic sintering method will be compared to samples from conventional sintering methods.

Professional Status of the Speaker

Doctoral or Master Student

Interest in submitting a paper in a special issue of

No interest

Invitation letter for visa

No

Author: ZÄHLER, Pascal (Universität Stuttgart)

Co-authors: Mr TEUCHER, Carsten (Universität Stuttgart); Mr EBERT, Julian (Universität Stuttgart); Dr JENNINGS, Dylan (Ruhr Universität Bochum); Dr KINDELMANN, Moritz (Technical University of Denmark); Prof. RHEINHEIMER, Wolfgang (Universität Stuttgart)

Presenter: ZÄHLER, Pascal (Universität Stuttgart)

Session Classification: Photonic sintering

Track Classification: Group 3: Photonic sintering