

Transfer of FAST / SPS technology from lab-scale to industrial usage for fusion energy, semiconductor and friction applications

Tuesday, 1 September 2026 12:00 (20 minutes)

Field Assisted Sintering Technology (FAST), also known as Spark Plasma Sintering (SPS), has become an established processing route in materials research and development due to its ability to consolidate and even join advanced materials with high heating rates, short cycle times, and excellent microstructural control. While often perceived primarily as a laboratory-scale technique, FAST/SPS has matured into a highly efficient and flexible manufacturing technology with high potential for industrial implementation.

In the presentation, it will be highlighted which efforts need to be made to transfer promising scientific results into large-scale industrial products. Main focus will be on two advanced, tungsten-based plasma-facing materials for fusion reactor applications: The SMART material (Self-passivating Metal Alloy with Reduced Thermo-oxidation) is designed to enhance safety by providing protective behaviour under accidental oxidation scenarios. The FIT material, a tungsten fibre-reinforced tungsten composite, targets improved ductility and extended lifetime compared to pure tungsten, and is particularly attractive for divertor applications. The work is part of the German BMFTR project “a-SMART-FIT” bringing together the expertise of German universities, research institutions and companies.

Additional case studies will be presented, underlining the potential of FAST as a mass production technology.

Keywords: Field-assisted sintering technology (FAST), Plasma Facing Components

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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