

Innovative Developments in Spark Plasma Sintering (SPS) Equipment Driven by Application Demands

GeniCore tracks market requirements to drive innovation in Spark Plasma Sintering (SPS) device design. Responding to evolving needs, the company developed the U-FAST Glovebox system—an integration of MBRAUN inert gas glovebox with U-FAST SPS technology. It enables continuous processing in inert atmosphere, preventing oxygen/moisture exposure for sensitive materials, achieving ultra-fast densification via <1 ms current pulses, minimizing grain growth and enhancing properties.

Key Innovations

Another advance is the U-FAST Compact PRO power supply. The upgrade delivers higher heating rates at equal power, with <1 ms pulse rise time and up to 5 kA currents. It supports DC (SPS), AC (induction), or combined modes controlled by a single PLC, blending both methods' benefits. Induction ensures efficient, rapid temperature control. Vacuum connectors prepare it for High-Voltage sintering.

Applications

Both systems target R&D and low-volume production of advanced materials like Bulk Metallic Glasses (BMG), High-Entropy Alloys (HEA), transparent ceramics, and thermoelectrics. Collaborations with top research centers validate their performance, accelerating progress in electronics, energy, aerospace, and beyond. Small-scale processes scale seamlessly to industrial volumes using identical parameters on production-grade equipment.

Benefits

This future-proof platform offers precise environmental control and process scalability, marking a breakthrough in plasma sintering technology.

Professional Status of the Speaker

Doctoral or Master Student

Interest in submitting a paper in a special issue of

Journal of the European Ceramic Society (Elsevier)

Invitation letter for visa

No

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