

SEMINAR III

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Rapid radiation sintering of strontium hexaferrite ceramics

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The phase composition and microstructure of strontium hexaferrite (SFO) ceramics critically determine their hard-magnetic properties. In this study, SFO was rapidly densified by pressureless spark plasma sintering (pSPS) at a heating rate of 500 °C min^{-1} using a radiative graphite crucible. Under these conditions, partial decomposition of the material occurred, yielding Sr-rich and Sr-deficient phases with distinct morphologies that together diminished the magnetic hardness. Several secondary phases possessed lower melting temperatures, resulting in localized liquid formation and a transition from purely solid-state densification to a combined solid–liquid mechanism. To contextualize these findings, the microstructures produced by pSPS were compared with those obtained by conventional sintering under various atmospheric conditions, highlighting the influence of the processing atmosphere on phase stability and microstructural evolution in SFO.

Kindly invited.