

Abstract Submitted  
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**Numerical simulation of the dynamic compaction process for fine iron disilicide powder** ALEXANDER SELEZENEV, VALERY LASHKOV, ALEXEY ALEYNIKOV, OLGA SINKOVA, YURI YANILKIN, RFNC - VNIIEF, Sarov, Russia — Iron disilicide is an attractive material for making thermoelectric generators and temperature sensors. One way to obtain high-density samples of iron disilicide is dynamic compaction technique. The paper summarizes the results of two-dimensional simulation study to optimize the performance of experimental setup for dynamic compaction of fine iron disilicide powder. This optimization was carried out in two-dimensional geometry and used EGAK code. Also, it describes the powder material temperature and pressure values calculated in relation to its loading conditions and initial powder density. The calculation found quantities of the equation of state in Mie-Grüneisen form and the dependence of heat capacity on temperature for crystalline iron disilicide. Elastic pressure versus compression was calculated using ABINIT code, and thermal energy calculation was based on Debye model for the heat capacity of crystal structures. The numerical compaction data were compared against the experimental results.

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