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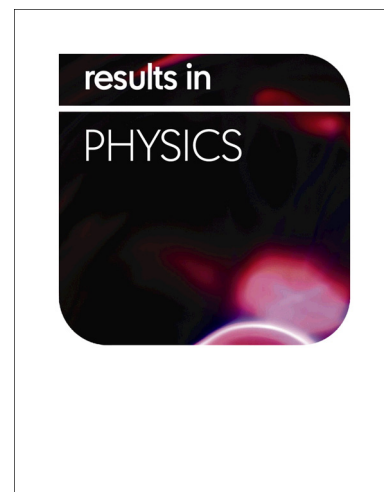
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# SWELLING NEGATION DURING SINTERING OF STERLING SILVER: AN EXPERIMENTAL AND THEORETICAL APPROACH

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## Keywords

Silver; Sintering; Swelling; Modeling; Dilatometry; Atmosphere control

## Abstract

One of the main challenges of the sintering of sterling silver is the phenomenon of swelling causing de-densification and a considerable reduction of the sintering kinetics. This swelling phenomenon opposes sintering and it needs to be addressed by a well-controlled processing atmosphere. In the present study, the pressure-less sintering behavior of sterling silver is investigated in air, argon, and vacuum. A specially modified spark plasma sintering mold is designed to study the pressure-less sintering of sterling silver in a high vacuum environment. The conducted analysis is extended to the new constitutive equations of sintering enabling the prediction of the swelling phenomena and the identification of the internal equivalent pressure that opposes the sintering.

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