

Abstract Submitted  
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**Coupling between charge carriers and point defects in electric-field assisted sintering of ceramics**<sup>1</sup> C STEPHEN HELLBERG, NOAM BERNSTEIN, STEVE ERWIN, Naval Research Lab — The densification that occurs during sintering of certain ceramics has been observed to occur more rapidly and at lower temperatures when a weak external electric field is applied. Also known as “flash sintering”, the densification is accompanied by a sharp increase in the conductivity. We examine the coupling between the injected carriers and the formation of point defects. The analysis is based on density functional calculations of the defect formation energies in yttria-stabilized zirconia and  $Y_2O_3$ .

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C Stephen Hellberg  
Naval Research Lab

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