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Exotic grain growth law in twinned boron carbide under electric fields

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Abstract

Grain growth is a ubiquitous phenomenon in all materials, and it affects both structural and functional properties. Despite its intrinsic importance, a full comprehension of grain growth from a fundamental point of view—i.e., from the nanoscale to the macroscale—is still a pending issue. In practical terms, our knowledge relies on the classical kinetic laws reported sixty years ago.

This paper reports the violation of such classical laws in boron carbide ceramics consolidated by spark plasma sintering. The conjunction of high temperature gradients with large

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