

Geometric characterization of grain boundary networks in polycrystalline materials

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Properties of polycrystalline materials are influenced by grain boundary networks. Recent advances in experimental 3D techniques have made it possible to determine all five macroscopic boundary parameters for significant numbers of boundaries.

The corresponding data sets are sufficiently large for carrying out statistical studies of boundaries.

We have been developing computer software that will allow for geometric characterization of boundaries in an automated and efficient way. The fundamental capability of the program is to determine whether an individual boundary can be classified as tilt, twist, symmetric, etc. In the case of large boundary data sets, the goal is to allow for estimating the frequencies of occurrence of such characteristic boundaries.