

Abstract Submitted
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Study on the selectivity of damage nucleation at the boundaries of ductile metal DUAN FAN, MEILAN QI, School of Science, Wuhan University of Technology — Voids nucleation is the first stage of fracture in ductile materials. The location and number of nucleation is the key to predict when and where the fracture will take place. Studies show that the nucleation mainly occurs at the grain boundaries in high-purity polycrystalline metals. However, the nucleation and growth does not occur uniformly. This project seeks to test the response of large-grain polycrystalline metal samples with different grain boundary structure under the same loading conditions and then recovers the samples. The resulting tensile damage in the recovered samples is examined by optical, electronic backscatter diffraction analysis of the technology (EBSD), and transmission electron microscopy (TEM). The distribution and mechanism of the nucleation will be studied at different grain boundaries, and a nucleation model will be established for finite element analysis, which can be used to predict the damage nucleation at complex grain boundary conditions (including textured polycrystalline). Finally, the result will be verified by experiment.

Duan Fan
School of Science, Wuhan University of Technology

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