
Poster Session | E. Deformation and Fracture Mechanism of Materials

[PO-E2]Poster Session 2

Symposium E

Wed. Oct 31, 2018 5:45 PM - 8:00 PM Poster Hall

[P2-35]Strengthening through solid solution in $W_{1-x}Ta_xB$ system

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The elastic properties, electronic structures and the energy barriers in slip processes of $W_{1-x}Ta_xB$ system have been studied using first-principles calculations. It was found that the (110) plane is the easiest slip plane in tungsten monoboride. By substituting tungsten with tantalum, slipping on the (110) plane can be hindered through dislocation pinning, resulting in the increase of overall hardness of tungsten monoboride. Strengthening of the easiest planes is an effective approach to creating new hard materials in more metallic materials.