Can tungsten store hydrogen

Do tungsten surfaces absorb hydrogen?

In light of these concerns, it is necessary to understand the thermodynamics and kinetics of hydrogen absorption into tungsten surfaces and the subsequent behavior of hydrogen in bulk tungsten, includ-ing diffusion and trapping. Tungsten surfaces have been well studied experimental-ly, since clean, low-Miller-index surfaces are easily ob-tainable.

Does tungsten trap hydrogen atoms?

The molecular dynamics simulations of trapping of hydrogen atoms in tungsten are presented. The simulations reveal formation of platelet-like structures of self-trapped hydrogeninduced by stresses in tungsten,in particular,those produced by dislocations,at the interstitial hydrogen concentrations at.%.

Does hydrogen interaction with vacancy affect the mechanical properties of tungsten?

The impact of hydrogen interaction with vacancy on the mechanical properties of tungsten was studied. The investigation reveals two factors contributing to the increase in activation energy with temperature. The presence of hydrogen atoms and vacancy defects reduces the tensile strength and elastic modulus of tungsten.

Why is it necessary to review publications on hydrogen traps in tungsten?

It is necessary to review publications on hydrogen traps in tungsten because the recent comprehensive review on this subject was published in 2001. Since then,a vast amount of material has been accumulated on this subject,and many papers have been published on hydrogen isotope trapping in tungsten-based materials.

How does temperature affect hydrogen retention in tungsten?

MD simulations further indicate that hydrogen retention is more obvious with the increase of grain density in tungsten,and hydrogen atoms are more easily enriched at the grain boundaries. With the increase in temperature,the retention of hydrogen atoms in monocrystalline/polycrystalline tungsten decreases significantly.

Does hydrogen diffusion affect mechanical properties of tungsten?

The hydrogen diffusion in tungsten at high temperatures was studied using molecular dynamics. The study explores the effect of different hydrogen concentrations on diffusion mechanisms. The impact of hydrogen interaction with vacancy on the mechanical properties of tungsten was studied.

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