

## **HYDROGEN BICOMPLEXES AND INTERSTITIAL CROWDIONS INSIDE CRYSTALS. HYDROGEN SOLUBILITY**

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In case of high concentration of hydrogen in the crystals (e.g. in accumulators) it could appear energetically advantageous the hydrogen atoms distribution in interstitial sites of different types, e.g. octahedral, tetrahedral, triangular as well as in sites of crystal lattice and as a consequence the forming of thermodynamically equilibrium hydrogen complexes such as dumb-bells of various type, linear and flat triple and quadruple complexes, crowdions. The binary disordered alloy with face-centered cubic lattice has been studied. Calculations has been carried out on basis of molecular-kinetic theory in simplified model of crystal. It is assumed that crystal lattice is geometrically ideal. Atoms interaction has been taken into consideration in the first coordinational sphere. Relaxation of lattice and correlation in replacement of sites and interstitial sites by corresponding atoms are not taken into account.

An energetic advantageous of hydrogen complexes creation has been justified. Hydrogen solubility has been calculated taking into consideration the complexes creation and plots of hydrogen solubility dependence on temperature has been constructed. It has been shown that creation of hydrogen complexes increases the hydrogen solubility.

Theoretical results have been compared with experimental data hydrogen solubility in alloys Fe-Ni, Fe-V, Pd-Ni and Pd-Pt.

### References

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