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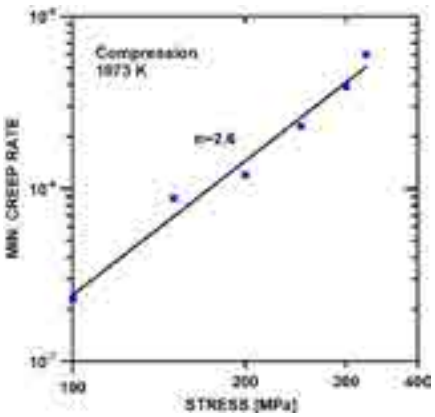
## Microstructure and creep behavior of AlTiVNbZr0.25 high entropy alloy at 1073 K

**Petr Kral[1], Dvorak J[1], Yurchenko N[2], Stepanov N[2], Zherebtsov S[2]** and **Sklenicka V[1]**
[1]Institute of Physics of Materials, ASCR, Czech Republic
[2]Belgorod State University, Russia

In the present work, the creep behaviour of AlTiVNbZr0.25 high entropy alloy at 1073 K is investigated. In the initial condition (annealing at 1200°C for 24 h) the alloys were composed of B2 matrix phase with coarse $Zr_5Al_3$-type phase particles. Constant stress creep tests in compression were performed in a protective argon atmosphere under 100-300 MPa. It was found that creep curves exhibited inverted primary stage and stress exponent of minimum creep rate is about 3. These creep results suggest that viscous glide of dislocations is rate-controlling process. Microstructure investigation showed that longer creep exposure led to the formation of a new Nb-rich phase (presumably, $Nb_2Al$-type sigma phase) along grain boundaries. The occurrence of new phase caused a depletion of Nb in the region along grain boundaries and could lead to the deterioration of creep properties.




Stress dependence of minimum creep rate determined for AlTiVNbZr0.25 high entropy alloy at 1073 K

### Biography

Petr Kral has completed the PhD at the University of Technology Brno, Faculty of Mechanical Engineering. Presently, he is employed in the Advanced High-temperature Materials group at Institute of Physics of Materials of the Academy of Sciences of the Czech Republic in Brno. He has published more than 30 papers in reputed journals.

pkral@ipm.cz

**Notes:**