

## **Nanocomposites and nanomaterials**

### **Cyclic martensitic transformations influence on the diffusion of carbon atoms in Fe-18wt.%Mn-2wt.%Si alloy.**

**V.E. Danilchenko, A.V. Filatov, V.F. Mazanko, V.E. Iakovlev**

*G.V. Kurdyumov Institute for Metal Physics, NAS of Ukraine, Vernadsky Blvd. 36,  
Kyiv 03142, Ukraine.  
E-mail: zvik83@mail.ru*

A significant carbon diffusion mobility acceleration as a result of cyclic  $\gamma$  martensitic transformations in Fe-18wt.%Mn-2wt.%Si alloy is determined by one- and two- dimensional structure defects of  $\gamma$ -martensite with face-centered close-packed lattice. Such defects (dislocations, low angle subboundaries of dislocations, chaotic stacking faults) were formed during cyclic  $\gamma$  martensitic transformations. Peak carbon diffusion coefficient increase was observed under thermocycling when maximum quantity of lattice defects increase was fixed.