

## **IDENTIFICATION OF DISLOCATION PATTERNS IN NANOSTRUCTURED MATERIALS**

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**Abstract:** Nanocrystalline and ultra-fine grain (UFG) materials processed by severe plastic deformation (SPD) methods have been the subject of intense study in the last decade. Nanostructured materials by severe plastic deformation have attracted much interest in the last decade due to their size-dependent unique mechanical, physical and chemical properties. One of the principal differences of the nanostructured materials, compared to the bulk ones, is that they include more defects such as vacancies, voids, grain boundaries and dislocations. During plastic deformation of metals and alloys, dislocations arrange in ordered patterns. The plastic behavior of crystalline materials is mainly controlled by the nucleation and motion of lattice dislocations. The paper proposes identification of the dislocation pattern during applying the boundary conditions corresponding to a severe plastic deformation process.

**Key words:** nanostructured materials, dislocation pattern, molecular dynamics simulation