ТЕЗИСЫ ДОКЛАДОВ

INTERNATIONAL WORKSHOP

**«Multiscale Biomechanics and Tribology
of Inorganic and Organic Systems»**

МЕЖДУНАРОДНАЯ КОНФЕРЕНЦИЯ

**«Перспективные материалы с иерархической структурой
для новых технологий и надежных конструкций»**

**VIII ВСЕРОССИЙСКАЯ НАУЧНО-ПРАКТИЧЕСКАЯ
КОНФЕРЕНЦИЯ С МЕЖДУНАРОДНЫМ УЧАСТИЕМ,
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ИНСТИТУТА ХИМИИ НЕФТИ**

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**STRUCTURAL HETEROGENEITY OF ULTRAFINE-GRAINED FCC METALS
PROCESSED THROUGH EQUAL-CHANNEL ANGULAR PRESSING ON MESO- AND
MACROSCALE LEVELS**

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The structural peculiarities of ultrafine-grained (UFG) aluminum, copper and nickel processed with equal channel angular pressing (ECAP) were studied using transmission electron microscopy (TEM) and electron backscatter diffraction (EBSD) analysis. The heterogeneous grain size distributions were determined within the local scan areas of 300 to 2500 μm^2 (on a mesoscale level), and the subgrain size distributions were homogeneous. The grain size heterogeneity was caused by the presence of coarse grains that were poorly refined during the ECAP process, apparently due to an unfavorable orientation. The distributions of the average grain size and the fraction of high-angle grain boundaries obtained in the definite local areas were heterogeneous in bulk billets of UFG aluminum and copper on a macroscale level. The average subgrain size varied negligibly in different parts of the billets. The heterogeneous distribution of several structural characteristics on the macroscale level was likely due to the absence of a uniform distribution of shear strain in the billets subjected to ECAP.