TECTONOPHYSICAL MODELS OF STRAIN FIELDS IN THE BLOCKS AND SLIP PLANES OF SHEAR ZONES

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The problem of formation mechanism of individual shear zones, their distribution and combining into large regional shears remains poorly studied. To solve it, we use the methods of tectonophysical modeling of strain fields (photoelasticity) and dislocations (depositional method) in homogeneous and layered media as applied to the West Siberian oil-bearing structures. As a result, different types of shear strain fields have been identified which form under the influence of concentrated mass strengths as well as strengths applied directly to the gliding surface (palanar shears) with significant inhomogeneities in strain distribution. The distribution of strains around individual and multiple inclusions in shear strips has been studied for the first time. The alternation of concentrators of compression and extension has been established, which is important in predicting the dynamics of ore- and oil-bearing fluids in melange and grained media.The conditions of shear gliding at the boundaries of different-density layers with formation of stage, hydrodynamically closed nappe systems creating fold-nappe belts rimming the eastern boundary of the Siberian Platform have been revealed in models. In the model of duplex covers three-unit structure of strain field of the allochthon has been established - zone of horizontal extension in its frontal part, zone of compression in the middle part and zone of vertical extension in its back part that allows the prediction of fissured reservoirs.In photoelastic models, the phenomenon of discontinuity of shear slipping to form the discrete centers of strain concentration and relaxation has been distinguished. This reflect the periodicity of distribution in the nature of dislocations or seismic phenomena.