

## Modelling of Contact of Structured Materials Based on Data from Scanning Probe Microscopy

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The micromechanical aspects of the formation of the contrast images in scanning probe microscopy and their relationships with the local mechanical properties of nanohomogeneous materials are discussed. The solutions of the contact problems with the consideration of the influence of surface forces and the layer composition of the material in the discussion of the experimental functions of interactions between the tip and the tested material: force or gradient of force -distance curves are proposed. The algorithms of the formation of the calibrated maps of the distribution of physico-mechanical properties on the surface are presented. We tried also to elaborate the spatial model of the real area of contact for the nonhomogeneity materials with the application of the results of experimental studies: 3D images of the topography, maps of the elasticity modulus and surface free energy and also the variable thickness of the surface layer on the tested area.

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