AFM Observation and Morphing-reconstruction of Dynamics of Crystal Growth

Natalya N. Piskunova, *Institute of Geology of Komi Science Centre of Ural Brunch of the Russian Academy of Sciences, Syktyvkar, Komi Republic, Russia.* E-mail: piskunova@geo.komisc.ru

With *in situ* investigations by an atomic force method (AFM) and using statistical approach we studied evolution of the crystal surface of sodium chloride in the solution. The determined mean values of tangential rate and distances between the steps for every interval showing a normal rate of the growth of the scanning area associating with thermodynamic conditions of growth [1]. Tangential rate of movement of each step is calculated by comparison of two successive snapshots. But not always the following AFM snapshot can be wrong for such comparison with the previous. Or statistics requires recovering a picture of the surface at the "offscreen" interval between two snapshots that is 40 sec. In crystallogenetic investigations there is often necessity for dynamic reconstruction of the occurring processes. Currently, there is a number of graphic programs as morphing programs enabling to estimate up to 100 intermediate images and thus, to obtain an image of a surface each 0.4 sec and to use the estimated images for statistical calculation. Moreover, it is important that all images can be combined as motions. We have made several demo videotapes with duration of 1 to 6 minutes used at the lectures for university students as visual aids showing peculiarities of development of the surface structure, formation of solution inclusions, surface growth in the directed flow of the solution.

This work was supported by RFBI (project №05-05-65112a).

[1] Piskunova N.N., Rakin V.I., *Proceedings of ICCG-14*, Grenoble, 2004, **347**.

Keywords: AFM, crystal growth from solution, surface morphology