

TEMPERATURE GRADIENT IN THE DIFFUSION REGIME OF DROPLET EVAPORATION

D.A. Gavryushenko, V.M. Sysoev, K.V. Cherevko

Taras Shevchenko Kyiv National University,
Faculty of Physics
(2, Academician Glushkov Ave., Kyiv 03127, Ukraine;
e-mail: Kostia_Cherevko@univ.kiev.ua)

S u m m a r y

The process of droplet evaporation has been considered on the basis of the general equations of the linear thermodynamics of nonequilibrium processes, i.e. by examining the general equation of diffusion taking into account the terms associated with gradients of the chemical potential and the temperature. An analytical expression for the temperature gradient, which arises in the diffusion regime of evaporation, has been derived. A mechanism, which explains the absence of the gas diffusion flow toward the evaporating droplet even in the case of its nonzero concentration gradient, has been proposed.