

VOID FORMATION AND COLLAPSE IN NANOWIRES

O.M. Podolyan, T.V. Zaporozhets

B. Khmelnytskyi Cherkasy National University
(81, Shevchenko Blvd., Cherkasy, Ukraine;
e-mail: ompodolyan@mail.ru)

S u m m a r y

The two-stage process of formation and collapse of hollow nanowires in core-shell systems is described in the framework of the phenomenological model of solid solutions as a result of the competition of the Frenkel effect, Gibbs–Thomson effect, and inverse Kirkendall effect. The dependences of the pore formation rate and efficiency on the initial cylinder radius and the fast component concentration are studied. The obtained results are compared with similar ones known for spherically symmetric particles. It is shown that the pore formation is more effective in cylindrical samples as compared to spherical ones, whereas the existence time of a void depends on the nanoshell radius.