SIMULATION OF IMPACT CLUSTER-SURFACE INTERACTION FOR IMPLANTATION PROCESS INTO SOLID THIN FILMS[1]

Batgerel B.[*][#]**, Nikonov E.G.**[*]**, Puzynin I.V.**[*]

[*]Laboratory of Information Technologies,
Joint Institute for Nuclear Research,
141980 Dubna, Moscow Region, Russia
[#]Mongolian University of Science and Technology, Mongolia
E-mail: batgerel@jinr.ru, e.nikonov@jinr.ru, ipuzynin@jinr.ru

The main goal of our investigation in this work is to study cluster implantation processes from dry etching to pore formation for thin metal films by computer simulation. Simulation of impact clusters-surface interaction is fulfilled by molecular dynamics methods [1]. It is well known that irradiation of various material by high-energy nanoclusters followed by etching is one of the way for the formation of nanoporous membranes [2,3]. As it was shown in our previous papers and other interesting works (see Refs in [2]) control of not only cluster kinetic energy but number of atoms in clusters also provides a possibility to tune the cluster–surface interaction regime from soft landing toward implantation. So the goal of our work is an investigation of geometrical configuration of cavity and pores formed by cluster impact in thin metal films in dependence on beam energy, number of clusters-beam impacts, impact angle and a frequency of impulsive nanoclusters source. Investigation results should be of interest in various fields of experimental physics and technologies developing nanomaterial with new physical and chemical properties.

References

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