ABSTRACT

The work contains 63 p., 12 fig., 6 tabl., 36 ref..

Object of research aimed nanosized films of Be/Mo(112).

The aim is to investigate the adsorption interaction of oxygen with supermonolayer beryllium films formed on the Mo(112) surface at the coverage degrees θ_{Be}=3.3-3.8.

Methods and equipments: nanosized films of Be/Mo(112) were synthesized in ultrahigh vacuum complex «Riber». Atomic structure, chemical composition and electronic properties of nanosized films were characterized by low energy electron diffraction, Auger electron spectroscopy and contact potential difference method.

We have found that oxygen chemisorption on such surface proceeds with the initial sticking coefficient $s_0 \approx 0.3$ which significantly exceeds that specific to the O/Be system ($s_0 \approx 0.01$). Thus the Be film of the mentioned thickness does not yet possess the electronic property of the bulk beryllium metal. Oxygen adsorption at room temperature is accompanied with BeO synthesis. The synthesized oxide coverage decreases the work function by 1-1.2 eV evidencing formation of a positive electrical double layer on the surface. No structural ordering has been observed that may be caused by the incommensurability between the lattices of BeO and still non-oxidized Be coverage which remains partially on the Mo(112) surface.

Keywords: NANOSIZED FILMS, OXYGEN ADSORPTION, LOW ENERGY ELECTRON DIFFRACTION, AUGER ELECTRON SPECTROSCOPY, ULTRAHIGH VACUUM CHAMBER, CONTACT POTENTIAL DIFFERENCE.