CONCLUSION

Nanosized films of Be/Mo(112) (coverage degrees θ_{Be}=3.3-3.8) were synthesized.

Adsorption interaction of oxygen with supermonolayer beryllium films formed on the Mo(112) surface at the coverage degrees θ_{Be}=3.3-3.8 has been investigated. Contrary to the submonolayer and monolayer films of Be on Mo(112) which coat the substrate surface only partially and provide abilities of some Mo atoms to interact directly with oxygen, the Be films of a coverage exceeding θ_{Be}=2.44 coat the substrate with a complete shell which adsorbs oxygen. Using Auger electron spectroscopy, low-energy electron diffraction and contact potential difference techniques, we have found that oxygen chemisorption on such surface proceeds with the initial sticking coefficient s_0≈0.3 which significantly exceeds that specific to the O/Be system (s_0≈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.

The data obtained may be useful for application of beryllium in nuclear technologies.