**Surface Tension of Ternary Lithium Alloys Based on the Lead-Bismuth Eutectic Alloy**

B.B. Alchagirov [C, S,*] and F.F. Dyshekova
*Department of Physics, Kabardino-Balkaria State University, Nal'chik, Russia*
**Present address: 10 Gugova St. Nal'chik, 360000, Russia*
*boris@alchagirov.ru, alchg@kbsu.ru*

The alloys of the Pb-Bi-Li system are promising materials used in designing high efficiency thermonuclear energy reactors [1], which necessitates the study of their thermophysical properties. However, there are no published experimental studies on the temperature and composition dependence of surface tension (ST) of Pb-Bi-Li alloys [2,3]. To date, the phase diagram of the system is not fully built, with only fragmented data available on the proposed liquidus and solidus curves based on marginal eutectics of the Pb-Bi-Li system [4]. In the presented study the surface tension of the Pb-Bi-Li system was measured for the first time along the $Pb_{44.5}Bi_{55.5}$ eutectic. The ST was measured with a sessile drop method in the concentration range with up to 24.2 at. % content of Li and in the temperature range from the liquidus to 620K, with confidence errors of ~1%. The components Bi (99.9999%), Pb (99.9999%) and Li (99.9%) were melted in vacuum at $10^{-5}$ Pa, with the alloys thermally treated for at least 1 hour before each measurement. Based on the obtained experimental data we conclude that Li is a weak surface-active component in the $Pb_{44.5}Bi_{55.5}$ based alloys, which agrees with the basic criteria of surface activity in liquid metal alloys. We also estimated in MathCAD the adsorption of Li in the studied alloys using the Guggenheim-Adam (N-variant) method. We show that the maximum adsorption of Lithium in the $Pb_{44.5}Bi_{55.5}$ eutectic alloy is expected at the concentration of around 5 at. % Li.

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