SURFACE TENSION OF LITHIUM ALLOYS: STATE OF RESEARCH (REVIEW)

Alchagirov B.B.,* Kyasova O.Kh., Uzdenova A.N.

KBSU, Nalchik, Russia

**boris@alchagirov.ru*

Great interest in the study of lithium alloys is caused by the possibility of their use as electrodes in batteries with high energy density and thermoelectric converters, as well as promising materials for the development and application of coolant in nuclear power plants on fast neutrons and other areas of new technology. In this regard, there is a need to obtain reliable information about the thermophysical properties of metallic system alloys involving lithium. In this paper, the task is to give a brief overview of the state of surface tension research (ST) - one of the most important energy characteristics of surface substance for this class of materials.

An analysis of the study results of the concentration dependences of the lithium-ion alloys in the literature shows that the surface tension (ST) has been studied for only a dozen binary systems, including Al-Li, Bi-Li, Ga-Li, In-Li, Sn-Li, Pb-Li, Zn -Li, etc. Studies of the ST triple alloys involving lithium only unfolds [1, 2]. In our opinion, this state of research is explained by the fact that the study of the physicochemical properties of lithium alloys is a very difficult experimental task, starting with the problems of synthesizing and homogenization of samples of the considered class of objects, as well as the measurements themselves.

Thus, from the analysis of literary and own results of researches of ST of lithium alloys, it follows that:

1) most concentration dependences of surface tension of lithium alloys are studied in narrow intervals of compositions, mainly in the form of small additives of lithium to metals;

2)a significant fraction of the concentration dependences a ST of lithium alloys available in the literature are based only on several experimental points;

3)in the binary alloys considered, lithium additions to low-melting p-metals reduce the ST of the solvent-metal, i.e. exhibit a sufficiently high surface activity, which all the more the surface tension of the solvent metal in comparison with the ST of lithium.

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1. Trybula M.E., Gancarz T., Gasior W.// Fluid Phase Equilibria. V.421. P. 39–48. 2016.
2. Alchagirov B.B., Dyshekova F.F.// High Temp. V.54. No.6. P. 815–819. 2016.