STUDY OF CHEMICAL COMPOSITION OF COPPER VACUUM CONDENSATES BY EDS METHODS

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The vacuum condensation method makes it possible to produce dispersed composite materials with the addition of a small amount of component that is insoluble in the matrix. Given its activity to the grain boundaries [1], the distribution of chemical elements in such pseudo-alloys is a key factor.

The objects of research were Cu-0.3at%Mo foils up to 50 μm thick, obtained by the PVD method. The composite foils were studied using scanning electron microscopy at Karlstad University, Sweden.

Figure 1 shows the results of the survey in the secondary electron fixation mode and EDS. The surface has a developed structure, on which one can see grain-like formations between which spherical particles of almost half the size have formed.

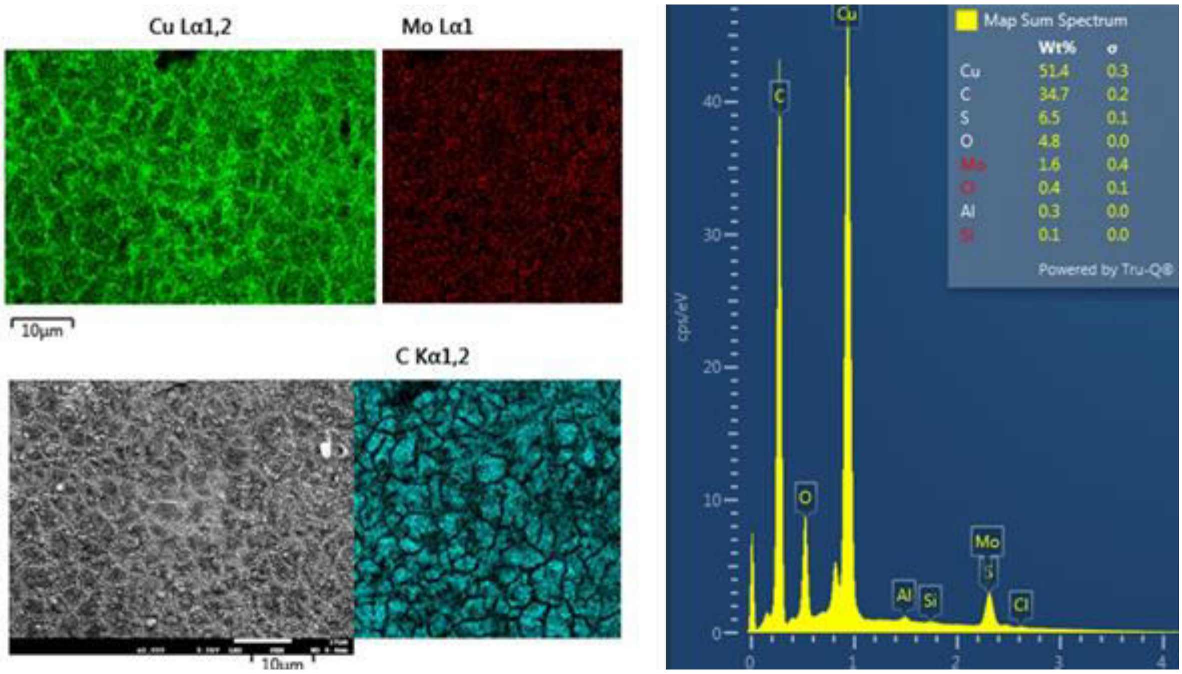

Figure 1 - Results of imaging in the secondary electron fixation and EDS modes

The location of molybdenum particles on the surface is associated with their connection to the matrix's grain boundaries [1]. In addition, they contain a large amount of carbon adsorbed on the surface. These formations likely have strong chemical bonds in the matrix, allowing them to persist despite thorough cleaning.

References:

1. Аномальний вплив температури підкладки на структуру вакуумних конденсатів Cu-Mo / Рябоштан В. А., Пінчук Н. В., Зозуля Е. В., Зубков А. І. // Фізика і хімія твердого тіла. Стан, досягнення і перспективи : матеріали 7-ї Всеукр. наук.-практ. конф. здобувачів вищої освіти та молодих вчених, 21-22 жовтня 2022 р., м. Луцьк / Луцький національний технічний університет. – Луцьк : ІВВ Луцького НТУ, 2022. – С. 91-92.