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Investigation of the possibility for obtaining rare metal sludge from waste of the heat-resistant nickel alloys

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Abstract

Approbation of rare metals powder obtaining technology by electrochemical dissolution of heat-resistant nickel alloys waste in sulfuric solutions is performed. Influence of the sulfuric acid concentration and the current density on the intensity of the process is revealed. It was found that in the course of anodic dissolution, Re, Co, Cr mostly transitioned to the electrolyte solution, and W, Ta, Nb to the slurry. Ni, Co, Mo, and Al transitioned in significant amounts and approximately the same proportion to the slurry and to the solution. X-ray diffraction analysis showed that nickel was present in the slurry as a solid solution. Tungsten and tantalum were formed as the oxides with the lowest degrees of oxidation.

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