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Electrochemical production of superdispersed and nanosized powders of metal and their carbides

© **Alexander V. Varaksin**,[1] **Viacheslav L. Lisin**,[2]* **Victor A. Kostilev**,[1]*
Leopold I. Leontiev,[2]* **Robert G. Zakharov**,[2] and **Sophia A. Petrova**[2+]
[1] "*Technologii tantala" Co Ltd. Lenin St., 131. Upper Pyshma, Sverdlovsk Region, 624096. Russia.*
Phone: +7 (922) 211-88-44. E-mail: npp-nauka@yandex.ru
[2] *Laboratory for Physical Chemistry of Metal Melts. Institute of Metallurgy, Urals Division of RAS.*
Amundsen St., 101. Ekaterinburg, 620016. Russia. Phone: +7 (343) 267-88-94. E-mail: danaus@mail.ru

*Supervising author; +Corresponding author

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Abstract

In the work superdispersed and nanosized powders of metallic Ni, Cr, Mo, Co, Ta, W, Fe, as well as a mixture of specified composition powders, equal to the 12X18H10T alloy, were obtained by electrochemical process in the salt melt. To produce nanopowders of tantalum carbide TaC and tungsten carbide WC the electrochemical process of volumetric crystallization and the method of chemical transport reactions were used in combination. It is possible to obtain stoichiometric non-defect nanocrystalline powders of refractory metal carbides under moderate temperatures (600-1100 °C). The initial steel was decomposed into a number of stable compounds during electrochemical reduction.