OP-20

ANALYTICAL PRECONCENTRATION OF IMPURITIES FROM SOLUTIONS BY MEANS OF DIRECTED CRYSTALLIZATION

Lyudmila P. Eksperiandova

Institute for Single Crystals of National Acad. Sci. of Ukraine
Lenin Ave, 60, Kharkov, 61001, UKRAINE
blank@sc.kharkov.com

Directed crystallization belongs to techniques of preliminary concentration of impurities. Impurities present in initial raw material are pushed away during directed crystallization by crystallization front to end part of ingot serving as an analytical concentrate. This physical method does not require introduction of reagents and can be easily subjected to automation. Preconcentration efficiency is characterized by the distribution coefficient equal to the ratio of impurity concentration in a solid to that in a liquid phase. To avoid the melt pollution by the container substance or volatilization of impurities under high temperature, low temperature variants of crystallization preconcentration of aqueous solutions are used. One of peculiarities of such a preconcentration is independence of the behavior of impurities on their nature. Inorganic impurities (cations of alkali, alkali-earth, heavy metals and their complexes, anions), organic compounds as well as particles of heterogeneous systems (suspensions, emulsions) are identically pushed away into the concentrate. This is caused by the fact that no impurity enters into lattice of the ice. The use this technique allows to carry out effective (of about 1-2 orders) group preconcentration of impurities. This method was used for preconcentration of impurities from natural water in Ioannina (Greece) and Kharkov (Ukraine).