Khlopin Prize of the Russian Academy of Sciences Awarded to N.B. Mikheev, I.V. Melikhov, and S.A. Kulyukhin

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In March 2010, Professor, Doctor of Chemical Sciences N.B. Mikheev, Corresponding Member of the Russian Academy of Sciences I.V. Melikhov, and Doctor of Chemical Sciences S.A. Kulyukhin were awarded the Khlopin Prize for the cycle of studies in the field of crystallization and cocrystallization, which led to discovery of previously unknown properties of radioactive elements.

The cycle consists of 121 papers reporting the results of the studies performed by the authors during the past 40-year period in the field of chemistry of radioactive elements in various disperse media at the Frumkin Institute of Physical Chemistry and Electrochemistry of the Russian Academy of Sciences and Chair of Radiochemistry of the Chemical Faculty of the Lomonosov Moscow State University. In the course of the long-term studies, the authors developed the theory of phase formation in various disperse media containing microamounts of radionuclides and the mathematical model of cocrystallization of microamounts of radioactive elements in various disperse media, which is

important for the development of methods for quantitative description of the radionuclide capture by solid carriers in nuclear fuel reprocessing and in use of radionuclides in research practice. Their studies expanded and deepened the basic knowledge of the chemistry of 4f and 5f elements, revealed previously unknown physicochemical properties of these elements, and allowed comparison of the properties of bivalent f elements with each other and with those of elements of other groups of the Periodic Table. Studies in the field of agglomeration cocrystallization of ionic compounds of radioactive elements in the gas phase, performed for the first time, not only demonstrated the applicability to the gas phase of cocrystallization relationships developed for solutions and melts, but also allowed formulation of the principal rate equation for the formation of aerosols of inorganic substances. Based on the results obtained, a new concept was suggested for localization of radioaerosols and volatile radionuclides, which is important for environment protection in case of accidents at nuclear power plants.