

STUDY OF CHEMICAL PROPERTIES OF NEW ELEMENTS OF PERIODIC TABLE AT FLNR

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Relatively high stability of new superheavy elements with atomic numbers 113-118, as well as new long-lived isotopes of elements 104-112, recently discovered at Flerov Laboratory of Nuclear Reactions, present unique possibilities to study chemical properties of transactinide elements which completes 7th period of the D.I. Mendeleev's Periodic System. The main focus is to compare the transactinide elements properties with the properties of their light homologues in the groups of the Periodic Table and thus test the influence of relativistic effects on the law of periodicity of chemical properties in the field of superheavy elements. The answer to this fundamental question is extremely important for the chemical identification of synthesized elements.

Results of recently performed experiments at FLNR on the chemical identification of ^{288}Mc , based on liquid-phase separations of its decay product ^{268}Db , and the results of pioneering gas-phase experiments on the chemistry of elements Cn, Nh and Fl are summarized in my talk. Detailed studies will be continued at the new accelerator complex SuperHeavy Element Factory at FLNR at significantly higher statistical level. The basis for future study of the chemical properties of SHE, including new elements 115-118, will be new gas-filled separator for radiochemical research and recoil ion gas trap. Research in this field is interdisciplinary and the potential of new research facilities will only be realized if they are accompanied by theoretical research and model experiments with homologues, the developments of new accelerator targets and beams, new setups and radiochemical laboratories.