
ISLAND OF STABILITY AND NEW SUPERHEAVY ELEMENTS

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In the complete fusion reactions of ^{48}Ca ions and neutron-rich isotopes of actinides, the heaviest elements with atomic numbers 113-118 were synthesized. In these investigations 53 new nuclides, isotopes of elements 104-118 having the largest number of neutrons, were produced for the first time, and their decay properties have been determined. A significant increase in the stability of the SHN with the number of neutrons, their relatively high cross sections caused their fission barriers; scenario and decay characteristics of new nuclides appeared a direct indication of the existence of a region (an island) of stability among very heavy elements predicted by the microscopic theory more than 45 years ago.

In the talk the experimental approaches to the synthesis of SHN as well as brief compares experimental data with the predictions of the macro-microscopic theory are given. Some prospects associated with the new accelerator and experimental facilities are discussed also.