ODD-Z SUPERHEAVY ELEMENT STUDIES: NEW RESULTS FOR ELEMENTS 113, 115 AND 117

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Odd-Z superheavy nuclei offer the opportunity to study the hindrance effects of an odd-proton on its decay properties. Long alpha decay chains have been observed for isotopes of elements 117 [1,2] and 115 [3,4,5] using ^{48}Ca + ^{249}Bk and ^{48}Ca + ^{243}Am reactions, respectively. Results of recent experiments at the Dubna Gas-Filled Recoil Separator aimed at studying production cross-sections, excitation functions, and nuclear decay properties for isotopes of elements 117, 115 and 113 will be presented. A total of 31 atoms of ^{288}115 have been produced in physics experiments so far at four ^{48}Ca energies, providing excitation function and alpha-decay spectra of the produced isotopes that establishes these events to be the product of the 3n-evaporation channel and confirms discovery of elements 113 and 115 in 2003 [4]. The broadening of the alpha spectrum for isotopes later in the decay chains indicates potential population of excited states. Production of ^{289}115 in both the two neutron evaporation channel of the ^{48}Ca + ^{243}Am reaction and as a decay product of the parent nucleus ^{293}117 produced in the ^{48}Ca + ^{249}Bk reaction provides a cross-bombardment consistency check on the data and strongly supports the discovery of element 117 [1,2].

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