

Were the Superheavy Elements Made in Nature?

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The periodic table of elements is now full up to the $Z=118$, element, Oganesson, the last element in the noble gas column of elements. The table contains elements that were in time identified by fission and by nuclear reactions. Some of them were deliberately created in the laboratory while others were sought after after weapons tests to reach the superheavy elements or rather the predicted island of stability. Environmental tests of nuclear weapons had indicated the creation of new elements. Theoretical chemists expect no limitations on the creation of chemical elements up to an astonishing $Z=174$ well beyond Oganesson. The question that has remained unanswered is whether the exotic elements or the superheavy elements were ever made in nature. Simulations of the rapid neutron capture process indicates that there are enough neutrons to reach the actinides and beyond. What would be the evidence that nature had in fact made superheavy elements? One can point to the observational evidence of fission recycling in old stars. Can similar signatures answer the question?

I will discuss the possibilities.

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