

= Fermium =

Fermium is a synthetic element with symbol Fm and atomic number 100 . It is a member of the actinide series . It is the heaviest element that can be formed by neutron bombardment of lighter elements , and hence the last element that can be prepared in macroscopic quantities , although pure fermium metal has not yet been prepared . A total of 19 isotopes are known , with ^{257}Fm being the longest @-@ lived with a half @-@ life of 100 @.@ 5 days .

It was discovered in the debris of the first hydrogen bomb explosion in 1952 , and named after Enrico Fermi , one of the pioneers of nuclear physics . Its chemistry is typical for the late actinides , with a preponderance of the + 3 oxidation state but also an accessible + 2 oxidation state . Owing to the small amounts of produced fermium and all of its isotopes having relatively short half @-@ lives , there are currently no uses for it outside of basic scientific research .

= = Discovery = =

Fermium was first discovered in the fallout from the ' Ivy Mike ' nuclear test (1 November 1952) , the first successful test of a hydrogen bomb . Initial examination of the debris from the explosion had shown the production of a new isotope of plutonium , ^{244}Pu

^{94}Pu : this could only have formed by the absorption of six neutrons by a uranium @-@ ^{238}U nucleus followed by two ? ? decays . At the time , the absorption of neutrons by a heavy nucleus was thought to be a rare process , but the identification of ^{244}Pu

^{94}Pu raised the possibility that still more neutrons could have been absorbed by the uranium nuclei , leading to new elements .

Element 99 (einsteinium) was quickly discovered on filter papers which had been flown through the cloud from the explosion (the same sampling technique that had been used to discover ^{244}Pu) .

It was then identified in December 1952 by Albert Ghiorso and co @-@ workers at the University of California at Berkeley . They discovered the isotope ^{253}Es (half @-@ life 20 @.@ 5 days) that was made by the capture of 15 neutrons by uranium @-@ ^{238}U nuclei ? which then underwent seven successive beta decays :

<formula>

Some ^{238}U atoms , however , could capture another amount of neutrons (most likely , 16 or 17) .