

Re: Bismuth radioactive??

Source: <http://sci.tech-archive.net/Archive/sci.chem/2004-12/0279.html>

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Date: 12/04/04

Date: 4 Dec 2004 02:23:23 -0800

Uncle Al <UncleAl0@hate.spam.net> wrote in message news:<419578E5.2E683B40@hate.spam.net>...

> *JenLin2005* wrote:

>>

>> *I think recently they proved Bismuth was radioactive with a half-life of
>> 1.9x10¹⁹ years. This makes me think a lot of elements are radioactive with
>> super-long half-lives. Is this possible?*

>

> *The instability was calculated then searched out. There are several
> isotopes with supremely long half-lives. One doubts there are any
> unsuspected ones that can sneak under modern calculations.*

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> *Protons don't decay, as evidenced by 50 kilotonnes of water in
> Super-Kamiokande observed for about five years.*

Are there any comprehensive overviews of long-lived isotopes suspected of undergoing radioactive decay and the experimental results?

One issue is alphas, as for bismuth. I gather that most detected alpha radiation has energies of several MeV. Do any have smaller energies, like a few hundreds or few tens of keV?

I have heard it alleged that tungsten is unstable like bismuth – in that every single longlived isotope (there are five) eventually undergoes alpha decay. Can anyone confirm this with experimental upper bounds of half-life? Energy is worthless because it can be computed from nuclear masses without actually observing the decay.

Single betas and electron captures. There is supposed to be a law against neighbouring isobars being stable to beta decay and electron capture. Can anyone quote an experimental upper bound on the half-life of, say, V-50?

Double beta decay and double electron capture. There is a plenty of neighbouring isobars. Just which of them are actually observed, with upper bound on half-life, to undergo double-beta decay or double electron capture?

Which nuclei are really stable? Of which elements?

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