Re: Isotope decay chains

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From: Angelo (*patrik56_at_libero.it*)
Date: 01/28/05

Date: 28 Jan 2005 14:13:05 −0800

Y.Porat wrote:
> *Angelo wrote:*
> > *Y.Porat wrote:*

[snip]

> > *Why not choosing a more easily testable prediction?*
> −−−−−−
> *just below.....*

[snip]

[You repropose your prediction about gold / nickel,
to which I already answered that I'm not able to decide,
and suggested other predictions from you, like IP / EA]

> −−−−−−−−−−−−−−−−−−−−−−
> *that is not a question of 'to be or not to be' for me*
> *all those are just 'byproducts' of my model*
> *imho its value is much more and beyond this or that example....*

Yes, I think I understand what you mean, but please
consider that those 'by−products', as I explained, might
be (if sufficiently sizeable) more easily testable.
However, any such (sufficiently sizeable) prediction,
even not involving chemical properties at all, might
do the job for you. OTOH, there will be also others
which may help, I think, and most probably better
than me.

[snip platinum / gold question]

> > *As I said before, I'd like to leave this kind of question*
> > *to experts in nuclear physics.*
>
> *did you hear that experts ???!!!*

No, I couldn't, but did what you can read below.

> > However, for the case
> > you mention above, I've consulted several on−line
> > nuclide charts. In all of them I see 179Pt as an
*> > *artificial* radioactive nuclide that decays beta(−) to yield*
> > 179Au, which is the only natural occurring isotope of Au.
> thank you Angelo
> you are very maticulate person (and not lazy as i am....)

Please excuse me, but I can't decode 'maticulate'.

[snip]

> > Sorry, it's not clear to me: 'P' stands for Potassium,
> > or Phosphorus, as it should be? Anyway, I'm not
> > familiar with these decay family trees, see also above.
>
> sorry it should be phosphorus
> it is a neighbour of the othres
> potasium is quit far fron them
> now the challenge is still on!
> why just those 3 elements involed and not others
> the question is for experts in decay processes.

I agree that this kind of questions is for experts in
decay processes.

> and i added to it the 'geologic clock question:
> why only argon potassioum and Calcium are involved
> but no more elements???!!

See above.

> −−−−−−−−−−−−−−−−

[snip]

> > Well, within that family (Fe, Co, Ni) ferromagnetism is shared,
>
> is Nickel feromagmetic ?? sory my ignorance i just dont know..

Ni is ferromagnetic (though less so than Co, and Fe,
of course). Its Curie temperature is only 375 oC.

> i know it is involved in magmetic compounds but once isolated ?

Yes, as I reported above.

> sory mu lazyness and ignorance.
> yet still i didnt mean that nickel is cuprum.....

Yes, that was clear to me.

> if you are a chen\mist
> take for instance both of them nickel and cu and their resistance
> to corrotion

Resistance to corrosion is a somewhat fuzzy property.
Look at aluminum, for example.

> −−−−−−−−−−−−−−−−
>
> > but chemical properties differ at the point that the name 'family'
> > seems to me unjustified: I can detail if you want.
> > Anyway 'resemblance' is a bit too vague to be decisive in favor
> > of one model or another. The tendency of Ni(II) to form square
> > planar complexes is one of it's distinctive features,
>
> all nucleids from fluorine upwards are sort of rectangular pipes
> so it is 3d
> yet the differencr is on thier edge orbitals**
> (that are connested to that 3d structure)
> if existing or missing if active or inactive etc

Sincerely, perhaps my fault, perhaps I don't know
your model, but I cannot understand what you say
above. I'm accustomed to use methods derived
from QM, and AFAIK those pipes are in full
disagreement with what is known about the
structures of nuclei: I think I can't help here.

> > but that is
> > substantially attenuated in Cu(II) complexes (tetrahedral, or
> > distorted octahedral ones −−
> octahedral ... fits me !! because the 'rectangular pipe '
> is just a simplification if to be more acrurate it is an
> octahedral pipe

Here, after reading your comment, I have a doubt:
don't know if we are speaking of the same thing.
For 'metal complex', in a simplified manner, I meant
something like e.g. [CuCl4]^2−, which can adopt a
square planar geometry, or a tetrahedral one
(Cu at the center, in any case), or also almost all
distorted tetrahedral ones, whose shape is in
between those two (extreme) cases. The preferred
geometry in this particular complex is strongly
dependent on the counter−ion(s) (type and number).
In other cases that dependence may be lower or
vanishingly small.

> since you are a chmist i hope you heared about the American
> chemist Gilbert Lewis (th ebeginning of the 20th century)wiht his
> 'Octets theory'

Please find for me a chemist that is not aware
of the octet rule, as it is now called :))
But now it is considered (less than) a rule of thumb.
Take NO (nitrogen monoxide), an odd electron species
(so no octet) and see that it won't dimerize, i.e. it doesn't
pair the odd electron with another NO molecule to yield
N2O2. The biologically very important superoxide ion,
i.e. (O2)^−, another odd electron species.
PF3 (octet present for both P and F) likes to react
with F2 to form PF5, in which P has 10 valence electrons.
Similarly SF6, S is surrounded by 12 valence electrons.
And a lot of other cases: too may exceptions for a rule.

> *he suggested a system of cubes connected **linearily***
> *ans touching each other.. as a model for the atom*
> *i found it only long after i finished my nuclear model*
> *that fitts nicely to that model of lewis!!!*

I'm glad for you about that matching, but hope your
model can also accomodate the other examples
provided above.

> *now about your gold and platimum isotops*
> *the ordinary Gold is 197*
> *very far from that 179 tha tyou mentioned*
> *so i realy dont think it is a real Gold!!*

Sorry, just a typo. The radioactive isotope 197Pt
(not a naturally occurring one) is reported to
decay beta(−) to 197Au in a lot of on−line nuclide
charts I could find. See, e.g.
http://atom.kaeri.re.kr/ton/index.html
(first click 'Pt', then '197Pt')

> *if yess you can go on and enrich youself or your country ....*

Ah, but 197Pt must be produced first !
(and its half−life is less than 20 hours, some costly
shielding apparatus should be properly devised)

[snip]

> −−−−−−−−−−
> *thank you Angelo its a pleasure to discuss with you*

Thanks. Anyway, I'm taking it easy (can't afford to do otherwise).

> *i will examine and study your appetiser*

Please let me know when you've done with it.
Small addition. When T is linked to C as in CH3T

(tritiated methane) the behaviour is reversed.
After decay, the C−T bond near always disrupts,
and the initially formed species (CH3−He)^+
remains practically unobserved.

> *maybe you or others will go on with my appetisers as well !*
> *TIA*
> *Y.Porat*
> −−−−−−−−−−−−−−−

Best regards,
Angelo