

I am more than just C, H, O, N, P and S — I am so much more

("Life", Periodic Table haikn)

Dilithium

It's Christmas Eve. and the Science Fiction channel had a Star Trek movie marathon on. Yeah, I watched some of Star Trek: Nemesis. and I heard once again their talks about Dilithium, an extremely hard crystalline mineral... You see, they use Dilithium crystals to stop reactions with antimatter, so they use Dilithium shields... And yeah, maybe it was Star Trek, but think about it: in Star Trek, streams of matter and antimatter are directed into Dilithium to heat up the excess deuterium gas, giving them a plasma that actually powers their warp drives.

Kind of cool if that worked in the real world...

But think of what is cool about *Star Trek*: they use names of places on planets in the Solar System (like Utopic Palenetia, near Mars' north pole) when describing the creation of the Enterprise D, they'll take a common molecule formed in the creation of our Universe and use it in their reactions (that seem impossible to us scientists in the real world) and pull off seemingly impossible feats in their science fiction. So I had to check it out: I knew a thing or two about lithium, but is Dilithium actually real? Well, yeah everyone, it is, and Dilithium is Li2, meaning that two lithium atoms bonded together, and that lower-case "i" in there means it's in a gas form. But the cool thing (scientifically) Is that since lithium is #3 in the Periodic Table, that makes Dilithium the lightest stable neutral homonuclear diatomic molecule after H2 (deuterium, which was made along with hydrogen in the initial minutes after the Big Bang).

Because in the scientific world, they find a ton of value in the study of this molecule, probably much in the same way they need it so desperately in *Star Trek* to pull off warp drive.

And you may think I'm kidding, but researchers are working on a fusion impulse engine that runs on real "Dilithium crystals" to cut the travel time to Mars from six months to just six weeks. The fusion fuel they're focusing on combines Dilithium and deuterium (is this sounding familiar?).

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Because the one thing I have noticed is that scientists often reflect on their science fiction loves, they try to emulate those stories and re-create what their iconic writers and directors first envisioned.

So, when you look at all the technology from the science gadgets we have around us today, you can thank the scientists and engineers, but sometimes you can also thank the writers who planted the seeds of what we have today in the heads of the scientific world.

Because maybe we can't beam anyone up and molecularly disassemble ourselves for reassembly somewhere else, but maybe the original *Star Trek* communicator was the prelude to the cell phone, and maybe science fiction's thoughts on Dilithium crystals forming warp drive can lead us into deep space ourselves.

Because really, we'd all love Dilithium if it will help us embrace our race into space: the final frontier.

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Tritium

So my husband has this nice Fossil watch that he wears only when we go out on nice dates now. You see, he says he doesn't need a watch because he has his cell phone with him at all times, and it always tells time in accordance with GPS.

But recently he broke down and bought another watch, one that looks like a small child should wear it, with a huge black band and face and neon glowing hands.

Lovely, I thought,

I thought just using the cell phone was bad enough. So I asked about the glowing hands on his watch (and thought about the original radium watch faces painted by women who got cancer from radiation). And he said no, the numbers and dials are covered in Tritium.

And I thought, great, another element that probably will leak into people causing certain eventual death. But he said no, this is safe, it's only an isotope of hydrogen.

And I thought, oh... So it's just another boring element that we Americans are using to try to make life easier for people who grow tired of using their eyes.

I don't think he liked my saying that. So he said, wait a minute (knowing how I seem to like learning about Atomic bombs and World War Two and the like), Tritium is used in the process of making the Hydrogen bomb.

Hmmm.

So I read that Tritium for American nuclear weapons was produced in special heavy water reactors. But tritium undergoes radioactive decay (ergo the glowing watch faces, I'd wonder, though I'm sure he's stress that there's no dangerous radioactivity in his watch oh wait, he said it's "safe" radioactivity), but Tritium's used in "boosting", increasing the speed and yield of fission bombs.

And yeah, he was trying to get me to like his child-like black glow-in-the-dark watch by linking it with heavy water in WWII and Hitler's efforts to get the bomb first. Scary to think that tactic might work with me, but at least he's trying to get me like the watch that he chooses to wear.

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Thallium

I swirled the wine glass in my hand. I watched the red wine swirl, creeping it's way to the lip as I hypnotically observe the vortex.

I like drinking my red wine from those low, wide-mouthed glasses so you could smell the sweet aroma without even drinking. But now,

now I check my fingernails, looking for dark ridges. I wonder if I should pull out a few hairs and check the roots for telltale stripes.

I scan my brain to check if I have enemies, the coast seems clear, but still I fear that this precious liquid I hold in my hand could be the vehicle for my demise.

And no, my liver's fine, it was just tested, and I'm not talking about alcohol poisoning unless it's because someone put something in my drink I wouldn't taste, or smell, or see.

But my brain now flashes to Thallium, this superconductor, once used to treat syphilis, gonorrhea, or even tuberculosis is such a highly toxic heavy metal that it was used for rat poisoning, and sometimes even for hair removal (yeah, trace amounts of Thallium can even make you lose your hair). But the thing is,

I've heard that if you drop it into somethnig like, say, red wine, no one would be the wiser and you could kill someone without your victim even knowing they were ever in danger.

If I keep this up, I'll really start to worry whenever my stomach hurts, whenever I feel nauseous, or even have diarrhea. If I feel numbness, or tingling and pain,

I'll second-guess myself. I'll have to check the shower drain for excessive hair loss, and I'll check my fingernails and follicles again to make sure I'm in the clear.

Astatine in a Fantastic Car Crash

And our life is one big road trip now, and we set the cruise control and make our way down the expressway.

And most of the time we're just moving in a straight line, and the scenery blurs. There's nothing to see.

But I know what's inside of you and I know what you're made of. There's no such thing as a calm with you.

You are a fantastic car crash. You stop traffic in both directions — In your twisted way, you come from the decay

of others... And what do you leave in your wake? More radioactive destruction, as all around you slows down to stare,

and all the gapers gawk, as the decay grows.

Everything shatters with you, you know. It's a spectacular explosion, *until your instability corrodes you down*

to the basics in the world. And yeah, what was left of you after you were gone is so much more stable than what you were,

but still, I'd duck and cover as metal flies through the air. Every time you leave the scene of the accident,

I am left picking up the shards of glass from the windows. You know, the glass breaks into such tiny little pieces. They look like ice.

It takes so long to pick up the pieces, and even though I'm careful, I'm still picking up the pieces

after dealing with only fractional amounts of you. I've only been able to infer what you're like by knowing your brethren,

while I'm stuck here, picking up the pieces, and I'm still on my knees. The glass cuts into my hands,

because it was only after so much of your destruction that you left blood dripping down to the street.

think of this as *your contribution*, *this radioactive short-term flash of decay...* think of this as *your contribution*

to this fantastic car crash that is you, that is me, that is us.

I've tried to learn, I've tried to study these microscopic parts of you to make sense of you...

But whether or not you ever leave enough, despite your destruction, despite this decay of yours,

I have to keep reminding myself that when it comes to you, This is what you do.

This happens all the time.

So,

I to pull the glass from my hands

and I wave my hand to the line of traffic: go ahead, keep driving, this happens all the time, there's nothing to see here.

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Plutonium

Now, I know they named the element Plutonium after the at-the-time newly-discovered planet, but I can't help but wonder if any of those scientists who deal with Plutonium now feel slighted that the planet was demoted to a planetoid.

But if these scientists care at all about astronomy, they have to feel consoled that, at least, their element Plutonium is used with the element Neptunium when extracted from spent nuclear fuel rods And Neptunium is a by-product in production.

Added bonus, if this element's namesake was named after an icy ball at the edge of our solar system, at least now the element can hang and work with the element Neptunium, which, like that element's namesake Neptune, is a bit of a gas giant itself. Fermi discovered Plutonium, and the silvery-white element (looking not unlike an ice ball) was even originally used in weapon design in the Manhattan Project...

Because you know, even if the planet Pluto is really just an icy ball from the Kuiper Belt, at least in the Periodic Table Pluto"nium" can at least hang out once again with it's once astronomical brother Neptun"ium" and feel important again.

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Carbon

I used to see the magazine ads and the tee vee commercials. All I was taught was that a big busted blonde was all I could aspire to be. So I would dye my hair. So I could act the dumb blonde. I could still beat them at any mind games, but men don't like the truth shoved in their faces, because they refuse to believe anything that doesn't stroke their ego.

So yeah, I was a carbon copy of what the media shoved down America's throats.

And yeah, as time went on the dark-haired women started to gain some popularity back, but they still had to be anorexically thin and they still had to battle the notion of all men still adoring the dumb blonde. And yeah, as the years wore on I didn't have to die my hair, but I still had to be thin, I had to be the carbon copy of the dark-haired, gaunt, soulless faces plastered on billboards, papers and screens.

I pass the magazine stands, see carbon copies of the models on multiple magazine covers.

I pass the media store with rows and stacks of repeated tee vee screens, showing carbon copies to the world of what we're supposed to be.

I don't want to be a carbon copy of anything. I want my own thoughts. my own ideas, and I want to spill them out for the entire world to read and hear.

But carbon copy or not, I end up resigned, knowing that despite our differences, we are all carbonbased life forms. I mean, when scientists look for life on other planets, they always only look for water first. Well sure, hydrogen, oxygen, life as we know it needs it, I get it. But carbon-based life forms are all we know. I mean, whether or not they have arms or legs, or gills, or a mouth, or a brain, they all have carbon in common.

So when I see the atrocities mankind causes:

when I see Adolph Hitler, the vegetarian artist wanna-be, when I see Adolph Hitler collect his cult followers to systematically slaughter millions...

when I see the stacks of the skin and bone emaciation, stacks of bodies in ditches, or in rooms, stacked in a pyramid to the small hole for air in the ceiling after their final "shower"...

when I see the pope visit Cuba and wear a sombrero...

when I see chickens crammed into rows of cages they cannot move in, for their eggs, for their flesh...

and when I see the rows of pre-packaged barely recognizable cow flesh wrapped in cellophane, row after row in the grocery store...

It is then I have to remember that despite everything, and as much as I hate to admit it, we are not all that different. I mean, if nothing else, we are all carbon-based life forms.

Silicon

I knew that Silicon is good for plant metabolism, which should make me be happy as a vegetarian and a woman with I don't know how many plants potted and taking over my home. But Silicon is barely ever needed for animal life... In nature, Silicon seems to be better suited for *sea sponges*. And although I love the sea, the last thing I want to be called is a sponge. And you know, if Silicon is used by anyone in the animal kingdom, you can believe that I *really* dislike breast implants made out of Silicon (or made out of anything unnatural to the human body, for that latter). And after my Lasik eye surgery, I even heard they use Silicon for some contact lenses which makes me glad I don't need contacts anymore.

So if Silicon doesn't have a use organically for humans, I guess it makes sense then that Silicon is actually used by humans in explosives and pyroptechnics. But really, for the abundant element, Silicon *has* to have some better uses for us humans, like in semiconductors, or even intregrated circuits...

But whenever I go out and walk on the beach, feel the sand work it's way between my toes, I should remember that Silicon Dioxide is pretty much *sand*. Then again, I heard that people were suing Taco Bell a few years back, because their "Taco Meat Filling", was only one third meat, plus flavorings, and a bit of Silicon Dioxide.

So yeah, people wondered, and were asking if Taco Bell "meat" was actually made with *sand*.

I know, I know, Taco Bell had to explain that Silica or Silicon Dioxide — is commonly used for foods, and Taco Bell was just using the harmless oxide to absorb water and keep the meat from clumping.

Hmmm... So if Silicon is common enough to be under our feet on beaches around the world, and if this vegetarian should be pleased that Silicon is used during plant metabolism, then I guess I'll have to expect us humans to use Silicon (even if we don't *need* it) to help us see better with eye contacts, or comically exaggerate our breast size, or even use integrated circuits to help set off some cool fireworks, because Silicon *has* to be cooler than just the beauty of the beach at sunset.



Fermium

When the bulldog ant of Australia is cut in half, the halves see each other as enemies.

The head attempts to devour the tail. And the tail, in an effort to defend itself,

battles for up to thirty minutes to sting the head. And this battle happens everywhere

in the world, because life is always that battle between the two halves of the whole.

#

Because everything contains that twin, one part good, and one part you've construed into something

so horribly wrong. And you want to tear it apart, that other half, you despise everything about it —

everything that somehow is a part of you. So you, in life, always possess that battle.

#

This even applies on a molecular level. Consider hydrogen: it's in our water we drink and bathe in,

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and atomically, we're sixty-seven percent hydrogen. But on November first nineteen fifty two,

"Ivy Mike" was the code name for the first successful test of the hydrogen bomb.

It's funny how we can take something so needed for our life and, like our sun, turn it into something

to destroy everything we know. Because as I said, one side gives life, the other kills.

#

And thanks to "Ivy Mike" and that hydrogen bomb, two elements were discovered —

one of them was named after physicist Enrico Fermi. You see, Fermi worked on "Chicago Pile-1,"

the first nuclear reactor. Fermi worked in a space under Chicago University's then unused

football stadium bleachers. That's because the school had not used the football stadium

for three years, because the school thought sports were a distraction from academics.

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Fermi, "the father of the atomic bomb". also worked on the Manhattan project, and Fermilab

outside of Chicago was named after him. And here's the kick: the hydrogen device that produced

Fermium was designed by Richard Garwin, Enrico Fermi's student. So for all that Enrico Fermi had done,

it seems fitting that Fermium is the heaviest element formed by the nuclear

bombardment of lighter elements (like hydrogen). And this highly radioactive element

was initially kept secret due to the cold war. But it's amazing what we can discover

while taking something we so need for life, and turning it into an instrument of death.

#

Because Fermium was classified in the cold war, Swiss scientists bombarding oxygen,

discovering an isotope if it, and wanted to name it centurium (to honor element one hundred). Good thing Fermi's nuclear work got declassified, so they could honor Enrico Fermi with "Fermium".

But wait, Fermium is bad, it's radioactive, there can't be any good applications for it...

Well, consider the two sides of any twin: Fermium's the only element that can use it's alpha particles

in radio therapy for cancer. And yes, it's radioactive, but it's short half life means it decays

quickly. Because as I said, it's amazing how two sides can be both bad, and also so good.

Indium

As I touch the screen display, see images and words moving along the small LED screen, I feel you there, just on the other side.

I say I've never needed you, but you've always been just on the other side, displaying what I wish to see, lubricating what cannot meld together. You're as brilliant to me as a shining silver metal but you've been so fluid that you melt when I see you.

That may be why you've always been just on the other side when it came to us, and only allowed me to admire you like this from afar.

Boron from the Big Bang

The Higgs boson, the Higgs particle. The God particle, as some have called it. It's an elusive elementary particle theorized about for nearly half a century.

They call it the God particle because it might have created all matter.

You see, scientists are trying to figure out how the Big Bang started to evolve. You see, the theory is that all of the universe's energy was created from this massive explosion from nothingness. But the question remains: how did any of that energy turn into matter?

Because during the first few minutes of our universe after the Big Bang, the temperature was so hot, that it was too hot for any binding energy that could have supported any matter, even hydrogen or it's isotope deuterium. With temperatures so hot, this bottleneck delayed the formation of anything until the universe was cool enough to make anything out of anything.

But just a few minutes after the Big Bang, elements burst forth, because the universe suddenly got cool enough. But at twenty minutes after the Big Bang, the universe was suddenly TOO cool for nuclear fusion or nucleosynthesis, and THAT is when elemental abundances were nearly fixed... That means hydrogen, helium and trace anounts of lithium, beryllium and Boron were the elements formed in those first three minutes of the Big Bang. (Sorry, any elements starting at carbon or higher were only formed after stars were around to create them.)

...So the creation of matter out of energy during the formation of this universe only happened in an insanely brief period of the universe's history. Was it just the insanely hot temperature in this insanely short period that did it?

And what does this have to do with the Higgs boson particle anyway?

Well, scientists believe this Higgs particle is a part of the Higgs field, an invisible field of energy throughout the entire universe. That Higgs particle interacts with whatever energy passes through the Higgs field. And with this interaction, particles, massless particles, they trade their energy to gain mass when passing through.

And this Higgs field, in the beginning of the universe, helped create matter.

Which helped create us.

Higgs helped create matter, including the first elements in the universe, from hydrogen to the comparatively heavy Boron.

Yeah, five electrons is heavy in the formation of the universe.

Yeah, Boron, which helps keep our bones strong. Boron treats osteoarthritis. Boron builds muscles, and when it comes to trying to understand this science, it even improves our thinking skills.

We've known of Boron for thousands of years, from the deserts in Tibet, or from China in glazes through to Persia before it got to Italy, where it was used for medical purposes.

Well, knowing how long we've used Borax for cleaning, or even that Boron's used to make the strongest magnet ever made, it's nice to know that we also understand how much this infancy-of-the-universe element is vital in everything in our lives, from our muscles and bones to the very creation of the universe.

Yeah, it's cool to see how scientists are starting to piece together how matter came to be in this universe, because without that Higgs field, and without that Higgs particle, energy would never have turned into Boron, to create any

thing,

or even create us.

Flerovium

I've had you on my mind. I think you have been trying to reach me since before I was born, since before fission bombs were imagined in the forties. I would sense you, but then I'd look around me. There would be nothing. Where did these feelings come from.

Since as far back as ninety eight I would get this tingling feeling every once in a while, and within a minute the feeling would be gone. Then I'd look over my shoulder. There would be nothing for me to see.

And now I find that since oh nine the feeling now comes to me all the time.

At times this feeling like a bomb through my body would rush over me, my bones would almost crumble from under my skin, my heart would race and my legs would shake, and I'd look for any island of stability to save me.

How did I know I was looking for you.

#

Theoretical physicists postulate that there are more dimensions than we can see.

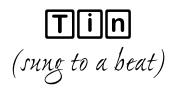
Some speak of a fourth dimension.

Some talk of ten.

So what I wonder is that at these times, when this devastating wave comes over me, well, I wonder if it is you, coming at me from another dimension, and I haven't been able to make contact with you just yet.

Maybe I don't know what's good for me, you make me shake to my core but I want to know if you're actually the one destroying me like this, from the inside out.

When I feel this corrosive feeling inside me that I can't control, maybe I should learn my lesson and keep myself in check, and leave the idea of you as just this feeling I think you give me.



If I only had a brain

if I only had a brain

I'd get out from under this bent tin roof that covers me as I sleep at night

tin metal sheets keep the rain away but the wind

but the wind

if I only had a brain

I wouldn't use my old tin cup to stand and face east at Canal and Randolph and ask for change

I wait for commuters to cross the Chicago river to get to their train

you see, I wait at the other side and the ones with the money have to walk right by that's when I rattle my old tin cup give them doe eyes say "God bless"

but if I only had a brain I wouldn't rattle my tin cup and ask for tin change I'd get myself up

if I only had a brain

I'd have a lot of money I'd eat at fancy restaurants I'd wear the plastic bib

if I only had a brain I wouldn't be poor drinking tin cans of Fanta eating soup from a tin can living on Tin pan alley

if I only had a brain

you might bend me but I just won't break 'cause if I had a brain then I'd be great

Ununseptium

I knew you were out there for years. But to get you, after toiling in my Dubna lab we had to ask the Americans over in Tennessee if they could send us some of their wares,

but years passed before I could get 22 milligrams of Berkelium so I could work in Moscow Oblast to get you in my sights.

All that time, all I could do was research, hope. I'd work, I'd go and I'd stand on my own, and I'd leave on my own,* wondering how long it would take before I'd see what you might be like.

You see, I used to work at a pharmacy at Nevsky Prospekt in Leningrad, that's when I fell in love with learning about chemicals, and that is when I wanted to discover something truly new.

That's when you came into the picture.

Because after years of work, I still waited for those damn Americans to come through for us. I mean, we're scientists, we're supposed to be on the same side, this is all about discovery. And the thing is, the higher we get in our research, the more stable we got on our little island of knowledge. But this waiting was exasperating — I got to the point that I got tired of trying to tell myself that I had something to discover, something to share, that someone wanted to hear.**

Eventually, they had to ship what I needed to get you in five packages wrapped in lead; it flew back and forth across the Atlantic five times and was rejected twice by customs. But once I got what I needed oh, you were just about the heaviest thing I could imagine. Then again, you've had me spinning around over the years for you, so it wouldn't surprise me if you would do the same for me.

So I'd work while listening to the radio, and active actions from you would come to me in short bursts. But I'll take whatever I can get in my little corner of the world. This is research. And this is what I do

to learn what I can from you.

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Jant Kuyperes

http://scars.tv/kuypers/poems/periodic-table-of-poetry.htm

and http://www.janetkuvpers.com/kuvpers/poems/periodic-table-of-poetry.htm

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