Slowers in the stars

Periodic Table OF POETRY

Ni

47

AG

68

49

815

BK

Ho

Poetry Love Letters 9/12/14 live, Let them Eat Chocolate

Seaborgium

#104, Sg

I've always loved the sea. When standing at these Pacific shores I'm always intoxicated by the action there, at the vibrancy, the sense of life. I've always been drawn to the idea of learning, to California's desire to explore and discover.

#

There was a scientist, Glenn Seaborg, who later worked through U of C Berkeley. And when it comes to discovery in California, Seaborg really had a hold on the chemistry market. Because during his career, he did theoretical work in the development of the Actinide series in the Periodic Table, and he even helped discover ten elements (many in that Actinide series).

But one element that wasn't in the Actinides series that he helped discover, element one oh six, that was the element people petitioned to be named after him (you know, because of all he had discovered for the Periodic Table). But scientists in Dubna Russia were also wanting to claim the naming rights for element one oh six, and naming this element after Seaborg caused quite a stir, because elements are only named after dead people, they said. But the Americans actually pulled it off and got the new element named Seaborgium. Transuranium elements like Seaborgium are only artificially made with particle accelerators, and I know those scientists, after finding elements that way only acquire one or two atoms, and they can only guess the element's properties by their location on the Periodic Table... I mean, Seaborgium's isotopes have half lives only seconds long, and there's no use we know of for Seaborgium other than scientific research (like for scientists like Seaborg or Albert Ghiorso, or the leader of that Seaborgium discovery team).

But after the element was named Seaborgium, and since Seaborgium is the only element named after a living person, it may have been possible to send Glenn Seaborg a letter addressed in chemical elements: send it to Seaborgium, in lawrencium (for his Lawrence Berkeley Lab), in the city berkelium, in the state californium, and (if the letter's being mailed from outside the U.S.) in the country americium... I don't know if any letters like this actually got through to him, but for a man with that many discoveries under his belt, sending letters to him using only Periodic Table elements almost seems like icing on the cake.

Meitnerium

#109, Mt

Performance artists and feminists alike will jump at the chance to explain that women aren't treated fairly in this world. Women in the workplace make seventy some cents to the man's dollar, and if they're married they're still expected to take care of the kids and cook the meals and clean the house. As a woman, I can tell you that I'm objectified nearly every time I go outside for a long walk with horn honks or cat calls.... And objectively, it *is* rough when the cards seem stacked against you as a woman trying to get ahead in the world —

And I hate to be the person who squashes the ego of all women out there, but if you think it's rough for you women now, think of the uphill battles you'd have to climb if you lived, say, a century ago. That was a time when women didn't have the right to vote, and why on earth would they want to go to school (unless they wanted to be a teacher, or a nurse) when their place is at home to live to agree with the breadwinner, husband, father, patriarch, master?

#

Because not all of you may have a scientific mind, but one woman, Lise Meitner, born to a Jewish family in Austria ten years before Hitler, was blocked in so many ways to achieve any of her goals in life. Because she actually got her doctoral degree in physics in the days when women weren't even allowed to attend schools of higher education. Professor Planck in Berlin, who usually

rejected any women wanting to attend his lectures, allowed *her* in, and in a year Meitner even became his assistant. She later worked, without a salary, before she worked in Prauge as an associate professor.

She was the first woman in Germany to become a full professor in physics, and she eventually co-discovered nuclear fission with Otto Hahn. I mean, Alert Einstein even praised her by calling her the "German Marie Curie".

And yeah, as Adolph Hitler came to power, and most of her colleagues emigrated from Germany after they were forced to resign their posts, Meitner just immersed herself in her work until she witnessed the Anschluss (the annexation of Austria into Germany) that she felt forced in nineteen thirty-eight to flee to Holland, then Sweden. But a chemist where she worked, Kurt Hess, was an avid Nazi, and he even informed the authorities that she was about to flee, so it was lucky she escaped.



Meitner even said she escaped with only 10 marks, but before she left, Otto Hahn gave her a diamond ring for her escape in case she needed to bribe the frontier guards. She didn't need to use it in her escape, so the ring was later worn by her nephew's wife.

But after her assistance with nuclear fission, she didn't want to think of this used as a weapon, and she refused an offer to work on the Manhattan Project.

The sad thing is that she co-discovered nuclear fission, but it was her male co-worker, Otto Hahn, who was awarded the 1944 Nobel Prize in Chemistry for the discovery of nuclear fission. Some historians say Meitner should have been awarded the Nobel Prize with Hahn, but keep in mind that it was a man's world back then.

Though she was nominated for a Nobel Peace Prize three times, she has received awards in later years in addition to having craters on the Moon and on Venus named after her, in addition to element one oh nine.

And yeah, element one of nine, Meitnerium, is a highly radioactive synthetic element it's radioactivity makes me think of that nuclear fission she co-discovered with Otto Hahn, (they also even discovered the element protactinium) but when it came to naming element one oh nine, it was the only proposed name, making Meitnerium the only element named specifically after a non-mythological woman.

And really, there is so little of this Meitnerium that people can only guess it's properties, but learning and discovering seemed to be something Meitner was all about, facing all odds to achieve so much.

Berkelium

#79, BK

The streets of town were paved with stars, it was such a romantic affair and when we kissed and said good night a nightingale sang in Berkeley Square.

A nightingale sang in Berkeley square. Berkeley. B, E, R, K, E, L, E, Y. You see, on the other side of the pond the Brits have a different way of saying things, including the name of the Anglo Irish philosopher George Berkley. That's B, E, R, K, L, E, Y, like you're barking up the wrong tree, but when a city and University in California was named after this philosopher, well, the pronunciation changed after it crossed the ocean. And because of scientific work done at the University of Berkley, they decided to name element seventy nine after the University (it's actually only one of two elements in the Periodic Table named after a university). So, I don't really know how you're supposed to pronounce it, should I say berk-lee-um like the States, or the British ber-keel-ee-yum, because I've been trying to learn a thing or two about Berkelium ...

7

And the thing is, it's never found in it's pure form, because this transuranic radioactive and artificially produced element is a soft, silvery-white, actinide metal that *sometimes* has long half lives through it's isotopes (that range from microseconds to several days, to three hundred thirty days, to nine years to one thousand three hundred eighty years). So maybe I'm only meant to learn about parts of it by these fleeting dances scientists have with Berkelium...

1 H																	2 He
3	4 8e											5 8	ĉ	7 N	8 0	9 5	10 Ne
11 N5	12 Mg											13 Al	14 5i	15 P	16 5	17 Cl	18 Ar
19 K	20 Ca	21 54	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 C0	28 Ni	29 Cu	30 Zn	31 Ga	32 6e	33 A5	34 Se	35 8r	36 Kr
37 85	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 R	44 RJ	45 Rh	45 Pd	47 Ag	48 Cd	49 In	50 Sn	51 5b	52 R	53 1	54 Xe
55 G	56 83		72 Hế	73 D	74 W	75 Re	76 05	77 Ir	78 Pt	79 Au	80 Hg	81 TI	82 Pb	83 Bi	84 Po	85 AL	86 Rn
87 fr	88 F.5		104 Rf	105 Db	106 59	107 Bh	108 H5	109 Mt	110 D5	111 Rg	112 Cn	113 Uut	114 Fl	115 Uup	116 Lv	117 Uus	118 Uuo
			57	58	59	60	61	62	63	64	65	65	67	68	69	70	71
			La	ce	Pr	NS	Pm	Sm	Eu	68	Tb	Dy	Но	£r.	Tm	Yb	Lu
			하ん	50 Th	91 Pa	92 U	93 Np	94 PU	95 Am	96 Cm	97 8k	98 Cf	99 E5	100 Fm	101 Md	102 No	103 Ur

Hassium #108. Hs

Hassium is a Periodic Table element that was discovered in nineteen eighty-four. Apple launched it's first Macintosh computer in nineteen eighty-four. That's also the same year the first planet outside of our solar system was discovered. Nineteen eighty-four is the year Nelson Mandela saw his wife for the first time in twenty-two years. It's the same year Walter Payton achieved the most rushing yards, and the year Michael Jackson's hair was set on fire taping a Pepsi commercial. It was the year McDonald's sold it's fifty billionth hamburger. Then again, it's also the same year vegetarian Fred Rogers (you know, From Mr. Roger's Neighborhood) it was the same year he donated his red sweater to the Smithsonian.

Although it had existed for decades, nineteen eighty-four is the year the AIDS virus was technically identified.

Don't get Orwellian on me, but it was a busy year, nineteen eighty-four. Named for the German state of Hesse, this radioactive synthetic element (that's an element that can be created in a lab but is not found in nature) seems to have a half life - the time it takes for something to fall to half its value because of radioactive decay - it has a half life of only seconds... But give the scientists some credit, there have only been a little over one hundred atoms of the transactinide element Hassium synthesized to date. I know that Russian scientists in Dubna tried to synthesize this element in 1978, but Darmstadt scientists in Germany got it together in nineteen eighty-four.

"So... another radioactive synthetic element, so what?" is probably what you're thinking right now, and yeah, when it comes to it's apparent only value for scientific research you're probably right, but check out this one cool sounding point for element one oh eight ... According to calculations, one oh eight is a proton magic number (which means it is the number of protons that will arrange into complete shells in the atomic nucleus) and it's the proton magic number for deformed nuclei (that means nuclei that are far from spherical). This means the nucleus of Hassium 270 may be a deformed doubly magic nucleus.

Okay, it's more science stuff, but it's cool to think that an isotope of Hassium can still have a perfectly arranged nuclear shell in it's atom, while still remaining deformed and look completely out of synch. Makes sense for a radioactive element that we created: makes sense it's a little off-base, but still somehow together. So I guess it's kind of cool that we were able to create an element on the earth-shaking year of nineteen eighty-four, and that we'd make something so off-kilter, but somehow still perfectly in balance, considering everything it can potentially do if we ever made enough to this radioactive stuff.

1 H													2 He
3 4 Li 8e								5 8	é C	7 N	\$ 0	3	10 Ne
11 12 No Mg								13 Al	14 5i	15 P	16 5	17 CI	18 Ar
19 20 21 K Ca 5c	22 Ti	23 V	25 26 4n Fe		28 Ni	29 Cu	30 Zn	31 Ga	32 6e	33 A5	34 Se	35 8r	36 Xr
37 38 39 R5 Sr Y	40 Zr	41 Nb	43 44 R RJ	45 Rh	45 Pd	47 Ag	48 Cd	49 In	50 5n	51 5b	52 Te	53 1	54 Xe
55 56 C5 83	72 Hế	73 D	15 76 Re Os		78 Pt	79 Au	80 Hg	81 TI	82 Pb	83 Bi	84 Po	85 AL	86 Rn
87 88 Fr P.5	104 Rf	105 Db	07 100 3h H5	109 Mt	110 D5	111 Rg	112 Cn	113 Uut	114 Fl	115 Uup	116 Lv	117 Uus	118 Uuo
	_		 					_	_		_	_	
	57 L3	58 Ce	60 61 VS Pm		63 Eu	83	65 Tb	65 Dy	67 Ho	68 Er	69 Tm	70 Yb	71 Lu
	8) A:	90 Th	92 93 U Np	94	95 Am	96 Cm	97 8k	98 Cf	99 65	100 fm	101 Md	102 No	103 Ur

Dubnium #105.100

Over the years, the U.S. and Russia have fought over all sorts of things thermo-nuclear bombs, inter-continental ballistic missiles to carry those bombs, even getting men into space, or winning the most Olympic medals, or even... Making new chemical elements.

You may think of the Cold War when I mention the U.S. and Russia, oh, I'm sorry, the Soviet Union, but you could probably also think of the Transfermium Wars where both countries spilled a lot of

ink

in an effort to come out the winner.

Because it was both Dubna in the USSR and Berkeley California in the U.S.A. that claimed the discovery of this element, but after the Cold War, the IUPAC (oh, don't make me spell that out for you, the International Union of Pure and Applied Chemistry, the group that decides the names for elements) said that credit for this discovery should be shared between the two. But if the two countries no longer battled over who discovered it first, they could at least then argue over the naming rights for the element... The Soviets wanted to call it nielsbohrium for the Danish nuclear physicist Niels Bohr. The Americans wanted to call it hahnium for the late German chemist Otto Hahn. SO, American and Western Europeans started calling the element hahnium, while the Soviet Union and Eastern Bloc countries went on calling it nielsbohrium.

So the IUPAC gave the name unnilpentium (one zero five, Unp) as a temporary name. Though the two countries still disagreed over the naming of this new element, The IUPAC then decided on Dubnium, to honor the Russian discovery location. I think the only reason it got to be named after Dubna is because America had so many elements already named for them (like berkelium, californium, americium), and if the elements AROUND one oh five (rutherfordium and seaborgium) are U.S., Dubnium can offset the American discoveries.

So yeah, even after all these decades of competition and mistrust, a third party had to come in — repeatedly to try to settle our squabbles, kind of like the UN...

But now that we're got the name figured out for element one oh five, maybe now we can learn about Dubnium, right? So I did a little research, and lo and behold, scientists haven't been able to figure this element out either. Melting point? Unknown. Boiling point? Unknown. Density? Unknown... I guess that's what we get for battling with the Soviet Union (well, okay, later Russia) to try to create a highly radioactive metal which doesn't even occur in nature. Only a few atoms have ever been made, so I guess our "creation" is for research interest only.

...But wait a minute, we just created a radioactive element — should we worry that if this spreads we'll turn into a radioactive planet? Will our progenitors be a radioactive species?

Well, that might sound like a thrill for comic book guy, but Dubnium is so unstable that it would decompose so quickly that it'll never affect humans. And because of Dubnium's half life of half a minute (that's short, by the way), there's no point in even worrying about it's affects on the environment either. So as I said, sorry comic book guy, but this won't turn us into radioactive people or kill us by radiation ... Hmmm, maybe the United States and Russia once worked on trying to blow each other up with nuclear bombs and missiles, but when it came to the Dubnium battles in the Transfermium Wars, maybe for once we were both working at the same time on something for science that will only help us learn.

1 H					I									2 He
3 4 Li 8e									5 8	ő C	7 N	8 0	9 5	10 Ne
11 12 Na Mg									13 Al	14 5i	15 P	16 5	17 Cl	18 Ar
19 20 21	22	23 24	25	26	27	28	29	30	31	32	33	34	35	36
K Ca 5c	Ti	V Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	A5	5e	Br	Kr
37 38 39	40	41 42	43	44	45	45	47	48	49	50	51	52	53	54
R5 Sr Y	Zr	Nb Mo	R	RJ	Rh	Pd	Ag	Cd	In	5n	5b	Te	1	Xe
55 56	72	73 74	75	76	77	78	79	80	81	82	83	84	85	86
C5 85	Hế	D W	Re	05	Ir	Pt	Au	Hg	11	Pb	Bi	Po	A!	Rn
87 88	104	105 106	107	108	109	110	111	112	113	114	115	116	117	118
Fr R.5	Rf	Db 59	Bh	H5	Mt	D5	Rg	Cn	Uut	Fl	Uup	Lv	Uus	Uuo
	57	58 59	60	61	62	63	64	65	65	67	68	63	70	71
	La	Ce Pr	Nd	Pm	Sm	Eu	68	Tb	Dy	Но	£r.	Tm	Yb	Lu
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	AL	Th Pa	U	Np	PU	Am	Cm	8k	Cf	E5	Fm	Md	No	Ur

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