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Elements in the Eyes of a 4-Year-Old

My husband is a scientist. He often brings home different scientific journals and magazines to read, and my 4-year-old son, Nicholas J. Hu, likes to flip through them. A recent issue of *Chemical and Engineering News* (September, 2003) caught his interest more than usual because there were stories of different elements. Nicholas has been able to recognize elements for more than a year now. He knows some facts about common elements such as oxygen (O), calcium (Ca), nitrogen (N), and hydrogen (H).

After he had finished looking at this particular issue, he came to me and said, "Mommy, let's see if you can guess the atomic numbers of the elements. I will name the element and you give me the atomic number. You have to get three of them right."

I thought to myself, *Okay, this seems like a fun game. After all, I am a high school chemistry teacher. I know some of the elements' atomic numbers.*

So, I said to him, "Okay, give Mommy an element."

Jumping up and down, Nicholas asked, "What is the atomic number for Lawrencium?"

Lawrencium? Who on earth would know the atomic number for Lawrencium? I thought to myself.

"C'mon, Mommy," my son encouraged.

"Let's see—It is somewhere at the bottom of the periodic table, so I would guess its number to be 100," I said.

"Nope! It's 103," said the little guy.

"Okay, give me another element," I said, anxious to get the next one right.

He gave me some obscure element again, at least obscure to me because I didn't get it right. He gave me another element, and another, and another—I couldn't get any of them right. Finally, I had to ask him to name the elements with atomic numbers lower than 20. And yes, I was able to get three correct. Well, it seems that I know the atomic numbers of the elements in the first three rows, but I was curious to see how many of them my little son knew.

"Now, it's your turn, Nicholas. Give Mommy the magazine and I'll ask you to give me the atomic numbers of the elements," I said.

Still jumping up and down like a yo-yo, he said, "Okay, Mommy."

I thought that I should give him an element further down on the periodic table just to surprise him. "What is the atomic number for zinc?" I asked.

Jumping up and down and smiling, he immediately answered, "30!"

Guess who ended up being surprised? *All right, little guy, lucky guess. Let's try another one.*

"What is the atomic number for aluminum?"

"13," came the reply without hesitation.

"How about phosphorus?"

"15."

"Oh, my goodness, how many of them do you know?" I exclaimed. I decided to randomly ask him elements from the first few rows. Lo and behold, he knew more atomic numbers than I did.

But, that wasn't the end of surprises for me. The next evening, I decided to read and memorize the atomic numbers, too. I didn't want to embarrass myself again should my son want to play his atomic number game once more. I came across an article on potassium and found out that bananas contain a high level of potassium. I wanted to share this fact with my husband, so I asked him, "Thomas, do you know which element is found in high levels in bananas?"

Before my husband could answer, Nicholas yelled out, "What is the element K called again, Mommy?"

"Potassium," I said.

"That's my answer—potassium. Yup, potassium is in bananas," he firmly stated.

He wasn't simply flipping through the magazine the day before. He was absorbing its content like a sponge! I was thrilled with and humbled by the little guy. I congratulated him. "Good for you, Nicholas. You're right. Maybe one day you'll become a famous chemist. You can get an element named after yourself. Maybe something like Hunium."

"Yeah, maybe element 115," he said.

At the time, I thought there were only 109 elements. So, I said, "No, element 110."

"Element 115 or 117," he insisted.

"Uh-huh," I said. I didn't know why he chose numbers 115 and 117. *Maybe 117 because 7 is his favorite number*, I thought to myself.

A few days later, as I was looking through an agenda book that I had given him a while ago, I came across a page with the periodic table. There it was—an updated periodic table with more than 109 elements. In fact, there were little boxes up to 118 with all elements filled in, except 115 and 117. In these two blank boxes we re scribbled the numbers 115 and 117 in blue felt pen by the little guy (see the picture below). That's why! That's why Nicholas insisted specifically on numbers 115 and 117: because they haven't been discovered yet. Silly me, I had told him 110. Unuunilium (now Darmstadtium) has already been designated 110.

Oh, so much more chemistry for Mommy to learn. GCT