



**Transcript for *I am Marie Curie* (Dial Books for Young Readers, an Imprint of Penguin Random House)
Preview Video**

Preview (0:00 – 9:20)

Hi everyone! It's Colleen from the KU Natural History Museum, and I'm so excited to remind you about tomorrow's Story Book Science! I am going to be reading the book *I am Marie Curie*. This book is written by Brad Meltzer, and it's illustrated by Christopher Eliopoulos. And it's published and being read with permission from Dial Books for Young Readers, which is an imprint of Penguin Random House. So thank you to them for the permission to read this book!

Now this month, we've been talking about the spookier side of science. And the reason we're going to be talking about Marie Curie is because she did research, and her research helps us better understand the periodic table of elements, and atoms, and radioactivity: all of these things that we can't really see with the naked eye. So because we were able to study all of these things with Marie Curie's notes and research, we're better able to understand our world!

Now Marie Curie, she was a Polish woman, and she moved to Paris, France, in order to study science and do her scientific research. And we're going to talk about the periodic table of elements, which is so important to understand all of the things that she did! But before we talk about the periodic table of elements, we're first going to talk about matter.

What is matter? Matter is anything that has mass and takes up space. So I'm sitting on a chair. And this chair, it has mass, and it takes up space. So it's matter! The air around me? It has mass. It takes up space. It's also matter! I have mass, and I take up space. So I'm matter! What about you? Do you have mass, and do you take up space? So you're matter!

Now matter, it is made up of these tiny particles called atoms. And I have a photo, a diagram, that represents an atom on the wall. And it's a little hard to see, so I do want to show the photo with you. So this is an atom. And when we talk about atoms, these things that build up matter, we have to talk about the things that make up the atoms.

So atoms have a center, and we call that the nucleus. And this nucleus is made up of protons and neutrons. Now protons, those are positively charged particles. And so we can remember protons as positively charged particles. Neutrons, they don't have a charge. So they're neutral. So you can remember neutrons as neutral. And then surrounding the nucleus, so orbiting around, moving around that center of the atom, are electrons. And electrons, they are negatively charged. So you can remember that electrons are negatively charged. Alright!

So what does all of this have to do with the periodic table of elements? Well, the periodic table of elements, they show all of the elements known in the world. And they show them in their most basic form. So they show them as atoms. So here is an image of the periodic table of elements, and I know that's a little hard to see. So here is that same image but just a little closer to the camera. And you can see that there are all of these

elements all on the periodic table. And like I said, these are the most basic forms of the elements. So they represent one atom of the element.

Now I want to investigate an element together. So let's start with the first element we see on the table, which is hydrogen.

Now if we were to zoom in on that square that represents hydrogen, this is what we would see. You have an H, and that H represents hydrogen. So we use the letter H to represent hydrogen. Now above the H, we have a one. What do you think that one represents? Well, it does represent that this is the first element on the periodic table of elements. But this number, the atomic number, represents the number of protons in the atom's nucleus. So hydrogen has one proton. Alright?

Now the atomic number can also tell us the number of electrons that an element has. So if an element has one proton, it has the same number of electrons. So if it has one proton, how many electrons does it have? It has one electron. So hydrogen has one proton, and if you remember, the proton is found in the nucleus. And it has one electron, and that electron is found orbiting the nucleus.

What about the neutrons? Now this is where it gets a little tricky because the periodic table of elements doesn't express directly the number of neutrons an atom has. But we can use another number to figure out the number of neutrons in an atom of any element. So this is the number I'm talking about right here. This number is the atomic mass. So for hydrogen, the atomic mass is 1.00784. So the atomic mass is how much stuff makes up the atom, and we know that it's 1.00784. To find the neutrons of this element, what we have to do is we have to take the atomic mass and subtract the number of protons from it. Alright?

Now I'm going to grab my sheet of paper so we can do this together! The first thing we have to do is we have to write down the atomic mass of hydrogen, which we know is 1.00784. We have the atomic mass of hydrogen, and we need to subtract the number of protons from the atomic mass. Do you all remember how many protons hydrogen has? It's the same as the atomic number. So look at this, and see if you can figure out the number of protons. It's one! So we subtract one from the atomic mass. So 1.00784 minus one is what? Well, it's 0.00784. And just to make this a little easier for us to think about, we're going to round this number down. And we're going to round it down to zero.

So because we did this math, we subtracted the number of protons of an element of hydrogen from its atomic mass. We know the number of neutrons is zero! So hydrogen, one atom of hydrogen, has zero neutrons.

But sometimes elements have these different forms. And we know that they have these different forms because they have different atomic masses. So they have the same number of protons. They have the same number of electrons. But there's a different atomic mass. So what does that mean about the number of neutrons?

So the example I want to provide is actually an atom of hydrogen. It's just a different form of hydrogen. Instead of having an atomic mass of 1.00784, it has an atomic mass of 2.014. What does that mean about the neutrons in that different form of hydrogen? It has the same number of protons, but it has an atomic mass of about two. So what does that mean about the neutrons? Does it have more neutrons, or does it have less neutrons? I want you to think about that. And then join me tomorrow, where we're going to talk about these different forms of elements, including the different forms of hydrogen, and we're also going to talk about other elements and other forms of those elements, and we're going to talk about Marie Curie. So I hope you join me tomorrow for Story Book Science, where we're going to talk about all of those different things. And I hope to see you then! Bye!