And why this matters.

Because in fact, this is one of the things, all the way back to Hook and his cannonballs, and even way before that, people noticed this stuff.

I broke something, but it always seems to slice in a certain way.

Why is that?

Why would something always break in the same way every time?

With the same kind of-- what does way mean here?

It means like the angles that form.

So why are those angles always kind of the same?

Well, it has to do with the strength, the relative strength, of the planes inside of these crystals.

And in fact, here's a beautiful piece of work on stretching a wire.

All right, so here you're taking a wire that is crystalline and you're pulling it.

And you can see how it breaks.

You can actually see how it breaks.

It's breaking along the weakest plane.

It's breaking along the weakest plane.

So if you want to think, then, about well, OK, how do I know how to make this stronger, for example?

So it stops breaking-- you know, the weakest link is the weakest link.

That was deep.

So then that's the plane of the crystal that I need to think about.

How are bonding together or packing in in that plane?

This is real stuff.

This comes about in many of the properties, not just the fracture, but in many of the properties of these materials.

The property, as I said before, depends heavily on which plane you're in.

And we'll see that more and more.