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The Paint That Can Turn Any Surface into a Solar Cell

| An interview with Professor Dwight Seferos
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Why is solar power important?

Solar is carbon-neutral energy and it's one of the few ways of generating electricity that doesn't lead to carbon dioxide in the atmosphere. Now this is a problem that not only affects all of the humans on the planet, it affects every living organism because more carbon dioxide can lead to things like global warming, it can lead to the acidification of the oceans and we don't yet know the consequences of those, but we'll have to deal with them.

How can we expand the use of solar?

One of the reasons why solar is not widely adopted is it's just too expensive. And so we're trying to design new materials that are low cost, light weight, Materials that can replace the silicon used in solar panels. The new hotness is carbon: make it lightweight, make it out of carbon, make it easy to mass produce and easy to scale up just like the plastics that we use all around us. The challenge is making a plastic that behaves like a semi-conductor. A really lightweight technology that's integrated right into the building materials themselves. Now these can be painted on, or they can be stand-alone materials, but in the long-term, maybe 10-20 years out, we'd like to reduce the weight, reduce the cost, and make this technology widely adopted.

What makes carbon so important?

Carbon's important because it's a hugely abundant resource on the planet. We have lots of carbon feed stocks and we use them for all kinds of things: for pharmaceuticals, for the plastics that are used in all kinds of commodity materials, so it really is a very readily available source. Carbon can be manufactured in different ways. For example you can melt carbon, you can mold it. You can't do that

with silicon. You need to etch it, use things like hydrogen fluoride, very caustic reagents to mold it. So carbon does offer a lot of advantage in terms of mechanical stability, it can be bendable, it can be mouldable, and so it really is a good material. I think if you have technology that's less expensive than burning hydrocarbons, it would be widely adopted because everyone needs energy