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Building a Robot That Could Help Save the Planet

An interview with Project Ada researchers:

Curtis Berlinguette, Professor, UBC Chemistry, Stewart Blusson Quantum Matter Institute

Fraser Parlane, Graduate Student, UBC Chemistry
Stewart Blusson Quantum Matter Institute

Curtis Berlinguette

What makes our robot really unique is that it performs an experiment just like a human would. It will make a material, it will then measure that material, and then based on those measurements it will then decide what the next material it will go out and make.

Fraser Parlane

I work on using robotics and automation, fused with machine learning, to try and find new materials for clean energy faster than we ever have before. When I walk into the lab, I have all the tools available to me to discover the next material we need, say for solar cells, for some clean material application. But it's a matter of finding the right combination and the right application of those materials that's going to result in that champion next-generation material.

Really the problem ahead of us is how fast can we search? How fast can we discover? How fast can we resolve the space to find that new material?

TODAY'S RESEARCH. TOMORROW'S REALITY.



Curtis Berlinguette

Currently the materials sciences in the clean tech sector really relies on two approaches. One is that we have humans that go out and perform experiments and hope that they find the best material. The challenge is that there are millions and millions and millions of materials that they have to go out and make and test. And that just takes a really long time.

One of the other alternatives is to build a machine that's capable of synthesizing millions of materials, but it's not able to really test those materials quickly, and by the time you process all of that data, many months have actually passed. And so it's still not a really fast process. And so we combine the positive attributes of the two.

The really fun thing about this robot is that it is actually learning on the fly. It's not building off any previous data. It's not going in with any prior bias. It's going out and making decisions based on the data that it's collecting. And so now we can have our humans spending more time on the creativity side, developing and thinking through new types of materials solutions, and leave the automation to go through and do the stuff that is really not building our knowledge base — we just need to do it in order to find the right material.