



RESEARCH2REALITY

Shining a light on research & innovation.

What Happens at This Level is Really, Really Cool

An interview with researchers at the **Stewart Blusson Quantum Matter Institute** at the University of British Columbia:

Douglas Bonn, Professor, UBC Physics & Astronomy

Sarah Burke, Associate Professor, UBC Physics & Astronomy

Douglas Bonn

I'm an experimental physicist and I work at low temperature properties of materials, looking at how electrons behave in different materials at low temperatures.

Sarah Burke

My research work uses a family of techniques called scanning probe microscopy, which allow us to see surfaces, atoms, and molecules at the atomic and molecular scale.

The new instrument that we're commissioning right now, which was funded by the Canadian Foundation for Innovation, allows us to bring together these two techniques - scanning tunneling microscopy, which lets us see where the electrons are on the surface in individual positions, and angle-resolved photoemission spectroscopy which allows us to see how the electrons move through the material. Bringing these two pictures together is really powerful because being able to put the same sample in one machine with both techniques available allows us to resolve what parts of the measurements that each technique can't see.

TODAY'S RESEARCH. TOMORROW'S REALITY.



What is the role of collaboration in research?

Sarah Burke

There's a lot of problems in science today that benefit from collaboration. Part of that is the materials challenges that we're facing require making new materials and the understanding is constantly developing.

Douglas Bonn

We're mixing two, three, four, five elements in the periodic table into some complicated crystal structure. There's a lot of different things you have to figure out in order to understand that problem.

Sarah Burke

So in order to actually apply more than one technique to a material, you have to collaborate with other people. Nobody's going to be an expert in five different techniques that are at the leading edge. In order to really apply all of these great new tools that we have to every materials problem that we have, we have to work with each other.