University of Alberta receives $18.6-million grant for research on permafrost, nanotechnology

More from Hina Alam | Published on: October 12, 2017

Trees in particular and nature in general has fascinated and inspired many a scientist for generations. And scientists are once again taking a leaf out of nature’s book.

“In the case of a leaf, everyone knows that chlorophyll absorbs light but you actually have a very complicated structure that absorbs the light and converts that into chemical energy,” said Jillian Buria, chemistry professor at the University of Alberta and Canada Research Chair of Nanomaterials for Energy. “In the same way in nanotechnology we now have the tools to go in and control matter, any matter, at that same length scale — very tiny. So we get things right.”

She was speaking at an official ceremony at the University of Alberta where Amarjeet Sohi, federal minister of infrastructure and communities, announced $18.6 million in infrastructure funding to the university through the Canada Foundation for Innovation.

“Science, in other words, is part of the mix of economic, social, health, gender and diversity evidence that we rely on to inform our decisions — decisions that protect the health and safety of Canadians and grow the economy in a way that creates opportunities for the middle class and those working hard to join it,” Sohi said.

Buriak received $6.2 million from the fund to build advanced integrated manufacturing for micro/nano systems in the Centre for Nanofabrication.

“Nanotechnology is just being able to control matter in very small dimensions,” she said Thursday. “It’s called the nano scale … on the atomic level. By
having that control, instead of dealing with big processing rocks and big chunks of metal, when you control things at that level the materials can do many different things. You can teach old dogs new tricks. It’s very inspired from nature.”

The funding will allow researchers to move their discoveries from the lab into the marketplace, she said.

Some of these discoveries include devices for quantum computing, which may be the next revolution in computing, being able to print solar panels like newspapers so they can be stuck on top of buildings and used as curtains or sun umbrellas, Buriak said.

The Permafrost Archives Science Lab received $1.6 million in funding.

Permafrost, which makes up more than half of Canada, is that part of the frozen Earth that people actually live on and build infrastructure on.

Communities in Canada’s Arctic are built on permafrost, roads are built across permafrost, there are pipelines and all kinds of infrastructure on permafrost, said Duane Froese, professor and Canada research chair at the University of Alberta’s department of earth and atmospheric sciences.

“At minus-five-degrees Celsius, permafrost has the properties of concrete,” Froese said. “At zero-degrees Celsius it turns into soup.”

The lab will have state-of-the-art equipment for the characterization of permafrost, he said. That means it will help understand the age of permafrost, the dynamics, the microbes found in permafrost, the role of those microbes, and how a lot of those elements will change as thaw progresses, he said.

Other projects funded by the Canada Foundation for Innovation include the Heart Failure Translational Research Centre, multiscalar nanoscopy for advanced cell biology, Future Smart Grid Technologies Lab and Canadian High Polarization Magnetic Resonance Centre.

Source: Edmonton Journal