On the trail of tungsten

New economic geology professor searches for critical metals.

By Jennifer Pascoe on January 10, 2018

Pilar Lecumberri-Sanchez is on the hunt for critical metal-bearing mineral deposits, while navigating not only economic but also environmental needs. The Spain-born scientist’s search has now brought her to the University of Alberta, where she has joined the Department of Earth and Atmospheric Sciences as one of the newest faculty members.

The geologist focuses on using fluids found in geologic deposits to understand where metals are found, including critical metals such as tungsten, which occur in very few localities in the world: China, Portugal, and the Northwest Territories and Yukon in the Canadian North. Lecumberri-Sanchez noted that Canada is viewed as a model for economic geology: maximizing economic impact while minimizing environmental impact.

“A lot of communities see mining as good for our economy, but they’re also concerned with the environmental issues. There’s a definite balance between providing economic support and also taking care of the environment. Canada is a place where people are putting a lot of effort into doing things right.”

Lecumberri-Sanchez explained that in addition to supporting both the economy and the environment, the Canadian geology community can also be looked at as a model example for supporting geologists themselves.

“Canada is very friendly toward economic geology,” said Lecumberri-Sanchez. “The geology community is very supportive for early-career scientists like me. Being part of this big but friendly community makes a world of difference.”

In addition to field work both in Canada and beyond our borders, Lecumberri-Sanchez will be conducting extensive analyses of metal-related minerals once her lab is up and running. “We employ this technique called cathodoluminescence. You bombard your sample with electrons, and it produces these beautiful colours that could not be seen before. It’s very pretty, but it also reveals some of the microscopic chemical changes within minerals. Combined with other techniques, it can help point us to how these deposits form and from there to where we can find them.”

Lecumberri-Sanchez’s lab work will see her collaborating with many geologists in the department, including Robert Creaser, Thomas Stachel, and Graham Pearson, as well as fellow economic geologist and recent UAlberta hire Matt Steele-MacInnis, who just happens to be her husband and constant co-collaborator. Alongside recruiting graduate students and getting her lab up to speed to support a plethora of research projects, Lecumberri-Sanchez said she’s most looking forward to teaching a mineral deposits class.

“I love undergrads, especially first and second year. They’re seeing something for the first time, and it’s awesome. It’s a huge responsibility. You get to contribute a lot to what someone is going to be doing with their life, and you have an opportunity to provide some guidance on the best way for students to get to where they want to be.”

Following undergraduate studies in Spain, where Lecumberri-Sanchez studied geology, she completed her graduate studies in fluid geochemistry at Virginia Tech. After a prestigious Marie Curie post-doctoral fellowship at ETH Zurich, Lecumberri-Sanchez worked as a research scientist at the University of Arizona before her move to Canada.

Lecumberri-Sanchez was recently recognized by the Society of Economic Geologists with their Waldemar Lindgren Award, “awarded annually to an individual under the age of 37 in recognition of published research that represents an outstanding contribution to economic geology.”

Source: Faculty of Science