FIVE QUESTIONS

ABOUT RESEARCH IN UKRAINE

FOR ANDRIY STYERVOYEDOV

Mr. Styervoyedov, together with V. N. Karazin Kharkiv National University, you are creating the German–Ukrainian Plasma-Spin-Energy Core of Excellence, which is funded by the Federal Ministry of Education and Research. How are your colleagues in Kharkiv managing to conduct research?

ANDRIY STYERVOYEDOV: The situation around Kharkiv is not good. The Department of Physics and Technology at Karazin University is located in the northern part of the city, which is only about 25 kilometers from the Russian border. Now many windows are broken, and much has been destroyed. Alarms are frequently going off, and sometimes you hear explosions during meetings. My colleagues often have neither power nor heat. In the winter, it is not uncommon for the temperature in some of the labs to be as low as five or six degrees Celsius. But they continue working as best they can.

Stuart Parkin's department is researching spintronics, which uses electron spin as a source of information rather than their charge. What is the Plasma-Spin-Energy project about?

Spintronics can make computers faster and more energy efficient. To achieve this, we are developing devices made of very thin layers of different materials. Our partners at Karazin University have a lot of experience with plasma technology. They typically use it to create thicker layers for applications in medical technology, for example. Together, we are now developing equipment capable of significantly improving the quality of atomically engineered layers for spintronic devices, using advanced plasma technology. We are thus not only helping the group there, but also learning from their expertise.

How will the Core of Excellence help rebuild research in Ukraine after the war?

Here in Halle, we are currently filling two doctoral positions, a postdoctoral position, and an engineering position with Ukrainians who will return to Ukraine after the war. We also have a larger team of experienced scientists and engineers in Kharkiv, as well as two doctoral students and two postdoctoral researchers. The team in Ukraine is helping us develop equipment and simulate the plasma processes. The equipment is being built in Halle, but will then be transferred to Kharkiv once the war is over. Ukrainian researchers will have online access to the equipment and will be able to conduct experiments remotely. This way, it will be relatively quick and easy to get the new devices up and running in Ukraine, as the scientists and engineers there will already be trained to use them.

What does it mean for the future of Ukraine and its science if many well-educated young people leave the country because of the war?

Many young scientists had left Ukraine even before the war. The Cores of Excellence that the Federal Ministry of Education and Research is funding are intended to reduce the brain drain from Ukraine and stimulate brain circulation instead. Many of the experienced researchers and engineers who left Ukraine after February 24, 2022, want to return there. But it also depends on whether there will be interesting scientific projects and suitable positions for them after the war. The Core of Excellence project aims not only help reconstruct science in Ukraine, but also to attract investment to the country. The idea is that high-tech start-ups will be founded based on our scientific developments. This will create new jobs in Ukraine. If there are good working conditions for highly qualified people, they will return to their homeland.

How optimistic are you that you will be able to bring the new equipment to Kharkiv within the four years this project will last?

I hope the war ends as suddenly as it began. The best thing we can do is be prepared for that to happen. We also have a lot of plans for the time after the war. We want to cooperate in the long term, not just for four years. We want to commercialize our developments as well. If a German–Ukrainian spin-off company emerges from the Core of Excellence, this may bring new ideas and additional investment for research.

Interview: Peter Hergersberg

Andriy Styervoyedov completed his doctorate at V. N. Karazin Kharkiv National University and has been researching in Stuart Parkin's department at the Max Planck Institute of Microstructure Physics in Halle (Saale) since February 2015.

ILLUSTRATION: SOPHIE KETTERER FOR MPG