

**Media Release, October 11, 2024**

## **New endowed lectureship in molecular quantum materials**

**Thanks to the support of the Bernese entrepreneur Walter Inäbnit, the University of Bern is able to establish a new endowed lectureship. It is based at the newly opened W. Inäbnit Laboratory for Molecular Quantum Materials at the Department of Chemistry, Biochemistry and Pharmaceutical Sciences (DCBP). The purpose of this new lectureship is to develop new classes of materials which could potentially solve the problem of energy loss in electronics. The lectureship will be held by PD Dr. Shi-Xia Liu.**

As both energy costs and the demand for energy continue to rise due, in part, to the increasing use of digital technologies, research and development in the area of energy-loss-free electronics is becoming vitally important. Electronic devices with no energy loss would be able to run continuously without heating up. The development of electronics free of electronic resistances and energy losses would be a major breakthrough – especially given the increased use of artificial intelligence and associated surge in energy consumption.

That is where the endowed lectureship at the newly opened W. Inäbnit Laboratory for Molecular Quantum Materials at the Department of Chemistry, Biochemistry and Pharmaceutical Sciences (DCBP) of the University of Bern comes in. A scientific project will be implemented in the hope of developing new classes of materials which could potentially provide an answer to the energy loss problem in electronics.

### **Other contributions of Walter Inäbnit to the University of Bern**

“With his donation towards the creation of an endowed lectureship at the new W. Inäbnit Laboratory for Molecular Quantum Materials, Walter Inäbnit is enabling the University of Bern to conduct groundbreaking interdisciplinary research that tackles important societal challenges,” says Heinz Karrer, President of the UniBE Foundation. An avid proponent of science, the Honorary Senator of the University of Bern is allocating the university a total of 2 million Swiss francs over a period of ten years. For many years, Walter Inäbnit has been committed to the University of Bern and its latest scientific developments. “Walter Inäbnit has supported the University of Bern for many years, from the foundation of our stem cell platform to the gift of a new laser laboratory at the Institute of Applied Physics and funding for the Bernese Award for Environmental Research. We are extremely thankful to him for his devotion to our university,” says Virginia Richter, Rector of the University of Bern.

With his broad knowledge of electronics, telecommunications and optoelectronics, Walter Inäbnit is very interested in the latest developments in quantum-based electronics. Walter Inäbnit is a believer in interdisciplinary research and innovation. That is why the project will take place in collaboration with the University of Basel Department of Physics, the Department of Laser Physics of the Institute of Applied Physics at the University of Bern, the EUXFEL X-ray research laser facility in Hamburg and other technological and non-technological partners. “I think that the collaboration between the Chemistry Department of the University of Bern and the Quantum Physics Department of the University of Basel could produce some fascinating new concepts in molecular quantum systems,” explains donator Walter Inäbnit.

### **Research into energy-loss-free electronics**

The foundation's new lectureship will be held by PD Dr. Shi-Xia Liu. Liu has been conducting research and teaching at the University of Bern since 2004. Along with her research team, Liu will be conducting a scientific project at the W. Inäbnit Laboratory for Molecular Quantum Materials to develop new and atomically thinner topological quantum materials with loss-free, switchable superconductive functions. Topological materials are materials known for their unique quantum-mechanical properties, such as their resistance to small interferences or external influences. Liu and her team are developing an innovative material in which molecules are produced which are similar to graphene – a carbon material that is just one atom thick. “By combining these molecules, which can accept electrons, with a special superconductor – a material that conducts electricity without losing energy – stable quantum bits or qubits are created that are protected against external influences. This technology could eventually lead to more efficient quantum computers and loss-free electronics, which could be used to reduce energy consumption and improve performance,” explains Liu.

### **A leading role in quantum-based research**

In establishing the Bernese endowed lectureship for a laboratory of molecular quantum materials, Walter Inäbnit is significantly strengthening Bern as a hub of quantum-based research in Switzerland. “The creation of the lectureship not only strengthens Bern as a center for quantum-based research but also enables Shi-Xia Liu and her team to assume and further expand the leading role in the field of switchable superconductors,” says Prof. Dr. Matthias Arenz, Director of the DCBP. In their research, Liu and her team have already taken topological superconductors in a new direction and published trailblazing findings. The team also receives support from the Swiss National Science Foundation (SNSF) and, in the second phase of the research project, will be collaborating with tech partners such as IBM and Siemens.

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**About Shi-Xia Liu**

PD Dr. Shi-Xia Liu earned her doctorate at the University of Lanzhou, China, in inorganic chemistry before joining the University of Siegen in Germany as a Humboldt Fellow. For nearly 25 years, she has been conducting research at the University of Bern. With her team at the W. Inäbnit Laboratory for Molecular Quantum Materials, she is conducting interdisciplinary work at the intersection of chemistry, physics, material science and engineering science. Their collaboration with the Physics department at the University of Basel is enabling Liu and her team to extend the limits of their innovative research.

**Department of Chemistry, Biochemistry and Pharmaceutical Sciences**

Research conducted at the Department of Chemistry, Biochemistry and Pharmaceutical Sciences (DCBP) can be grouped into two subject areas: (I) [Chemistry and Biochemistry](#), (II) [Pharmaceutical Sciences](#). The department includes over 20 lecturers and offers an advanced education with Bachelor and Masters programs in three different branches – “Chemistry and Molecular Sciences,” “Biochemistry and Molecular Biology” and “Pharmaceutical Sciences,” culminating with a doctorate program in Chemistry and Biochemistry.

[Further information](#)

**UniBE Foundation**

The UniBE Foundation strengthens and supports the University of Bern with the development of pioneering global solutions for the economy of the future, sustainable living spaces and an ethical quality of life with a new generation of researchers. The funding initiatives of the foundation align with the strategy of the university and focus on excellence, innovation and future potential. The foundation was established in 2021 and is chaired by Heinz Karrer, a Swiss business leader. On February 1, 2022, the UniBE Foundation started its operations under the leadership of Claudia Lehnherr Mosimann.

[Further information](#)