

With Head, Hand, Heart, and Humor

Peter Reimann has been researching and developing for almost 35 years

Academic research in the nanosciences is often based on state-of-the-art technologies. An innovative technology group – such as the well-established section of the Department of Physics at the University of Basel – is therefore an important requirement for many researchers. Dr. Peter Reimann has been running this group, which is also supported by the Swiss Nanoscience Institute, since it was founded in 1985. Peter Reimann does not only build and modify machines and devices for scientific purposes; he has also been conducting research in the Department of Physics for over 30 years and has made a name for himself as a builder of bridges between industry and the university. And he is highly skilled at sharing his fascination for his work to a wide range of audiences and introducing them to the exciting world of the nanosciences at numerous events.

No regrets

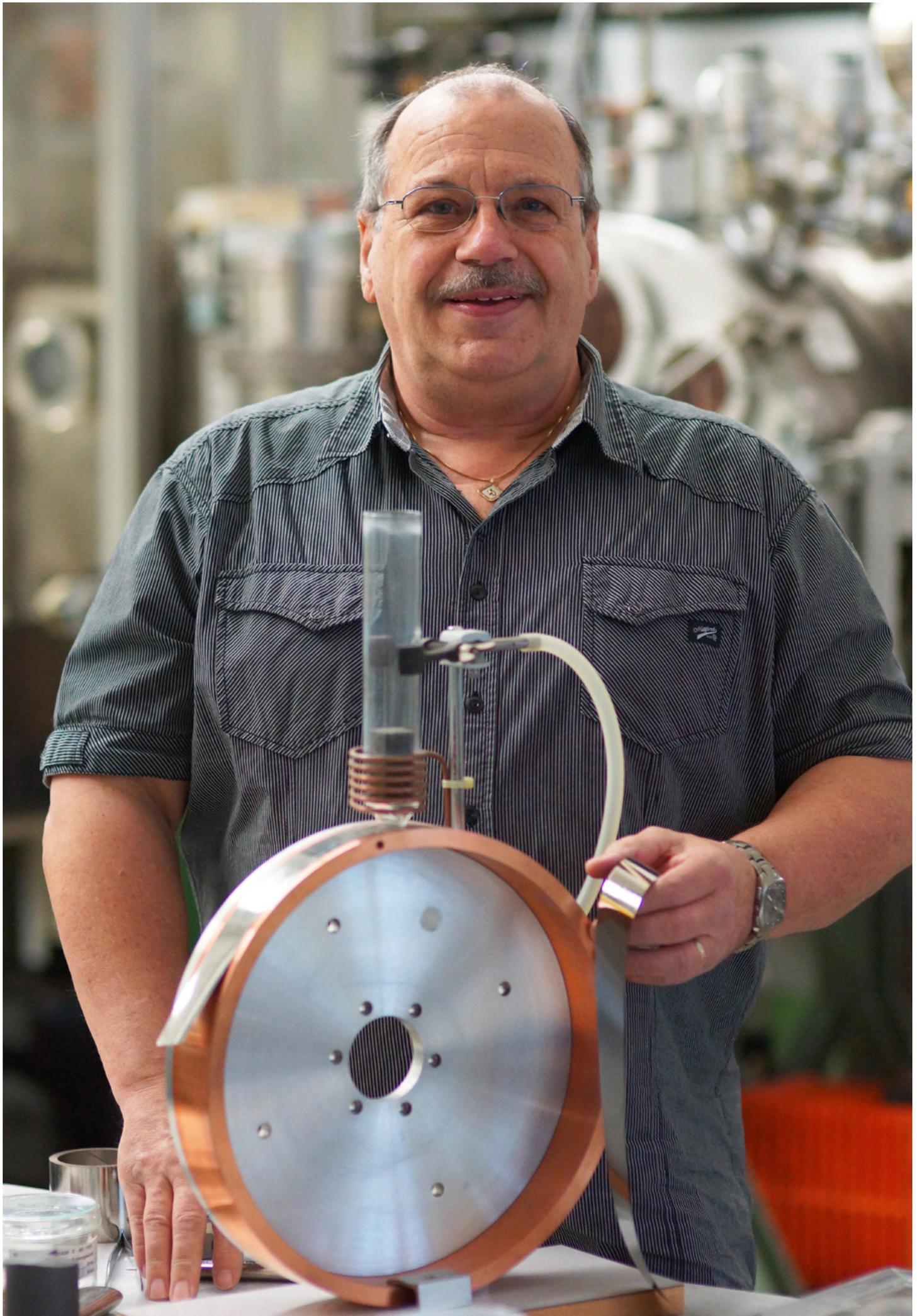
Peter Reimann's unique career at the University of Basel began in 1981. After training as an electrical mechanic, studying electrical engineering, and spending some years in industry, the 30-year-old graduate electrical engineer wanted to channel his passion for technology and science into basic research. "I simply called Professor Hans-Joachim Güntherodt at what was then the Institute of Physics to enquire about the chances of a position becoming available," he recalls. Although there were no jobs vacant, Hans-Joachim Güntherodt spontaneously offered him a six-month position following a personal meeting. And so began a fruitful collaboration with Professor Güntherodt and his colleagues in the Department of Physics. This move into academic research was not without risk for Peter Reimann, but he describes it as a "stroke of luck" that he has never regretted.

Decades of collaboration

His initial tasks included providing technological support to the research groups and maintaining, servicing,

and developing a range of equipment. His own application-oriented research projects gradually increased. In the mid-1980s, a personal relationship between Georg Endress and Hans-Joachim Güntherodt led to a collaboration with the company Endress+Hauser (E+H), for which Peter Reimann was responsible. The collaboration continues to this day and has produced several follow-on projects, including the Georg H. Endress Professorship.

At the time, E+H was searching for a reliable method of soldering ceramic components for premium pressure sensors. The Department of Physics had prior experience with particular alloys that would be suitable under certain conditions. A research project commenced to produce and examine these specific metallic glasses. Alloys made from zircon, nickel, and titanium were heated to melting point and then quickly cooled from over 1000 degrees to room temperature within one thousandth of a second by spraying them onto a rapidly rotating copper roller. This process turns the massive alloy into an elastic metal strip of around 50 µm in



strength with significantly different properties to the original material. While the atoms in the original material are arranged in a crystal lattice, the quick cooling of around 1 million degrees per second means that the atoms in the metal strip are essentially snap-frozen and thus unordered (amorphous). Heating this material again without atmospheric oxygen to solder the ceramic produces a chemical reaction with the oxygen molecules in the ceramic components, permanently binding the components together.

A surface specialist

Collaborations with the industry and transferring knowledge to companies in the region became two of Peter Reimann's main tasks. The invention of the scanning probe microscope in the mid-1980s provided Peter Reimann with more and more insights into the nano world, and he increasingly focused on developing and applying this new technology. Examining surfaces became his favorite pastime. From spectacle lenses, car headlights, and paint samples to dialysis machines, coffee powder, and fabrics – Peter Reimann and his team analyzed a wide range of surfaces, providing their partners with whole new perspectives on the materials they use and leading to considerable improvements. Peter Reimann was and remains an expert advisor for the university's own research groups in the development and application of scanning probe microscopy. It was also his suggestion to set up the Nanotech Service Lab, which is supported by the SNI, run by Dr. Monica Schönenberger, and takes on commissions from industrial companies and internal research groups.

Enjoying PR work

For many years, Peter Reimann has also been heavily involved in passing on his knowledge to a range of people. He supervises students and doctoral students. Children who attend various events to find out more about the nanosciences are just as thrilled with his presentations and experiments as the school groups that visit the physics laboratories and the politicians looking for more information on opportunities in nanotechnology. Peter Reimann always has practical ideas on how to present wide-ranging phenomena in an accessible manner and on ways to share his enthusiasm for technology and science.

Special recognition

By awarding him an honorary doctorate in 2006, the University of Basel highlighted Peter Reimann's PR achievements as well as his successes in applying and expanding scanning probe microscopy and the successful technology transfer projects between the university and industry. "Being recognized by my own university was a very special and totally unexpected honor," recalls Peter Reimann. "I was very moved and now appreciate the university even more."

Variety of further tasks

Alongside the activities mentioned, Peter Reimann's day-to-day work presents him with many more tasks. For example, he is in charge of coordinating the work-

shops in the Department of Physics. He is responsible for technical safety in the Department of Physics and, together with Bernd Heimann, is responsible for all technology in the department. This variety is just what he wants; no two days are the same, and work never becomes boring.

This variety continues in Peter Reimann's private life. Numerous colleagues in the Department of Physics have already had the privilege of enjoying his entertaining poems and hearing him sing with his quartet. He also likes to ride his bicycle and motorbike and to fly model airplanes. His planned retirement at the end of this year will offer more time to pursue these activities. "I'll be leaving with very mixed feelings," he comments. "I can count on one hand the days when I didn't really want to come into work." However, he also has some goals for his time without AFM and STM. He wants to improve his piano playing, dedicate more time to his family and to recreational sport, and he might even get another Bernese mountain dog. This is still some time away, and until then Peter Reimann will continue in his laboratory with the same passion as ever, taking on all his tasks with head, hand, heart, and humor.