

Dear TUM friends and associates,

Catalysis is one of the trending technologies in our high-tech society. New catalysts and catalytic processes are paving the way for energy-efficient, low-resource substance conversions with the ability to add value while saving money. They will also make it easier for us to use renewable raw materials. At TUM, we have been prioritizing research into catalysis for several years now. Today we are proud to present our new TUM Catalysis Research Center in Garching. The largest and most modern center for catalysis research in Europe, this interdisciplinary facility provides an excellent scientific platform for our continued endeavors in this area.

In Ulrich Heiz's lab, scientists are creating nanocatalysts with tailored properties comprising just a few atoms. This work is paving the way for the design of catalysts that behave in a specific way and are resource-efficient. Meanwhile, Thorsten Bach is developing catalysts to precisely control the products of photochemical reactions, thus laying the foundations for material-efficient production processes that use natural light as an energy source.

Thomas Brück's research focuses on algae, specifically on how to efficiently harness this sustainable natural resource to produce biokerosene and valuable chemical materials. To further this work, TUM, in cooperation with the Airbus Group, has built the world's first algae research facility at the Ludwig Bölkow Campus in Ottobrunn. The Werner Siemens Foundation recently provided EUR 11.5 million in funding to further research in synthetic biotechnology.

Physics researchers working with Johannes Barth are creating new nanostructures and molecular functional architectures on specially structured interfaces. Their work is, among other things, paving the way for new kinds of nanomaterials and future nanoelectronic systems. Thirty years have elapsed since the discovery of high-temperature superconductivity, and still the physics behind the phenomenon is not fully understood. Jitae Park and Astrid Schneidewind are managing two unique instruments at the Heinz Maier-Leibnitz neutron source research reactor (FRM II) that could contribute to a possible theory for this phenomenon. Scientists from all around the world are using these experiments to gain new insights. The infrastructure in place here is yet another jewel in Garching's catalysis crown.

As one of the world's top research universities, we are also involved in several other high-profile projects. The most accurate digital elevation model of the Earth yet produced is being



compiled from data beamed down by the TanDEM-X radar satellites. Applications range from forecasting volcanic eruptions to creating digital maps for self-driving cars. With a team headed by Richard Bamler and Michael Eineder, TUM is one of the primary European scientific partners in this mission overseen by the German Aerospace Center (DLR).

Eckehard Steinbach is developing a robot that uses a small camera to control its movements and gripping pressure. This completely novel technology is already a viable alternative to today's more costly industrial robots. Steinbach's team is currently building an initial prototype for industrial applications.

I hope that you will be inspired by the work of these members of the TUM family who are striving to bring us the technologies that will make our world a better place, now and in the future!

Wolfgang A. Herrmann

Prof. Wolfgang A. Herrmann