TECHNISCHE
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Speech held by Professor Dr. Wolfgang A. Herrmann
at the doctor honoris causa ceremony in Lissabon, June 8, 2002

Rector magnificus,
respected members of the academic senate,
dear collegues,
ladies and gentlemen,

being awarded with the honorary doctorate of your respected university, I consider a great honor for my scientific work in organometallic chemistry and catalysis. My scientific achievements were possible because I always had excellent working conditions at my universities: Technische Universität München, Universität Regensburg, Universität Frankfurt, and Pennsylvania State University. However, it has not only been my own effort and success: some 80 PhD students have shared my enthusiasm in chemistry, and they now apply their knowledge and wisdom to academia, industry, and public administration. A number of my former students has received chair positions in German, American, French, and Spanish Universities. Some day at the end of my scientific career, these outstanding scholars will remain to continue their fascination about the world of chemistry to the generation to follow.

The honorary doctorate also reminds me that my family always has provided me with the freedom of being fully absorbed by science. I am grateful to my wife and our five children that they tolerate me and that they accept me to having been just a „visiting professor“ at home over quite a long period of our common life.

This ceremony - including our today‘s academic outfit - reminds us on the „idea of university“. It was Wilhelm von Humboldt who „invented“ the new university two hundred years ago. It is the freedom of research and the freedom of scientific communities to decide by themselves about their scientific targets and the scientific methodology to be used, what Humboldt´s new university focussed on. Academic teaching deviates from scientific research, and both belong together: science and teaching, and the freedom of both. This principle, I gather, ranks among the most important inventions made in Germany, possibly as important as Keppler’s astronomic laws and the invention of the book-printing technology by Gutenberg. The honorary degree I received today also honors the freedom of science, because I always was free to decide on my research topics and strategies.

Furthermore, I feel honored on behalf of my discipline: our beautiful, colorful world could not be thought of without chemistry. Chemistry is everywhere, inside our body and around us. The main topics of the beginning new century are *ressources*, *energy* and *food*. To take care of regrowable ressources, to generate clean and cheap energy, and to provide mankind with enough and healthy food – these are the key challenges in the new century. Without understanding how the world of matter works, how biomolecules inside our body are formed and how they work, how to make chemistry along clean routes: this is the mission of today‘s chemistry. Presently, we know approximately 1,8 million different chemicals. Many of them are indispensible to keep up with high standards of life in developed societies like those in the middle of Europe. In former days, however, many of the key chemicals were produced along „messy routes“. This means that a number of sometimes poisonous by-products were formed. In this respect, my scientific work honored today has contributed a minimum to the progress of mankind: By inventing new, structurally tailored organometallic catalysts that can be used to synthesize fine chemicals and precursors of certain pharmaceuticals in a very selective way. This means, that undesired by-products can be avoided. One specific example is vitamin-K_3. This chemical has an anticoagulative effect and is being applied to newborn children and is used in veterinarian medicine. Previously, vitamin-K_3 was made by a chemical route that produces 1,6 kilogram of poisonous chromium-containing by-products per kilogram of the desired product. According to a method invented by us, vitamin-K_3 can now be made on a

catalytic way without toxic loads. Specific catalysts of precisely designed structures can be used to attend such effects.

The typical example I mentioned before was achieved by a Portuguese PhD student in my group. This should remind us of the great chances that we can expect from „little Europe“. Right from the very beginning, your university recognized the opportunities Europe provides us with. For example, your Institute of Technology, Chemistry and Biology chartered a number of initiatives in European scientific networks. Professor Romao, a former fellow of the Humboldt foundation, was at the Max Planck-Institute at Mülheim and the Technische Universität München. He entered a catalysis network which I joined, too. In addition, the Deutsche Akademische Austauschdienst (DAAD) and Portuguese authorities supported the exchange of PhD- and postdoctoral students. Thus, an intimate relationship of your university not only to Germany emerged. However, the partnership between the two of our countries – Portugal and Germany – became particularly reliable and strong in the field of chemistry sciences. The work in organo-metallic chemistry-related catalysis performed in Prof. Romao’s laboratory is particularly respected by the international scientific community.

Scientific collaborations need a reliable administrative framework. However, scientific success can only grow on the basis of friendship. Science is an easy but necessary means contribute to the understanding of people and to the peaceful future of mankind. Let us remember that Europe plays a particular role in this respect, especially as a strong, united Europe.