Richard Ernst

1991 NOBEL PRIZE IN CHEMISTRY

Passion and responsibility. Education, magnetic resonance, and Central Asian painting art

Passion and responsibility were two major driving forces in my professional and private endeavours. Passion has an emotional origin. It leads to curiosity and the desire to understand. Responsibility, on the other hand, originates from the recognition of societal connectivity and interdependence. It stems from the need to serve society by educating future leaders and by solving urgent problems that might even threaten global survival. Education is by far the most relevant academic task, while research is a most efficient educational tool.

In my professional engagement, I was enormously lucky that my contributions in the development of magnetic resonance led to novel tools of undeniable societal importance. Magnetic resonance has today an extremely broad spectrum of applications ranging from solid state physics to chemistry, molecular biology, and to brain imaging. It was evident to me from the beginning that only broad, comprehensive approaches and interdisciplinary engagements will lead to advances in science as well as in the humanities. So to say, as a counterbalance to my scientific activities, I became deeply fascinated by Central Asian painting art. During the past millennium, it has developed an enormous virtuosity in the graphical representation of emotions and of aspects that are beyond a mathematical scientific description. In this way it is complementary and addresses human domains not properly addressed by science.

However, my overarching thoughts are dominated by deep concerns regarding a beneficial future of mankind. Undeniably, we are living today on the account of future generations and follow a frightfully non-sustainable track. To find avenues toward a better world and toward more conscience, compassion, and foresight among our fellow-citizens should be a most important goal of all academic endeavours.

BIO

Richard Ernst was born in Winterthur (Switzerland). He studied and subsequently served on the faculty of the Swiss Federal Institute of Technology (ETH-Zurich) from which he is now retired. Prof. Ernst received both his diplomas in chemistry (1957) and PhD in physical chemistry (1962) from ETH. From 1963 to 1968 he worked as a research chemist at Varian Associates in Palo Alto, California (USA). In 1968 he returned to Switzerland to teach at ETH and became professor in 1976. He is a Honorary Doctor of the Technical University of Munich and the University of Zurich. Prof. Ernst was awarded the Nobel Prize in Chemistry in 1991 for his contributions towards the development of Fourier Transform nuclear magnetic resonance (NMR) spectroscopy while at Varian Associates and the subsequent development of multi-dimensional NMR techniques. These underpin applications of NMR both to chemistry (NMR spectroscopy) and to medicine (MRI). Prof. Ernst also received Louisa Gross Horwitz Prize in 1991. He is member of the World Knowledge Dialogue Scientific Board and foreign fellow of the Bangladesh Academy of Sciences. The 2009 Bel Air Film Festival featured the world premiere of a documentary film on Ernst; *Science Plus Dharma Equals Social Responsibility*.