

## Preamble

The non-profit foundation "Scimus et Sciemus" established by the Founders, Hannelore and Bernhard Kissler, serves to promote fundamental research, particularly in the field of pure Organic Chemistry. The Foundation rests on the belief in the power of the natural sciences to gradually solve the mysteries of the world so that one day, people will recognise what holds the world together at its innermost core.

Since the dawn of mankind, inquisitive minds have sought for answers to the most fundamental questions that can be asked: from whence do we come; what, if any, is the purpose of our existence; and where do we go after death? While the world's religions have sought solace in God or their spiritual leaders, the philosophers' leitmotif '*ignoramus et ignorabimus*' (we do not know and we shall not know) has long stifled scientific curiosity and progress.

Greek 'nature philosophers' such as Anaxagoras, Democritus and Euclid have opened our eyes and proved that we *can* know. It took almost 2000 years, until the Age of Enlightenment, for Europe to awake from the darkness of the Middle Ages and give birth to modern science. Within just 300 years, the exact sciences and their offspring technologies have not only facilitated and prolonged human life tremendously, but they have also provided a deep insight into creation. Galileo's heliocentrism, Kepler's *Astronomia Nova* on planetary motions and Euler's *Institutiones calculi differentialis* paved the way for Newton's *Philosophiae Naturalis Principia Mathematica* and the formulation of the classical laws of physics. Leibnitz, who had been disputing Newton's notion of absolute space, thereby anticipating Einstein's idea of relativity, was convinced that rational thinking would eventually unravel the secrets of nature.

In 1801, Carl Friedrich Gauss, one of the greatest mathematicians ever, published his *Disquisitiones Arithmeticae*. In 1829, Gauss found the *theorema egregium* and he extended Euclid's 2000 years old 'flat' geometry to non-Euclidean geometries. In 1854, Bernhard Riemann, one of Gauss' students at Göttingen University, delivered one of the most famous lectures in the history of mathematics: Riemann presented his Riemannian geometry, an extension of Gaussian surfaces to n-dimensional spaces. His ideas would bear fruit more than half a century later when Einstein formulated his theory of General Relativity.

While mathematicians and physicists were exploring the evolution of the universe, another new theory shook the world. On 1st July 1858, Albert Wallace gave a lecture at the Linnean Society on the evolution of species and natural selection, and in 1859 Charles Darwin published his book *On the Origin of Species*.

At the Second International Congress of Mathematics held in Paris in the summer of 1900, another famous German mathematician, David Hilbert, presented 10 unsolved mathematical problems to his audience, the eighth problem being the famous Riemann Hypothesis, and he challenged the motto '*ignoramus et ignorabimus*' with the words '*ignorabimus* does not exist in mathematics'.

2,500 years after Euclid had collected the antique mathematical wisdom in his thirteen volume script '*Elements*', physicists had discovered Democritus' 'atoms', the fine structure of matter, which we now call elementary particles. Man set foot on the moon, cosmologists unraveled the evolution of the universe and the life cycles of stars, and theoretical physicists are attempting to find a 'Theory of Everything' that would unify quantum field theory and general relativity.

Chemists and biochemists have learnt how to analyze and 'see' the three-dimensional structures of even the most complex molecules, and they have at their disposal an arsenal of methods to 'copy' virtually any molecule created by nature and to *create* new compounds that never existed in nature before. On 21st November 2011, the American Chemical Society's Chemical Abstract Service (CAS) announced that the 40 millionth chemical substance had been registered. Many artificial compounds are being used in medicine to cure or to prevent diseases.

Progress in the biosciences and in medicine has been equally breath-taking. Biochemists have been able to crack the genetic code and to map the human genome, surgeons are using minimally invasive surgical techniques to carry out even the most complicated operations that were unthinkable only a few decades ago. Artificial hips and 'bionic eyes' make the lame walk and the blind see again.

All these accomplishments have been the result of human ingenuity and curiosity in the exact sciences. It is hard to say whether Einstein's General Relativity or Darwin's theory on the evolution of the species had the more profound impact upon man's altered perception of his role in the universe. The anthropocentric view of the world has turned out to be an illusion and 'the best of all possible worlds', to use the words of Gottfried Leibnitz, could indeed prove the only friendly world in a hostile and violent universe. Theoretical physicist and cosmologist Stephen Weinberg once said, 'The more we know about the universe, the more pointless it becomes.'

Despite this gloomy outlook, the Founders of this Foundation share Hilbert's optimistic view and believe that if there are any answers at all to the fundamental questions, those answers will be provided by the exact sciences.

In 1971, Werner Heisenberg, in his essay, "The Meaning of Beauty in Exact Science", recalled the eminent creative power inherent in *beauty* as a postulated principle of existing in itself at all times for the discovery of the true. Things that are perceived as *beautiful* are associated

with a high degree of symmetry in nature as in the fine arts, in physics and mathematics with the symmetry of equations and in chemistry with the symmetry of molecules and structures. The Foundation, therefore, resting in the belief of a connection between aesthetics and scientific knowledge, recognises the application of symmetry principles and research into highly symmetrical compounds in chemistry and its interdisciplinary sciences.

Hence, the motto and the name of the Foundation are "Scimus et Sciemus" - We know and we shall know.