

## Fraser Stoddart / Biosketch 747 words

The academic career of **Fraser Stoddart**, who was born in the capital of Scotland on Victoria Day (May 24) in 1942, can be traced through thick and thin from the Athens of the North to the Windy City beside Lake Michigan with interludes on the edge of the Canadian Shield beside Lake Ontario, in the Socialist Republic of South Yorkshire, on the Plains of Cheshire beside the Wirral, in the Midlands in the Heartland of Albion, and in the City of Angels alongside the Peaceful Sea. His formal education began with his attending the local village school in Carrington, Midlothian at the age of four, followed by Melville College, a high school in Edinburgh. He graduated from Edinburgh University with a BSc degree in 1964. He cut his teeth in research investigating the nature of plant gums of the *Acacia* genus within the School of Carbohydrate Chemistry under Professor Sir Edmund Hirst.

In March 1967, Stoddart took his leave of the Chemistry Department at Edinburgh with a PhD degree to spend three years as a National Research Council of Canada Postdoctoral Fellow at Queen's University with Professor J. K. N. Jones. No sooner had he arrived in Kingston, Ontario than a communication appeared in the *Journal of the American Chemical Society* by Charles Pedersen describing the synthesis of dibenzo[18]crown-6 in excellent yield as a consequence of the templating action of potassium ions. This seminal event marked the beginning of Fraser's fascination with chemistry beyond the molecule, which, combined with his interest in templation, has led to the template-directed synthesis, based on molecular recognition and self-assembly processes, of a wide range of mechanically interlocked molecules, e.g., catenanes and rotaxanes. See *The Nature of the Mechanical Bond: From Molecules to Machines* (Wiley, 2016) written in conjunction with ex-graduate student, Carson Bruns.

In 1970 he returned to the United Kingdom to take up an Imperial Chemical Industries (ICI) Fellowship at Sheffield University before being appointed as a Lecturer in Chemistry. After spending a three-year sabbatical (1978–1981) at the ICI Corporate Laboratory in Runcorn, he returned to Sheffield where he was promoted to a Readership in Chemistry. It was during his time at ICI that Stoddart developed his long-standing interest in bipyridinium as a redox-addressable molecular building block for incorporation into bistable catenanes and rotaxanes.

In 1990, he took up the Chair of Organic Chemistry at Birmingham University where he was Head of the School of Chemistry (1993–97) before moving to the University of California, Los Angeles (UCLA) as the Saul Winstein Professor of Chemistry in 1997. In 2002, he became the Director of the California NanoSystems Institute (CNSI) and assumed the Fred Kavli Chair of NanoSystems Sciences. He joined the faculty at Northwestern University in 2008 as a Board of Trustees Professor of Chemistry and was Director of the Center for the Chemistry of Integrated Systems (CCIS) from 2010 to 2017.

He was appointed as a Thousand Talent Scholar at Tianjin University in China (2014), an Honorary Professor of Chemistry at the University of Nottingham (2015), a Part-Time Professor of Chemistry at the University of New South Wales in Sydney, Australia (2018), and Dean of the Stoddart Institute of Molecular Science in Zhejiang University in China (2020).

Fraser is a Fellow of the Royal Society of London, the German Academy (Leopoldina) of Natural Sciences, and the Royal Netherlands Academy of Arts and Sciences, as well as an Honorary Fellow of the Royal Society of Edinburgh and the Royal Society of Chemistry. He is a Member of the American Academy of Arts and Sciences, the National Academy of Sciences, the National Academy of Inventors, and the European Academy of Sciences and Arts. He is a Foreign Member of the Chinese Academy of Sciences and the Australian Academy of Science.

Stoddart was appointed by Her Majesty Queen Elizabeth II as a Knight Bachelor in her 2007 New Year's Honours List for services to chemistry and molecular nanotechnology. In this same year, he won the King Faisal International Prize in Science, and in 2010 he was awarded a Royal Medal, presented by Prince Philip, Duke of Edinburgh. He was a recipient, along with Ben Feringa and

Jean-Pierre Sauvage, of the Nobel Prize in Chemistry in 2016 for *the design and synthesis of molecular machines*.

On 23 May 2013, Fraser published his 1000th scientific paper: the total count has now reached over 1250. He has trained >500 graduate and postdoctoral students of which >100 have subsequently embarked on successful independent academic careers.