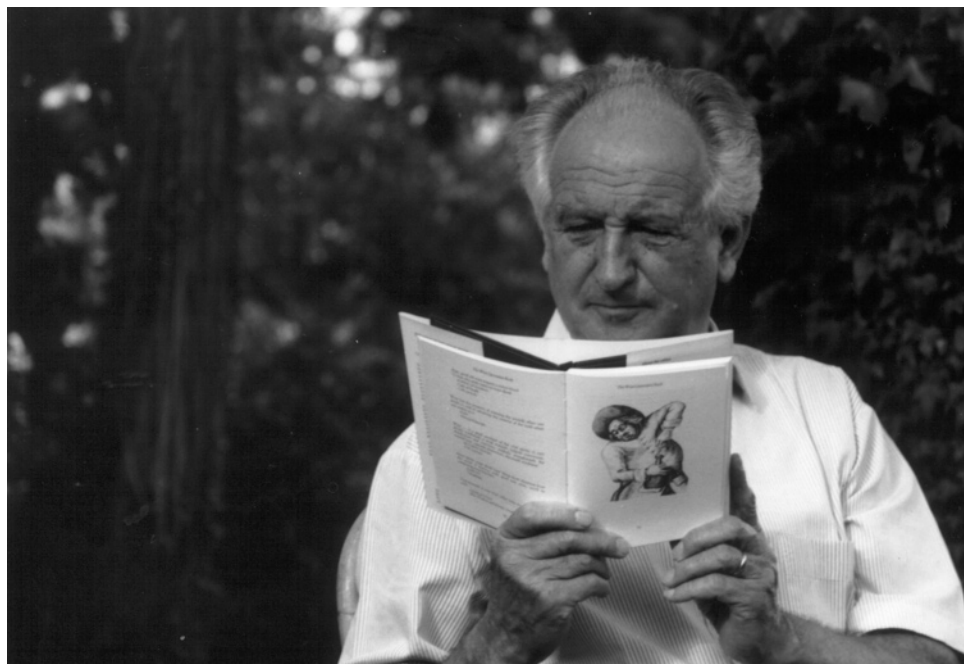


# Macromolecules

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## Tribute to Professor Helmut Ringsdorf

On July 30, 2004, Helmut Ringsdorf, Professor Emeritus at the Institute of Organic Chemistry at the University of Mainz, celebrated his 75th birthday. Although Ringsdorf officially retired from his position at the age of 65, even without Masters and PhD students, he is still very active. Since his retirement he remains at the University of Mainz working as a “free consultant” for students and faculty alike. In addition, he now has the positions of “Courtauld Visiting Professor” at the University of California, Los Angeles (1995–2000), Adjunct Professor of Polymer Science at Jilin University, Changchun, China (from 1988 on), and—most importantly—adjunct professor together with Ruth Duncan in Great Britain, first at the University of London (1994–2000) and now at the University of Cardiff.

Ringsdorf was born in Giessen, Germany, and grew up in the Rheingau region well-known for its vineyards. Both his sister and his younger brother became involved in the wine business. Instead, Helmut Ringsdorf studied chemistry at both Darmstadt and Freiburg. There he became the last Masters student of Nobel laureate

Hermann Staudinger before Staudinger retired. Ringsdorf finished his PhD thesis under the cosupervision of Husemann and Staudinger on the classical polymer science topic of “reversibly cross-linkable elastomers”. During this time he married Margot. After his PhD he went for two years (1960–1962) to the Polytechnic Institute of Brooklyn, New York, under the tutelage of C. G. Overberger and H. F. Mark. There he was introduced to the “Great New World” and the “business of doing independent research” with simple concepts such as “write three research proposals during the next month, we need one grant”. Further steps in his career include his time as Assistant and Associate Professor at the University of Marburg, Germany, from 1962 to 1970, where his daughter and his son were born. Then followed the offer of a chair in organic chemistry at the University of Mainz, where he remained from 1970 until his official retirement in 1994.

Mainz has been the place of his greatest scientific productivity, which led to over 500 papers. Here he introduced ~170 PhD students to his unique style of doing science. From these students, seven eventually

made their way to academia (along with countless postdoctoral associates and visiting scientists). Listed in chronological order, they are Michael Przybylski (University of Konstanz), Helmut Ritter (University of Düsseldorf), Leo Gros (Fachhochschule Fresenius), Rudolf Zentel (University of Mainz), Hans-Werner Schmidt (University of Bayreuth), Andre Laschewsky (University of Potsdam and the Fraunhofer Institute of Applied Polymer Science), and Gero Decher (University of Strasbourg, France). Ringsdorf is a very passionate teacher, who was able to impress and to motivate students and his audience in general.

Ringsdorf is well-known for his successful efforts to bridge the gap between the life sciences and materials science.<sup>1</sup> This interest has led to numerous publications and research themes that are too extensive to discuss fully. Starting from his initial studies of azomethine polymers while a graduate student at the University of Freiburg,<sup>2</sup> his research activities later evolved into what is now known as "bio-inspired materials". This broad research area in particular led to his inclusion on the list of the 100 most cited chemists worldwide. One root of this research stems from his search for pharmacologically active polymers, an area of research for the past 25 years.<sup>3</sup> This work stems from his postdoctoral days with Overberger in which they explored *N*-vinyl-2-thiazolidine as an antiradiation agent<sup>4</sup> and later included such studies of polymers as morphine antagonist, for example.<sup>5</sup> On the basis of his early work on polymeric antitumor agents,<sup>6</sup> Ruth Duncan at the University of Cardiff has now brought many systems close to application.

The second aspect of his research comes from the study of polymerization in ordered media, beginning with studies of polymerization of 4-vinylpyridinium salts in micelle-ordered solutions.<sup>7</sup> Research in liquid crystalline polymers evolved from this interest and took his research from pure chemistry into materials science. He has reported a broad range of liquid crystalline polymers including those inspired by the "wheels of Mainz".<sup>8</sup> This area of research has produced new concepts in optical storage media and photoconducting materials.<sup>9,10</sup> Another related research topic is polymerization in monolayers and liposomes.<sup>11</sup> This research has led to studies of thin films with special material properties. But the same concept proved to be very useful for the preparation of models of cell membranes and for the use of liposomes as carriers for pharmaceutical agents.<sup>12</sup> Thus, simple systems such as polymerized lipid analogues in a bilayer arrangement were shown to be ideal structures that combine materials science and life science.

As a scientist, Ringsdorf's greatest ability is to identify new concepts with a high potential and to bring people from different disciplines together to work on new interdisciplinary fields. It was his greatest aim to catalyze interdisciplinary activities. This would not have been possible without his many national and international contacts and without his uniquely open personality, which was the precondition for success. His wife Margot played a very important part in his attempts to bring people together by organizing many evenings at their home with wine and "Spundekäs" (a special homemade soft cheese typical for the area). His intention of finding new ideas and bringing people together required frequent traveling, something he liked very much. One of the authors (R.Z.) remembers the time when Ringsdorf was away for 4 months during summer

periods. One might ask how he could simultaneously run a research group with many Ph.D. students? Simply by selecting them more on their ability to act independently than by always looking for the very best grades. As a result, his students spontaneously organized themselves in their research and in their lives in much the same way as the themes of Ringsdorf's research on the topics of "liquid crystals" and "lipid membranes". In the same way, we expect that Ringsdorf will have continued success as he successfully organizes his post-retirement.

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