guage and the proliferation of man's semantic environment limit man's comprehensive prowess" (p. 254); "even in industrial research success comes through good individuals who are left alone" (p. 209); "science will complete the integration of the world and will help unify man's microcultures and civilizations" (p. 278).

All in all, as a tract for science this book is a good read for a teenager interested in a scientific career. As an argument for the essential continuity of science and religion, it fails badly. The metaphysical stance of the scientist-as-believer is weakened by (the aptly-named) Christophorou putting facts and values on the same plane. His epistemology ignores skepticism as an essential dimension of science: at least in our Western tradition of physical science, as opposed to the wisdom of the believer, knowledge is built as a combination of critical discussion and experiment.

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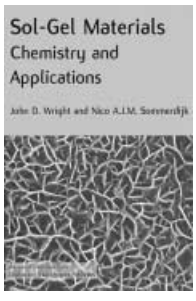
Sol–Gel Materials, Chemistry and Applications. By *John D. Wright* and *Nico A. J. M. Sommerdijk*. Gordon and Breach, Amsterdam 2001. x + 125 pp., hardcover £ 19.95 (ca. € 33).—ISBN 90-5699-326-7



The authors of this concise book on sol–gel materials have set themselves the ambitious task of bridging the gap between a conventional textbook and a comprehensive monograph, by writing a short up-to-date description of the subject. The eight chapters describe the basic chemistry of methods for synthesizing the materials, and cover recent original publications and review articles. To deal with the vast amount of experimental information in a manageable way, the authors have concentrated on two important classes of materials.

An introduction, including definitions of important numerical quantities and terms, and a brief outline of the history, is followed by a description of the reaction mechanisms involved in sol–gel syntheses of silicates. Aspects covered include the hydrolysis of the molecular starting compounds, the condensation of the monomers and gel formation, and the subsequent modification, drying, and compression of the material. An understanding of the individual reaction stages forms the basis for the following discussion of possibilities for controlling the chemistry of the sol–gel process to obtain products with specific properties. These include the production of hybrid materials and the incorporation of organic functional groups into the inorganic matrix. A knowledge of the most important processes for silicates provides the necessary background for understanding the formation of metal oxide gels. For this class of materials the hydrolysis of the "precursor" is very rapid, and the metal ions show variable coordination numbers. The chapter on characterization methods includes descriptions of the use of solid-state NMR spectroscopy, vibrational spectroscopy, small-angle scattering, EXAFS, and various techniques for determining surface areas. This is followed by two chapters on applications of the materials, for example as catalysts, as chemical sensors, and for treatment of surfaces. The book ends with a chapter on future prospects, with applications of the sol–gel method.

The text is illustrated by many figures, some reproduced from the original papers. Particularly important passages are clearly marked by shading. The comprehensive bibliographies at the ends of the chapters enable the reader to go into special topics in more depth and to obtain quick access to the latest research results. There are a few minor flaws which are nevertheless annoying; for example, the word "stoichiometry" is repeatedly used instead of "composition", and some of the reaction equations do not have the correct material balance.

The overall impression left by the book is that the authors have made an interesting and representative selection from the available mass of information. It gives a concise and informative introduction to sol–gel materials for students, beginners in the field, and everyone interested in the subject. It is a useful alternative to more detailed monographs such as *Sol–Gel Science*, by C. J. Brinker and G. W. Scherrer (Academic Press, London 1990).

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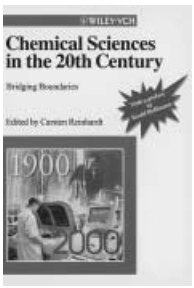
Chemical Sciences in the 20th Century. Bridging Boundaries. By *Carsten Reinhardt.* Wiley-VCH, Weinheim 2001. xviii + 281 pp., hardcover € 85.00.—ISBN 3-527-30271-9

"Chemistry stands between physics and biology". That trite statement gave rise to this book, the proceedings of a conference. As such and as was to be expected, it mixes the good and the mediocre. It has as its ambition to address the history of chemistry in the 20th century, focused upon the interdisciplinary areas at the boundaries of chemistry and physics, and of chemistry and biology. Chemical physics and physical chemistry and biochemistry, then? Oh no: quantum chemistry, geochemistry, radiochemistry, polymer chemistry, and materials science were picked. But photochemistry, electrochemistry, phytochemistry, etc. also were not drawn out of the hat. Their bad luck! But is it such bad luck?



The book is in three parts. In the first, Ana Simões and Kostas Gavroglu once again draw an affectionate and well-deserved portrait of Charles A. Coulson. In his practice of quantum chemistry, this wise man elected to be a chemist first and a mathematician second. This chapter is followed by two chauvinistic local histories, Andreas Karachalios on the Italian quantum chemist Bonino, and Marika Blondel-Mégrelis on the French theorist Barriol. I knew Jean Barriol as a courteous and kind gentleman. But his impact on French quantum chemistry pales in comparison to those of Lionel Salem, of the Pullmans, or of Raymond Daudel's school at rue du Maroc.

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