

Preface

Currently, biomineralization is evolving from its heyday of structural research into one of the most exciting fields of molecular biology. In order to bring these new developments to the notice of its chemists and physicists, I had edited two multi-author books on "Biomineralization", in November 2000 and October 2004. In a competent and detailed review of the second of these books, S. Weiner (*Angew. Chem. Int. Ed.* **2005**, *44*, 4833–4834) noted that he had missed the presence of a general introduction and, in addition to that, a more comprehensive view "... to cover the waterfront of this vast field".

It was the exemplary intuition of the outstanding publisher, Dr. Gudrun Walter, the Program Director of Wiley-VCH, that encouraged her to outline biomineralization as a fundamental interaction between the organic and inorganic spheres. Consequently, she devised three volumes on biomineralization, covering biomimetic chemistry, materials science, and the life sciences. Moreover, she entrusted me again with this new project which exceeds by far, both in content and extent, the two preceding books.

The first draft three volumes of "Biomineralization" were appended with the subtitle: Biology, Biomimetic and Bio-Inspired-Chemistry, Medicine. In addition, because each volume was planned to consist of 25 to 30 chapters, I invited Prof. Peter Behrens, a well-known expert in biomimetic chemistry and coordinator of the DFG-Priority Program "Principles of Biomineralization", to co-edit with me the chemistry volume. Prof. Behrens convinced me that biomimetic chemistry is an indispensable approach to study the developments of inorganic/organic hybrids in addition to molecular biology, which, before our co-edition, was in my mind the *only* method. The Spring Meeting 2005 of the Materials Research Society (MRS) was characterized by a broad offer of bio-inspired synthesis and techniques, and this allowed the selection of several new topics. Prof. Matthias Epple, an extraordinary inorganic chemist, whose interests cover the isolation and analysis of biominerals, the synthesis of biomaterials, and the development of new physical methods in materials science and cooperation with medical institutes and clinics, agreed – to my great pleasure – to organize the medical volume essentially by himself.

As all manuscripts for the book arrived at Munich for the pre-editorial management, I had the chance to take a general view of each of the 68 chapters, and this

allowed me to prepare a first draft in Chapter 1 of what might be common in biomineralization reactions but characteristically different from mainstream biochemistry. It is possible that although this draft was too specialized for an introduction, its complexity was simply a reflection of the current state of the art of biomineralization.

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