

# Preface

Peptide-mediated biomineralization is a promising technique for the synthesis of inorganic nanomaterials that are useful in numerous applications. Much has already been learned about this nature-inspired method, but a lot of questions still remain unanswered. This book presents recent advances in peptide-mediated biomineralization. The topics are discussed in a concise manner without sacrificing important details which advanced undergraduate and graduate students will appreciate. On the other hand, the themes contained in this book attempt to briefly describe the research landscape in peptide-mediated biomineralization, which will help the experts in the field in identifying research gaps. The book opens with a thorough discussion about the basic concepts needed to appreciate biomineralization such as peptide chemistry, solid-phase peptide synthesis, and characterization methods in material science. Chapters 2–4 present and organize the recent developments in peptide-mediated biomineralization wherein a case study can be found at the end of each chapter. The case study aims to provide a concrete example to supplement contents of the chapter.

The tables used in the case study in Chap. 2 originally appeared in Janairo J.I.B., Co F., Carandang J.S., Amalin D.M. (2015) Sequence-dependent cluster analysis of biomineralization peptides. *Z Naturforsch C* 70:191–195, DOI: 10.1515/znc-2014-4202, and were reproduced with permission from De Gruyter. The case study found in Chap. 4 was slightly modified and originally appeared in 2014, Volume 43 and Issue 8 of *Chemistry Letters* as an article entitled Effects of buffer on the structure and catalytic activity of palladium nanomaterials formed by biomineralization by Janairo and Sakaguchi. This has been reproduced in this book with permission from The Chemical Society of Japan. Finally, the case study in Chap. 3 originally appeared in the doctoral thesis of Janairo at Hokkaido University which was later modified and published by the Royal Society of Chemistry. The images presented in this case study were republished from Janairo J.I.B., Sakaguchi T., Hara K., Fukuoka A., Sakaguchi K. (2014) Effects of biomineralization peptide topology on the structure and catalytic activity of Pd nanomaterials. *Chem Commun* 50:9259–9262, with permission from the Royal Society of Chemistry.

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