

Metal Ions in Bio-Imaging Techniques

Volume 22, entitled Metal Ions in Bio-Imaging Techniques, of the series Metal Ions in Life Sciences deals with metal ions as tools in imaging. This dates back to the first half of the past century, when barium sulfate was orally given to patients undergoing X-ray examination. The use of contrast agents has since developed into a large interdisciplinary field encompassing not only medicine, but also chemistry, material sciences, physics, biology, engineering, and computer sciences. MILS-22 provides deep and current insights in 17 stimulating chapters on the new research frontiers of this fast growing field on bio-imaging. and beyond. For example, adding bio-sensing yields theranostic agents, meaning diagnosis and therapy linked in the same molecule; ions of Gd, Mn, Fe, Co, Ir, ^{99m}Tc, etc., are involved. Other important topics are, e.g., metal complexes in paramagnetic Chemical Exchange Transfer (paraCEST), radiometals for Positron Emission Tomography (PET) imaging, or paramagnetic metal ion probes for ¹⁹F magnetic resonance imaging. MILS-22 is written by 57 internationally recognized experts from 12 countries, that is, from the US via Europe to China. The impact of this vibrant research area is manifested by more than 2300 references and nearly 120 figures, mostly in color, and several informative tables. To conclude, Metal Ions in Bio-Imaging Techniques is an essential resource for scientists working in the wide range from material sciences, enzymology, analytic, organic, and inorganic biochemistry all the way through to medicine including the clinic. not forgetting that also excellent information for teaching is provided.

The Sigels' Series Metal Ions in Life Sciences Metal Ions in Life Sciences links coordination chemistry and biochemistry in their widest sense and thus increases our understanding of the relationship between the chemistry of metals and life processes. It is an old experience that metals are indispensable for life. The series reflects the interdisciplinary nature of Biological Inorganic Chemistry and coordinates the efforts of scientists in fields like biochemistry, inorganic chemistry, coordination chemistry, materials sciences, molecular and structural biology, biophysics, enzymology, environmental chemistry, physiology, toxicology, pharmacy, medicine, and others. Indeed, already for years this "...series is (praised as) a timely resource" [D. Wilcox, J. Am. Chem. Soc. (2009)] "...a compilation of an incredible amount of research" [K. Duncan, Angew. Chem. Int. Ed. (2009)] "...a must for. bioinorganic research labs" [P. Sadler, Chemistry World (2009)] "...(a) stimulate (for) the combined action of chemists, biologists, medical doctors, and physicists to contribute to new developments in the field" [G. L. Squadrito, J. Am. Chem. Soc. (2007)]. "The editors have without question been at the forefront of promoting Biological Inorganic Chemistry over many years and this latest volume is no exception" [C. J. Marmion, Trans. Met. Chem. (2014)] "...it is a must to have" [L. Quintanar, J. Inorg. Biochem. (2016)]. "I strongly suggest that (the volumes) should reside on the bookshelves of bioinorganic chemists, biochemists, biophysicists (and others) interested in the diverse. functions carried out by metal ions in biology" [K. D. Karlin, Inorg. Chim. Acta (2016)]. "The articles (in the series) will greatly help to overcome (the) language barrier(s) between the historically separate disciplines of chemistry, biology, medicine, and physics that hinders progress" [P. J. Sadler, Coord. Chem. Rev. (2014)]. "(Furthermore)...Experts will find countless pieces of information that they might not have been aware of and students. will appreciate. (appealing) introduction(s) to an interdisciplinary field that continues to grow (rapidly) and provides future challenges for basic research and the applied sciences" [M. Egli, Trans. Met. Chem. (2016)]. "will be a valuable addition to libraries of researchers and institutions active in cancer research, but also a helpful source for advanced teaching [H. Schmidbaur, Z. Naturforsch. B (2018)]. Clearly, the MILS series is an essential source for researchers as well as teachers preparing courses, e.g., in Bioinorganic Chemistry. Individual chapters can be downloaded.

Cover

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