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Nota di contenuto	General Introduction to Multivalent Interactions. Additivity of Energy Contributions in Multivalent Complexes / Hans-Jorg Schneider -- Models and Methods in Multivalent Systems / Jurriaan Huskens -- Design Principles for Super Selectivity using Multivalent Interactions / Tine Curk, Jure Dobnikar, Daan Frenkel -- Multivalency in Biosystems / Jens Dornedde -- Multivalent Systems in Chemistry. Multivalency in Cyclodextrin/Polymer Systems / Akihito Hashizume, Akira Harada -- Cucurbit[n]uril-Mediated Multiple Interactions / Zehuan Huang, Xi Zhang -- Multivalency as a Design Criterion in Catalyst Development / Paolo Scrimin, Maria A Cardona, Carlos M Leon Prieto, Leonard J Prins -- Multivalent Molecular Recognition on the Surface of Bilayer Vesicles / Jens Voskuhl, Ulrike Kauscher, Bart Jan Ravoo -- Multivalent Systems in Biology. Blocking Pathogens by Multivalent Inhibitors / Sumati Bhatia, Benjamin Ziem, Rainer Haag -- Multivalent Protein Recognition Using Synthetic Receptors / Akash Gupta, Moumita Ray, Vincent M Rotello -- Multivalent Calixarenes for the Targeting of Biomacromolecules / Francesco Sansone, Alessandro Casnati -- Cucurbit[n]uril Assemblies for Biomolecular Applications / Emanuela Cavatorta, Luc Brunsveld,

Jurriaan Huskens, Pascal Jonkheijm -- Multivalent Lectin-Glycan Interactions in the Immune System / Joao T Monteiro, Bernd Lepenies -- Blocking Disease Linked Lectins with Multivalent Carbohydrates / Marjon Stel, Roland J Pieters.

Sommario/riassunto

Connects fundamental knowledge of multivalent interactions with current practice and state-of-the-art applications. Multivalency is a widespread phenomenon, with applications spanning supramolecular chemistry, materials chemistry, pharmaceutical chemistry and biochemistry. This advanced textbook provides students and junior scientists with an excellent introduction to the fundamentals of multivalent interactions, whilst expanding the knowledge of experienced researchers in the field. Multivalency: Concepts, Research & Applications is divided into three parts. Part one provides background knowledge on various aspects of multivalency and cooperativity and presents practical methods for their study. Fundamental aspects such as thermodynamics, kinetics and the principle of effective molarity are described, and characterisation methods, experimental methodologies and data treatment methods are also discussed. Parts two and three provide an overview of current systems in which multivalency plays an important role in chemistry and biology, with a focus on the design rules, underlying chemistry and the fundamental principles of multivalency. The systems covered range from chemical/materials-based ones such as dendrimers and sensors, to biological systems including cell recognition and protein binding. Examples and case studies from biochemistry/bioorganic chemistry as well as synthetic systems feature throughout the book. Introduces students and young scientists to the field of multivalent interactions and assists experienced researchers utilising the methodologies in their work. Features examples and case studies from biochemistry/bioorganic chemistry, as well as synthetic systems throughout the book. Edited by leading experts in the field with contributions from established scientists. Multivalency: Concepts, Research & Applications is recommended for graduate students and junior scientists in supramolecular chemistry and related fields, looking for an introduction to multivalent interactions. It is also highly useful to experienced academics and scientists in industry working on research relating to multivalent and cooperative systems in supramolecular chemistry, organic chemistry, pharmaceutical chemistry, chemical biology, biochemistry, materials science and nanotechnology.
