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Nota di contenuto	Bonds and intermolecular interactions--the return of cohesion to chemistry / Sason Shaik -- Using computational quantum chemistry as a tool to understand the structure of molecular crystals and the nature of their intermolecular interactions / Juan J. Novoa -- Bonding in organic molecules and condensed phases. The role of repulsions / A. Gavezzotti -- On topological atoms and bonds / Paul L. A. Popelier -- Quantitative determination of the nature of intermolecular bonds by EDA analysis / A. Martin Pendas, J. L. Casals Sainz and E. Francisco -- Beyond QTAIM: NCI indexes as a tool to reveal intermolecular bonds in molecular aggregates / Roberto A. Boto and Julia Contreras-Garcia -- Molecular beam and spectroscopic techniques: towards fundamental understanding of intermolecular interactions/bonds / Sharon Priya Gnanasekar and Elangannan Arunan -- Solid-state NMR techniques for the study of intermolecular interactions / P. Cerreia Vioglio, M. R. Chierotti and R. Gobetto -- The use of databases in the study of intermolecular interactions / Alessia Bacchi -- Intermolecular interactions in crystals / Peter Politzer, Jane S. Murray and Timothy Clark -- The nature of hydrogen bond, from a theoretical perspective /

Steve Scheiner -- The CH...[pi] hydrogen bond / Osamu Takahashi and Motohiro Nishio -- Hydrogen bonds and halogen bonds--a comparative study / Sawomir J. Grabowski -- The cation-[pi] interaction / Dennis A. Dougherty -- Intramolecular beryllium bonds. Further insights into resonance assistance phenomena / O. Brea, I. Alkorta, I. Corral, O. Mo, M. Yanez and J. Elguero -- On the nature of hydrogen-hydrogen bonding / Juan C. Garcia-Ramos, Fernando Cortes-Guzman and Cherif F. Matta -- Long, multicenter bonds in radical anion [pi]-dimers / Fernando Mota, Juan J. Novoa and Joel S. Miller -- Revealing the intermolecular bonds in molecular crystals through charge density methods / C. Gatti and A. Forni -- Noncovalent interactions in crystal structures: quantifying cooperativity in hydrogen and halogen bonds / Sawomir J. Grabowski -- Crystal engineering: state of the art and open challenges / D. Braga and F. Grepioni.

Sommario/riassunto

"The field of crystal engineering concerns the design and synthesis of molecular crystals with desired properties. This requires an in-depth understanding of the intermolecular interactions within crystal structures. This new book brings together the latest information and theories about intermolecular bonding, providing an introductory text for graduates. The book is divided into three parts. The first part covers the nature, physical meaning and methods for identification and analysis of intermolecular bonds. The second part ... describes representative examples of the most relevant types of intermolecular bonds currently known to occur in molecular crystals. The third part describes how cooperativity affects the properties of intermolecular bonds, how they can be identified in crystals and how the information on intermolecular interactions and bonds can be used to design new molecular crystals. Each chapter is written by specialists in the topic being covered. This comprehensive textbook will provide a valuable resource for all students and researchers in the field of crystallography, materials science and supramolecular chemistry"--
