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| Altri autori (Persone)  | TiekinkEdward R. T<br>VittalJagadese J   |
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| Nota di contenuto       | Frontiers in Crystal Engineering; Contents; List of Contributors; Foreword; 1 Applications of Crystal Engineering Strategies in Solvent-free Reactions: Toward a Supramolecular Green Chemistry; 1 Introduction; 1.1 Making Crystals by Smashing Crystals?; 1.2 Milling, Grinding, Kneading and Seeding; 2 Mechanochemical Preparation of Hydrogen-Bonded Adducts; 3 Mechanically Induced Formation of Covalent Bonds; 3.1 Mechanochemical Preparation of Coordination Networks; 4 The Solvent-free Chemistry of the Zwitterion [CoIII(5-C5H4COOH)(5-C5H4COO)]; 5 Concluding Remarks; 6 Acknowledgments; References<br>2 Crystal Engineering of Pharmaceutical Co-crystals1 Introduction; 1.1 What Are Co-crystals?; 1.2 How Are Co-crystals Prepared?; 1.3 Why Are Co-crystals of Relevance in the Context of APIs?; 2 What Is the Origin of Polymorphism and Is It Prevalent in Co-crystals?; 3 What Is a Pharmaceutical Co-crystal?; 3.1 A Case Study: Pharmaceutical Co-crystals of Carbamazepine, 1 (CBZ, 1); 3.2 But Beware of "Fake" Pharmaceutical Co-crystals!; 4 Conclusions; 5 Acknowledgments; References; 3 Template-controlled Solid-state Synthesis: Toward a |

## General Form of Covalent Capture in Molecular Solids

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5.3 Carballylic and 1,2,4,5-Benzenetetracarboxylic Acids  
5.4 Tetrakis(4-iodoperfluorophenyl)erythritol; 6 Summary and Outlook; References;  
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2 Aromatic Edge-Edge C-H...N Dimers; 3 Heteroatom-1,3-Peri Interactions; 3.1 The Ether-1,3-Peri Aromatic Hydrogen Interaction; 3.2 The Thioether-and Aza-1,3-Peri Aromatic Hydrogen Interactions; 4 Molecular Pen Structures; 5 Halogenated Edge-Edge Interactions; 6 Pi-Halogen Dimer (PHD) Interactions; 6.1 A New Aromatic Building Block; 6.2 Staircase Inclusion Compounds; 6.3 Layer Inclusion Compounds; 7 Molecular Bricks, Spheres and Grids; 7.1 Bricks and Mortar Inclusion Systems; 7.2 Molecular Spheres of Variable Composition; 7.3 Interlocking Molecular Grids  
8 Conclusions

### Sommario/riassunto

Crystal engineering - where the myriad of intermolecular forces operating in the solid-state are employed to design new nano- and functional materials - is a key new technology with implications for catalysis, pharmaceuticals, synthesis and materials science. Frontiers in Crystal Engineering gathers personal perspectives, from international specialists working in molecular aspects of crystal engineering, on the practical and theoretical challenges of the discipline, and future prospects. These demonstrate the approaches that are being used to tackle the problems associated with the comp