Contents

1 Introduction to the Volume ........................................... 1
Steve Scheiner

Part I Hydrogen Bonds

2 Hydrogen Bonds Involving Sulfur: New Insights from ab Initio
Calculations and Gas Phase Laser Spectroscopy .................... 15
Himansu S. Biswal

3 CH···π Interaction in Organic Molecules .......................... 47
Osamu Takahashi

4 The CH··O H-Bond as a Determining Factor
in Molecular Structure .................................................. 69
Steve Scheiner

5 Hydrogen Bonds Involving Radical Species ....................... 107
Qing-Zhong Li and Hai-Bei Li

6 Agostic and Hydrogen-Bonding X–H···M Interactions Involving a
d8 Metal Center: Recent Advances Towards Their Understanding 129
Jiří Kozelka

7 What is Common for Dihydrogen Bond and H···σ
Interaction—Theoretical Analysis and Experimental Evidences ... 159
Sławomir J. Grabowski

Part II Other Bridging Atoms

8 The Pnicogen Bond in Review: Structures, Binding Energies,
Bonding Properties, and Spin-Spin Coupling Constants of Complexes
Stabilized by Pnicogen Bonds .......................................... 191
Janet E. Del Bene, Ibon Alkorta and José Elguero
9 Chalcogen Bonds in Protein Architecture ......................... 265
Michio Iwaoka

10 A Unified View of Halogen Bonding, Hydrogen Bonding and Other σ-Hole Interactions ................................. 291
Peter Politzer and Jane S. Murray

11 The X-C· · ·Y Carbon Bond ........................................ 323
Devendra Mani and E. Arunan

12 Interplay of Hydrogen, Halogen, Lithium and Beryllium Bonds in Complexes of Thiirane .................................. 357
Sean A. C. McDowell and Jerelle A. Joseph

13 Understanding Lone Pair-π Interactions from Electrostatic Viewpoint ........................................ 391
Shridhar R. Gadre and Anmol Kumar

Part III Aromatic Systems

14 Unraveling the Origin of Substituents Effects in π-Stacking Interactions ...................................................... 421
Steven E. Wheeler

15 Noncovalent Interactions of Organic Ions with Polar Molecules in the Gas Phase ............................................. 443
M. Samy El-Shall, Isaac K. Attah and Sean P. Platt

16 Anion-π Interactions in Supramolecular Chemistry and Catalysis 471
Antonio Bauzá, Pere M. Deyà and Antonio Frontera

17 A Survey of DNA–Protein π–Interactions: A Comparison of Natural Occurrences and Structures, and Computationally Predicted Structures and Strengths ........................................ 501
Katie A. Wilson and Stacey D. Wetmore
Noncovalent Forces
Scheiner, S. (Ed.)
2015, VIII, 532 p. 256 illus., 200 illus. in color.,
Hardcover
ISBN: 978-3-319-14162-6