

Introduction to the special issue on halogen bonding

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There is a growing understanding in the scientific community that current scientific and technological challenges can only be efficiently met in a collaborative atmosphere and using multidisciplinary approaches. The field of halogen bonding became not just a hot research area, but also one known for its friendly openness to various scientific fields and approaches that may provide an improved understanding, a further development or an application to its central topic, the halogen bond. This welcoming openness has characterized and was well reflected by the contributions of the 2nd International Symposium on Halogen Bonding, ISXB-2, at which results from a number of fields including fundamental and computational chemistry, crystal engineering, biochemistry and molecular biology, liquid systems and applications were presented. In this special issue, a selection of the research presented in 52 oral and 31 poster presentations of the symposium is provided for the reader, highlighting some of the main advances of this field.

It all started 200 years ago, when Jean-Jacques Colin described the formation of an iodine–ammonia complex, involving an intermolecular interaction in which iodine acts as electron acceptor and the nitrogen of ammonia as electron donor. The composition of the complex was established by Fredrick Guthrie 50 years later, the nature of the interaction first understood by Robert Mulliken in the 1950s, and the interaction rationally applied first by Odd Hassel, winning him a Nobel Prize in 1969. Although some sporadic research addressed the behavior of this phenomenon, it only became intensely studied and its existence widely accepted over the past decade. Over the past years, the focus of its investigations started moving from crystallographic and computational studies aimed at fundamental understanding to its applications in chemistry and biology, for example for the improvement of synthetic techniques and the properties of bioactive substances. The aim of this special issue is to present examples of studies on the frontiers of halogen bonding. We present this issue with the hope that it will draw the attention of the broad scientific community and raise the interest of many to enter this exciting field and contribute to the upcoming 3rd International Symposium on Halogen Bonding, ISXB-3, which will take place in Greenville, USA, June 2018.

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