Nearly all systems in nature consist of aggregates of a large number of molecules. The physical and chemical properties of these systems are due partly to the properties of the individual molecules composing them and partly to the collective properties of these molecules. Weak bonds, also named interactions, play a major role in determining a wide variety of the properties of organic and inorganic systems, either in the solid, liquid or gas phases. Intermolecular interactions mediate recognition and self-assembly processes and thus affect both static and dynamic features of systems. The recent focus on supramolecular chemistry and nanotechnologies has further boosted the interest in interactions. Hydrogen bonding is by far the most common and important interaction, but other weak bonds, e.g. π-π, cation-π, anion-π, and aurophilic interactions, are also receiving attention thanks to their relevance in some specific systems.

According to a recent IUPAC definition, a *halogen bond* occurs when there is an attractive interaction between an electrophilic region associated with a halogen atom in a molecule and a nucleophilic region in another, or the same, molecular entity. While the first synthesized adduct formed under halogen bond control was reported more than two centuries ago, the understanding of the nature of this bond, its discovery in biological systems, and its designed use in materials is a much more recent story and has experienced an exponential acceleration in the two last decades. As is often the case when there is major interest in a field, several reviews appeared on the interaction in recent years. Due to the relevance that structural studies have on understanding the nature of the halogen bond and its potential, three different journals focused on crystallography have devoted a Special Issue to this interaction in the last years.

In more recent times the halogen bond has extended its impact from basic science to applicative fields and the interaction is now an established tool for those working in several and diversified application oriented areas. We thus pursued a Themed issue on halogen bond in a broad-based primary journal encompassing all branches of chemistry and its sub-disciplines. This Themed issue in the *New Journal of Chemistry* is the successful result of this aim. Its papers span mechanochemistry and quantum calculations, phosphorescent cocrystals and biomolecules activation and inhibition thus proving how rich and active the topic is. The timing of this Themed Issue is particularly convenient as there is a nice synchronization with the Third International Symposium on Halogen Bonding (ISXB-3; Greenville, SC, USA; 10^{th}-14^{th} June 2018), a major event for the community of those interested in the interaction. Most of the authors of papers of this Themed Issue will deliver lectures at this event and in order to further gear the growing future of the halogen bond, some excellent posters presented by students at ISXB-3 will be assigned a prize sponsored by the *New Journal of Chemistry*.

Research on the halogen bond drew attention to the fact that the anisotropic distribution of the electron density in covalently bonded atoms is a general phenomenon and enables elements of Groups 14-18 of the Periodic Table to function as electrophilic sites and to form close and attractive contacts with electron rich partners. In analogy with the halogen bond, these interactions are named tetrel bond, pnictogen bond, chalcogen bond, and aerogen bond, respectively, and are receiving an exponentially growing attention from the chemical community. Some of the papers of the present Themed Issue discuss also these new interactions thus confirming the important role of the Issue and its seminal and prospective nature. The synchronization mentioned above continues, as an IUPAC sponsored workshop, IUPAC Workshop@ISXB-3 covering these interactions will take place prior to ISXB-3 at the same venue (Greenville, SC, USA; 9^{th}-10^{th} June 2018).

Finally, the Editors of this Themed Issues are pleased to express their appreciation and gratitude to all colleagues that contributed a manuscript to the Issue. Their science and their commitment allowed this notable result to be obtained, and it is our wish is that their science and their commitment will continue to expand the field of halogen bonding. As … bonding matters!

Giuseppe Resnati

William T. Pennington