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Reactions, Structures, and Properties of Small Clusters: Experiments and Theory

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Deadline for manuscript submissions:
closed (31 December 2022)

Message from the Guest Editor

Dear colleagues,

Clusters are aggregates of atoms or molecules whose size ranges from a few units up to hundreds of millions of constituents. According to the nature of the components, clusters can be bound by weak interactions of the order of less than 1 kJ/mol, such as van der Waals forces or hydrogen bonds, or by strong interactions of the order of hundreds kJ/mol, as in the case of covalent bonds. Clusters represent a link between the bulk matter and the single molecule. They exhibit peculiar physical and chemical properties that differ remarkably from those that characterize the bulk matter. Such deviations from the bulk system behavior increase as the number of components decreases. For small clusters, the variation of the properties becomes strongly dependent on the number of constituents, until resembling the behavior of the molecular matter.

This Special Issue is addressed to all the research groups involved in the development of theoretical models for the study of reaction mechanisms and properties of small clusters, with special emphasis on reaction dynamics, structure, weak interactions, thermodynamics, kinetics and innovative applications.

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Message from the Editor-in-Chief

Symmetry is ultimately the most important concept in natural sciences. It is not surprising then that very basic and fundamental research achievements are related to symmetry. For instance, the Nobel Prize in Physics 1979 (Glashow, Salam, Weinberg) was received for a unified symmetry description of electromagnetic and weak interactions, while the Nobel Prize in Physics 2008 (Nambu, Kobayashi, Maskawa) was received for the discovery of the mechanism of spontaneous breaking of symmetry, including CP symmetry. Our journal is named *Symmetry* and it manifests its fundamental role in nature.

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