



Special Issue

Chemical Bond and Bonding 2014

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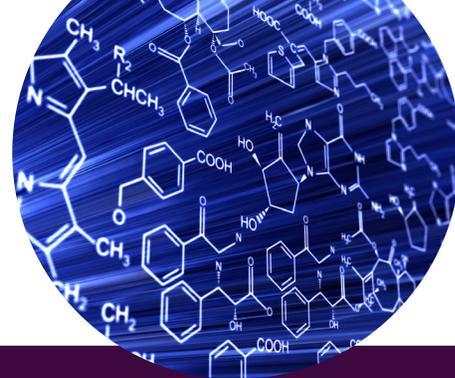
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Dear Colleagues,

“A chemical bond is not a real thing: it does not exist: no-one has ever seen it, no-one ever can. It is a figment of our own imagination”—so it appeared in 1951 the “Coulson’s dream”, legitimated by the plethora of physical-chemistry theories rooted in three inter-related directions: (I) The first continues Lewis’ (1916) intuition, according to which the Coulomb law changes its nature in electronic pairs of chemical bonding, thereby opening electronic correlation issues; (II) The Pauling (1939) insight on ionic and covalent resonance characters, which nowadays feeds into the charge shift models of Shaik, Hiberty *et al.*; (III) The variational Heitler and London (1927) model, which triggered self-consistent molecular orbitals approaches, i.e., chemical density functional theory and delocalization models.

Accordingly, current and future endeavors should unify these equally challenging quantum nano-approaches of chemical bonding by involving synergetic concepts and methods: atoms-in-molecules, natural orbitals applied to electron density, bosonization of electrons into quantum condensates of the chemical bonding field, molecular topology, chemical reactivity, nano-chemical synthesis, and quantum information theory, etc.

We kindly invite you to contribute papers expanding on these and allied concepts for a better understanding and control of chemical bonds for a sustainable environment and life in the 21st century.

Dr. Habil. Mihai V. Putz
Guest Editor

