

UNUSUAL NEGATIVE MOLECULAR IONS AND DIANIONS AND CHEMICAL BONDS INVOLVING RYDBERG ORBITALS

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In this presentation, our work and that of several other groups on the species listed in the title will be discussed. Particular emphasis will be given to: (a) dipole bound anions¹ (which have also been the subject of numerous experimental studies), (b) dipole bound dianions² (which remain theoretical speculation), (c) resonance states of anions that can be made stable via “solvation”, (d) dianions such as TeF_8^{2-} that have extremely high second electron binding energies³ (which occur in the solid state and in solution), (e) anions in which the “extra” electron occupies a Rydberg-like molecular orbital⁴ (which have been seen experimentally), and (f) chemical bonds that arise when a Rydberg-like orbital is involved⁵.

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3. Alexander I. Boldyrev, Maciej Gutowski, and Jack Simons; *Acc. Chem. Res.*; **29**, 497 (1996).
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5. A.I. Boldyrev and J. Simons; *J. Phys. Chem.* **96**, 8840 (1992); A.I. Boldyrev and J. Simons, *J. Phys. Chem.*, **103**, 3575 (1999).