The Periodic Electronegativity Table

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The origins and development of the electronegativity concept as an empirical construct are briefly examined, emphasizing the confusion that exists over the appropriate units in which to express this quantity. It is shown how to relate the most reliable of the empirical scales to the theoretical definition of electronegativity in terms of the quantum potential and ionization radius of the atomic valence state. The theory reflects not only the periodicity of the empirical scales, but also accounts for the related thermochemical data and serves as a basis for the calculation of interatomic interaction within molecules. The intuitive theory that relates electronegativity to the average of ionization energy and electron affinity is elucidated for the first time and used to estimate the electron affinities of those elements for which no experimental measurement is possible.

Key words: Valence State, Quantum Potential, Ionization Radius