Electronegativity: A Mnemonic Rule

Electronegativity continues to be a most useful idea in chemistry. It helps, mainly, to "interpret" and/or predict the nature of the chemical bond by a mere difference of two numbers: the electronegativities of the atoms participating in the bond in question.

The purpose of the present note is to suggest a simple mnemonic rule for the electronegativities \( (E) \) of the second-\((E_2)\) and third-\((E_3)\) row elements. It is for these elements that application of the electronegativity idea is most successful.

\[
E_2 = \frac{z - 1}{2} \quad \text{and} \quad E_3 = \frac{z^* - 1}{3}
\]

where \( z \) is the atomic number of the element, 2 and 3 correspond to the second- and third-row elements, respectively, and \( z^* \) is an effective atomic number, \( z^* = z - 7 \). Formula \( E_2 \) predicts "exactly" the electronegativities (in Pauling's scale) of all second-row elements. Values obtained from \( E_3 \) are consistently larger by 0.1 or 0.2 units for all third-row elements, except chlorine. For the latter, the exact Pauling number is reproduced.

S. Kapellos
A. Mavrides
Athens University
13A Navarinou Street
Athens—106 80 Greece