

## Slater Shielding Constant (S)

1. The electronic structure of the atom is written in groupings as follows:

(1s) (2s, 2p) (3s, 3p) (3d) (4s, 4p) (4d) (4f) (5s, 5p), etc.

2. Electrons in higher groups (to the right in the list above) do not shield those in lower groups.

3. For ns or np valence electrons:

a) Electrons in the same ns, np group contribute 0.35, except the 1s, where 0.30 works better.

b) Electrons in the  $n - 1$  group contribute 0.85.

c) Electrons in the  $n - 2$  or lower groups contribute 1.00.

4. For nd or nf valence electrons:

a) Electrons in the same nd or nf group contribute 0.35

b) Electrons in groups to the left contribute 1.00.

The shielding constant  $S$  obtained from the sum of the contributions above is subtracted from the nuclear charge  $Z$  to obtain the effective nuclear charge  $Z^*$  affecting the selected electron.