# Slater's Rules for Calculating $Z_{eff}$

The effective nuclear charge, $Z_{eff}$, is given as $Z - S$ where $Z$ is the actual charge on the nucleus and $S$ is a shielding constant the value of which is determined using the following set of rules:

1. write out the electron configuration in groups using the following order

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

2. identify the group in which the electron of interest lies; ignore electrons to the right of this group
3. if the electron of interest is an *s* or *p* electron, then each additional electron in its (*ns, np*) group contributes 0.35 to *S*, each electron in the $n - 1$ shell contributes 0.85 to *S*, and each electron further to the left contributes 1.00 to *S*
4. if the electron of interest is a *d* or *f* electron, then each additional electron in its (*nd*) or (*nf*) group contributes 0.35 to *S* and each electron further to the left contributes 1.00 to *S*