Appendix

Electron screening model prediction.

> The ground state of nitrogen ($Z = 7$) is $1s^2 2s^2 2p^3$. Using the model, predicts the ionization energy of a nitrogen atom.

The nucleus has 7 protons. The 4 inner electrons provide full shielding, and the other two electrons in the $2p$ state provide half-shielding:

$$Z_{\text{eff}} = 7 - 4 - 2(1/2) = 2$$

the energy ionization is therefore

$$E = \frac{2^2}{2^2} 13.6 \text{ eV} = 13.6 \text{ eV}$$