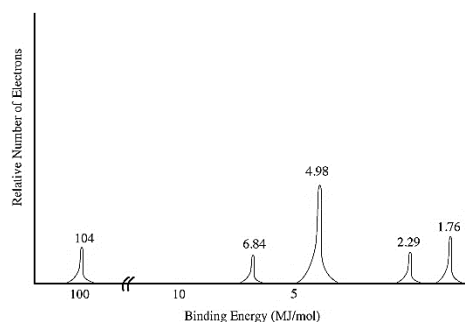


AP Chemistry Level 1.11-1.14 Practice Problems

Level 1.11: The ionization energy for Mg has been experimentally determined to be 740 kJ/mol, whereas the ionization energy for Al is 580 kJ/mol. Identify the deviation from the predicted periodic trend and propose an explanation for this aberration.

Level 1.12.1: Examine the photoelectron spectra below. Identify this element and calculate the effective nuclear charge. ($Z_{\text{eff}} = Z - s$)



Level 1.13: A light wave propagates through a medium with a wavelength of 2.5×10^{-5} m. How much energy exists in 1.5 moles of these light photons?

Level 1.14: A total of 155 kJ/mol of energy is required to break the bond of diatomic fluorine (F_2). What frequency of a photon would have enough energy to cleave this F-F bond?