

# Chapter 3

## Chemical and Nuclear Reactions

3.1 The products

3.2 3120 kJ/mol

3.3  $1.73 \times 10^{-19}$  J/bond (note that there are four bonds in each methane molecule), 1.08 eV/bond

3.4 The products

3.5 (a) Helium, (b) zero

3.6 1802 MeV

3.7 (a) 7.1 MeV/nucleon,  $2.74 \times 10^9$  kJ/mol, (c) Nuclear binding energy is much larger

3.8 (a) 1802 MeV, (b) 2023 MeV, (c) Release

3.9 (a) 156 MeV, (b)  $2.49 \times 10^{-11}$  J

3.10 (a) 10.9 MeV, (b) 28.3 MeV, (c) 17.4 MeV