

Introduction to Natural Science, Winter 2007
Chemistry Workshop – Week 3

- Calculate the wavelength of light emitted when each of the following transitions occur in the hydrogen atom. What type of electromagnetic radiation is emitted in each transition?
 - $n=3 \rightarrow n=2$
 - $n=4 \rightarrow n=3$
 - $n=2 \rightarrow n=1$
 - $n=5 \rightarrow n=2$
- Without doing any more calculations, order the above transitions in the order of increasing energy and increasing frequency.
- Calculate the de Broglie wavelengths for the following particles. Express your answer in nanometers.
 - A baseball of mass 250.0 g traveling at 2.5 meters per second
 - A car of mass 500 kg traveling at 80 km/hr
 - An electron with a speed of 3.2×10^8 cm/s
 - A proton with a speed of 1.32×10^8 m/s
- Complete the following table.

Principal quantum #	Angular momentum quantum #	Magnetic quantum #	Number and type of orbital
Symbol =	Symbol =	Symbol =	
1			
2			
3			
4			