

Answer on Question #54385 – Chemistry – Inorganic Chemistry

Question:

Why does the ionisation of two or more electrons from an atom of a transition element take place with the removal of s electrons in preference to the d electrons?

Answer:

The principle quantum number determines the energy of the corresponding electronic level as well as ionization potential. The stabilization of the electronic shell decreases in order of increasing of the principle quantum number (N). Thus, since s – orbital has the higher principle quantum number than d-orbital (N is for d-orbital and N+1 for s-orbital), the electrons being on the s – level have lower ionization energy than those on the d – level. For instance,



The comparison of ionization energies for outermost levels gives the following statement

$$E_{4s} < E_{3d} \text{ (N = 3 for d –orbital and N = 4 for s –orbital).}$$

