Mukesh Tekwani

Assuming the nuclei to be spherical in shape, how does the surface area of a nucleus of mass number A1 compare with that of a nucleus with mass number A2?

Solution:-

Nuclear radius $R = R_0 A^{1/3}$

Surface area $S = 4\pi R^2$

$= 4\pi \left(R_0 A^{1/3}\right)^2$

$S = 4\pi R_0^2 A^{2/3}$

∴ Ratio of surface areas is

$$\frac{S_1}{S_2} = \frac{4\pi R_0^2 A_1^{2/3}}{4\pi R_0^2 A_2^{2/3}}$$

$$\therefore \frac{S_1}{S_2} = \left(\frac{A_1}{A_2}\right)^{2/3}$$

— x —

$$\log\left(\frac{K_2}{K_1}\right) = \frac{E_a}{2.303\,R}$$

$$\log(mn) = \log m + \log n$$

$$\log\left(\frac{m}{n}\right) = \log m - \log n$$

$$\log m^n = n \log m$$