

Εξέταση **Ραδιοχημείας (818)** (1/2/2021)  
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**Χρήσιμες σχέσεις:**

$$BE(A,Z) = \alpha_v A - \alpha_s A^{2/3} - \alpha_c Z(Z-1)/A^{1/3} - \alpha_a (N-Z)^2/A + \delta(A)$$

$$\alpha_v = 15.9 \text{ MeV} \quad \alpha_s = 18.3 \text{ MeV} \quad \alpha_c = 0.71 \text{ MeV} \cdot \alpha_a = 23.2 \text{ MeV}$$

$$\delta(A) = \pm \alpha_p/A^{1/2} \quad \alpha_p = 11 \text{ MeV}$$

$$Z_{\min} = (A/2) / (1 + \frac{1}{4} \alpha_c/\alpha_a A^{2/3})$$

$$S_n = BE(A,Z) - BE(A-1,Z) \quad S_p = BE(A,Z) - BE(A-1,Z-1) \quad R = r_0 A^{1/3} \quad r_0 = 1.12 \text{ fm}$$

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$$N(t) = N_0 e^{-\lambda t} \quad t_{1/2} = \ln 2 / \lambda \quad \text{Ενεργότητα: } A = \lambda N$$

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$$P = \sigma n x \quad n = \rho / AW N_A \quad N_A = 6.022 \times 10^{23}$$
$$1 \text{ barn} = 100 \text{ fm}^2 = 10^{-24} \text{ cm}^2.$$

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Shell Model:

$$(1s_{1/2})^2(1p_{3/2})^4(1p_{1/2})^2(1d_{5/2})^6(2s_{1/2})^2(1d_{3/2})^4(1f_{7/2})^8(2p_{3/2})^4(1f_{5/2})^6(2p_{1/2})^2(1g_{9/2})^{10}$$

Μαγικοί αριθμοί :

2

8

20

28

50