

IZOTOPNA GEOLOGIJA

5. Metoda fizionih tragova

1. Apatit i sfen separirani su iz granita. Odredi starost ovih minerala na osnovu fizionih tragova

	ρ_s (trag/cm ²)	ρ_i (trag/cm ²)	ϕ (neut/cm ²)
Apatit	$4,82 \times 10^5$	$10,10 \times 10^5$	$5,88 \times 10^{15}$
Sfen	$1,95 \times 10^6$	$4,29 \times 10^6$	$5,88 \times 10^{15}$

$$\rho_s / \rho_i = \frac{\lambda_f}{\lambda_\alpha} \cdot \frac{137,88}{\phi \cdot 6} (e^{\lambda_\alpha t} - 1)$$

$$\phi = 5,88 \times 10^{15} \text{ n/cm}^2$$

$$6 = 580,2 \times 10^{-24} \text{ cm}^2$$

$$\lambda_f = 8,46 \times 10^{-17} \text{ god}^{-1}$$

$$\lambda_\alpha = 1,55 \times 10^{-10} \text{ god}^{-1}$$

a) APATIT

$$\rho_s / \rho_i = 0,4545$$

$$0,4545 = 5,46 \times 10^{-7} \cdot \frac{137,88}{3,4 \times 10^{-6}} (e^{1,55 \times 10^{-10} \cdot t} - 1)$$

$$(e^{1,55 \times 10^{-10} \cdot t} - 1) = 0,0206$$

$$e^{1,55 \times 10^{-10} \cdot t} = 1,0206$$

$$1,55 \times 10^{-10} t = 0,0204$$

$$t = 1,32 \times 10^8 \text{ god} = 132 \times 10^6 \text{ god}$$

b) SFEN

$$\rho_s / \rho_i = 0,4772$$

⋮

$$t = 138 \times 10^6 \text{ god}$$