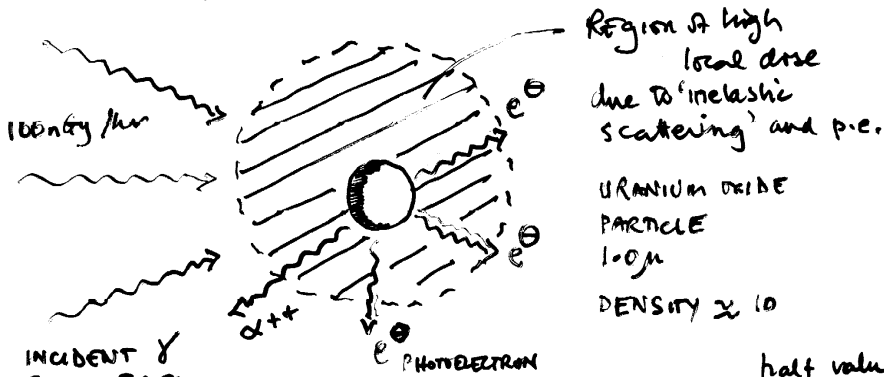


Bushby 6:15

NATURAL BACKGROUND RADIATION AND X-RAY AMPLIFICATION

PHOTOELECTRONS CONCENTRATE DOSE IN REGION OF DENSE METAL PARTICLES

$$Q_{TOT} = Q_{ABS} + Q_{SCA}$$



URANIUM HAS LOW PHOTOELECTRIC WORK FUNCTION $\approx 3.6 \text{ eV}$
 $\approx 350 \text{ nm}$

ABSORBED γ RAYS CONVERTED TO LOW ENERGY PHOTO ELECTRONS 0 - 100 eV AND COMPTON ELECTRONS.

half value thick: cm
 $\mu_{1/2}^U = 0.01$
 $\mu_{1/2}^{H_2O} = 4.0$

at 100 keV for U the attenuation coefficient $\mu = 70$
for H₂O " " $\mu = 0.17$ (cm)

$$\therefore \text{Absorbance} = \ln(I_0/I) = \mu x$$

U particle absorbs 400 times equivalent vol. of water if dissipated as photoelectrons represents $\approx 400 \text{ mSv/}$ year dose in tissue local to the particle without multiple scattering.