

HW due Oct 8

- The table below gives the mass attenuation coefficients for a list of elements (labeled absorbers) of specific energy photons (given in the line labeled 'ENERGY'). Using this table, calculate the depth at which the relative intensity of the photons (I_x/I_0) equals $1e-90$ for the Ca absorber with a density of 1.53 g/cm^3 . Provide a type-written answer for each of the incoming photon energies for Ca as the absorber. Finally, relate the photon depth with possible photoelectron escape depths.

MASS ATTENUATION COEFFICIENTS FOR K ALPHA LINES					
EMITTER	B	C	N	O	F
WAVELENGTH	6.76+01	4.48+01	3.16+01	2.36+01	1.83+01
ENERGY (KEV)	1.83-01	2.77-01	3.92-01	5.24-01	6.76-01

ABSORBER		B	C	N	O	F
1	H	3.06+03	9.02+02	3.08+02	1.32+02	6.14+01
2	HE	1.41+04	4.27+03	1.48+03	6.37+02	2.05+02
3	LI	3.01+04	1.00+04	3.73+03	1.68+03	8.03+02
4	BE	7.00+04	2.36+04	8.82+03	3.98+03	1.02+03
5	B	5.42+03	3.69+04	1.48+04	6.99+03	3.49+03
6	C	6.76+03	2.38+03	2.34+04	1.19+04	6.23+02
7	N	1.06+04	3.92+03	1.64+03	1.02+04	9.87+03
8	O	1.66+04	6.28+03	2.60+03	1.34+03	1.21+04
9	F	2.40+04	8.93+03	3.76+03	1.89+03	1.01+03
10	NE	3.69+04	1.33+04	5.49+03	2.71+03	1.43+03
11	NA	5.95+04	2.09+04	8.36+03	4.04+03	2.10+03
12	MG	9.28+04	3.13+04	1.21+04	5.69+03	2.88+03
13	AL	1.16+05	3.86+04	1.47+04	6.83+03	3.42+03
14	SI	1.41+05	4.79+04	1.86+04	8.77+03	4.46+03
15	P	1.33+05	5.62+04	2.21+04	1.06+04	5.41+03
16	S	1.41+05	6.09+04	2.49+04	1.22+04	6.45+03
17	CL	4.14+04	7.61+04	3.13+04	1.51+04	7.81+03
18	AR	4.97+04	7.71+04	3.64+04	1.74+04	8.01+03
19	K	6.92+04	2.34+04	4.94+04	2.36+04	1.20+04
20	CA	7.52+04	2.86+04	5.32+04	3.09+04	1.52+04
21	SC	1.09+05	3.63+04	1.38+04	3.45+04	1.73+04
22	TI	1.41+05	4.57+04	1.70+04	3.46+04	2.08+04
23	V	1.78+05	5.68+04	2.08+04	4.13+04	2.45+04
24	CR	2.24+05	7.06+04	2.57+04	1.14+04	2.50+04
25	MN	2.68+05	8.38+04	3.02+04	1.35+04	2.88+04
26	FE	3.20+05	1.02+05	3.65+04	1.63+04	7.84+03
27	CO	3.47+05	1.09+05	3.95+04	1.77+04	8.55+03
28	NI	2.83+05	9.25+04	3.46+04	1.59+04	7.89+03
29	CU	8.37+04	3.24+04	1.41+04	7.31+03	4.04+03
30	ZN	3.47+05	1.13+05	4.23+04	1.94+04	9.61+03
31	GA	3.69+05	1.21+05	4.54+04	2.09+04	1.04+04