

(14.6) Flerov bombarded ^{207}Pb with ^{54}Cr and obtained a product which within 4-10 ms decayed by spontaneous fission. Suggest a product nucleus.

The probable reaction type is ($^{54}\text{Cr}, xn$).

$$Z_{\text{Pb}} := 82 \quad Z_{\text{Cr}} := 24 \quad Z_{\text{prod}} := Z_{\text{Pb}} + Z_{\text{Cr}} \quad Z_{\text{prod}} = 106$$

$$A_{\text{Pb}} := 207 \quad A_{\text{Cr}} := 54$$

$x := 1..10$ Test 1 to 10 neutrons

$$A_{\text{prod}_x} := A_{\text{Pb}} + A_{\text{Cr}} - x$$

x A_{prod_x}

1	260
2	259
3	258
4	257
5	256
6	255
7	254
8	253
9	252
10	251

Guess: ^{259}Sg , $t_{1/2}$ about 7 ms, α and SF (from comparison with data in Fig. 14.1).