(16.6) 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}Cr,xn).

First the known data and data from the text:

$$Z_{Pb} := 82 \qquad Z_{Cr} := 24 \qquad Z_{prod} := Z_{Pb} + Z_{Cr} \qquad Z_{prod} = 106$$
$$A_{Pb} := 207 \qquad A_{Cr} := 54$$

Calculations:

$x := 1 .. 10$ Test 1 to 10 neutrons emitted to cool down the compound nucleus

$$A_{prod_x} := A_{Pb} + A_{Cr} - x$$

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: ^{260}Sg, $t_{1/2}$ 3.6 ms, α and SF (from comparison with data in Fig. 16.1).