

Half-life and radioactive equilibrium with Cobra3 5.2.01-11



What you can learn about ...

- Parent substance
- Daughter substance
- Rate of decay
- Disintegration or decay constant
- Counting rate
- Half life
- Disintegration product

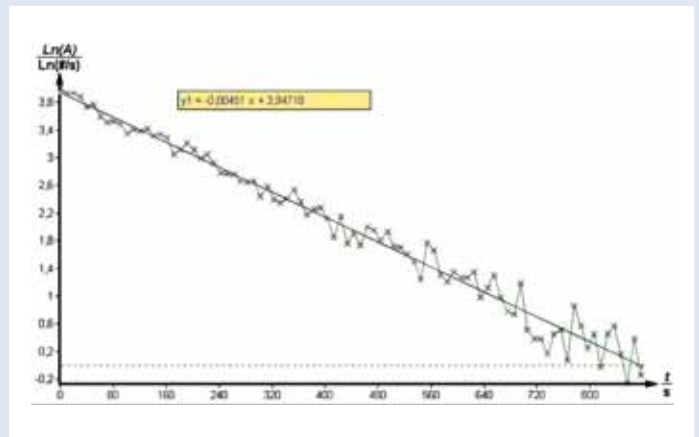
Principle:

The half-life of a Ba-137 m daughter substance eluted (washed) out of a Ca-137 isotope generator is measured directly and is also determined from the increase in activity after elution.

What you need:

| | | |
|--|----------|---|
| Cobra3 BASIC-UNIT | 12150.00 | 1 |
| Power supply 12V/2A | 12151.99 | 1 |
| Data cable 2 x SUB-D, plug/socket, 9 pole | 14602.00 | 1 |
| Software Cobra3 Radioactivity | 14506.61 | 1 |
| Cobra3 measuring Module GM counting tube | 12106.00 | 1 |
| Base plate for radioactivity | 09200.00 | 1 |
| Counter tube holder on fixing magnet | 09201.00 | 1 |
| Plate holder on fixing magnet | 09203.00 | 1 |
| Source holder on fixing magnet | 09202.00 | 1 |
| Counter tube, type A, BNC | 09025.11 | 1 |
| Screened cable, BNC, $l = 750$ mm | 07542.11 | 1 |
| Test tube, FIOLAX®, $d = 12$ mm | 36307.10 | 1 |
| Rubber stopper, $d = 14.5/10.5$ mm, without hole | 39253.00 | 1 |
| Isotope generator Cs-137/ Ba, 370 kBq | 09047.60 | 1 |
| PC, Windows® 95 or higher | | |

Complete Equipment Set, Manual on CD-ROM included
Half-life and radioactive equilibrium
with Cobra3 P2520111



Logarithmic plot of the counting rate of Ba-137m's decay; counting rate as a function of time, with the regression line.

Tasks:

1. To record the counting rate as a function of the counter tube voltage (counter tube characteristic) when the isotope generator activity is constant (radioactive equilibrium).
2. To measure the activity of the isotope generator as a function of time immediately after elution.
3. To measure the activity of a freshly eluted solution of Ba-137 m as a function of time.