

## Laboratory Generator for $^{212}\text{Pb}$ Production

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$^{212}\text{Pb}$  radionuclide generator with  $^{228}\text{Th}$  as a parent radionuclide has been developed. The generator principle is based on diffusion of gaseous  $^{220}\text{Rn}$  emanating from strong anion exchange resin containing  $^{228}\text{Th}$  into a separate collector where post-decay  $^{212}\text{Pb}$  is deposited on the collector walls. After a 48-hour operation cycle of the generator, sampling of  $^{212}\text{Pb}$  in the form of solution in 0.1 M HCl is executed with approximately 40% yield of  $^{212}\text{Pb}$ .

Another  $^{212}\text{Pb}$  generator design was also realized via ion exchange technique with  $^{224}\text{Ra}$  as parent source ( $T_{1/2} = 3,6$  d). Actual implementation involves an ion exchange separation of  $^{224}\text{Ra}$  from  $^{228}\text{Th}$  with subsequent absorption of  $^{224}\text{Ra}$  in strong cation exchange column.  $^{212}\text{Pb}$  could be then eluted with 1 M HCl.

The generators are supposed to be reloaded once in a few years because of long-lived parent  $^{228}\text{Th}$  ( $T_{1/2} = 1,9$  y). The generators is developed for biological and radiochemical investigations in the field of obtaining radiopharmaceuticals for targeted therapy.

### The speaker is a student or young scientist

Yes

### Section

1. Nuclear technology and methods in medicine, radioecology

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