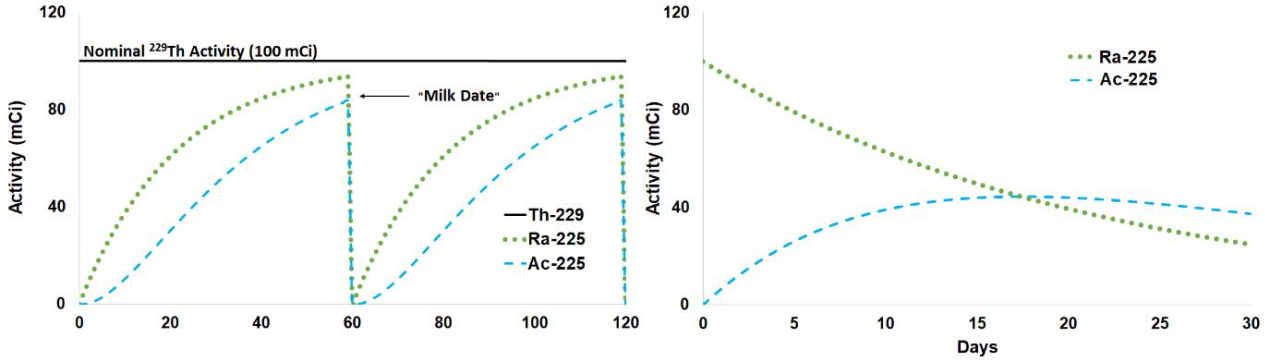
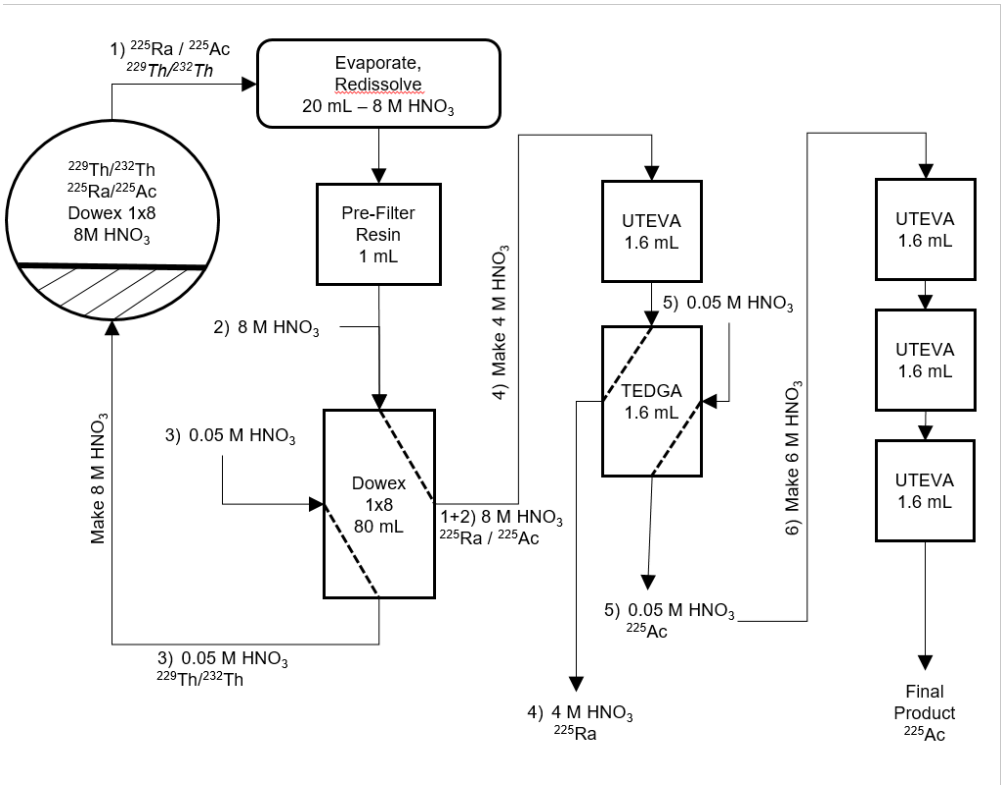
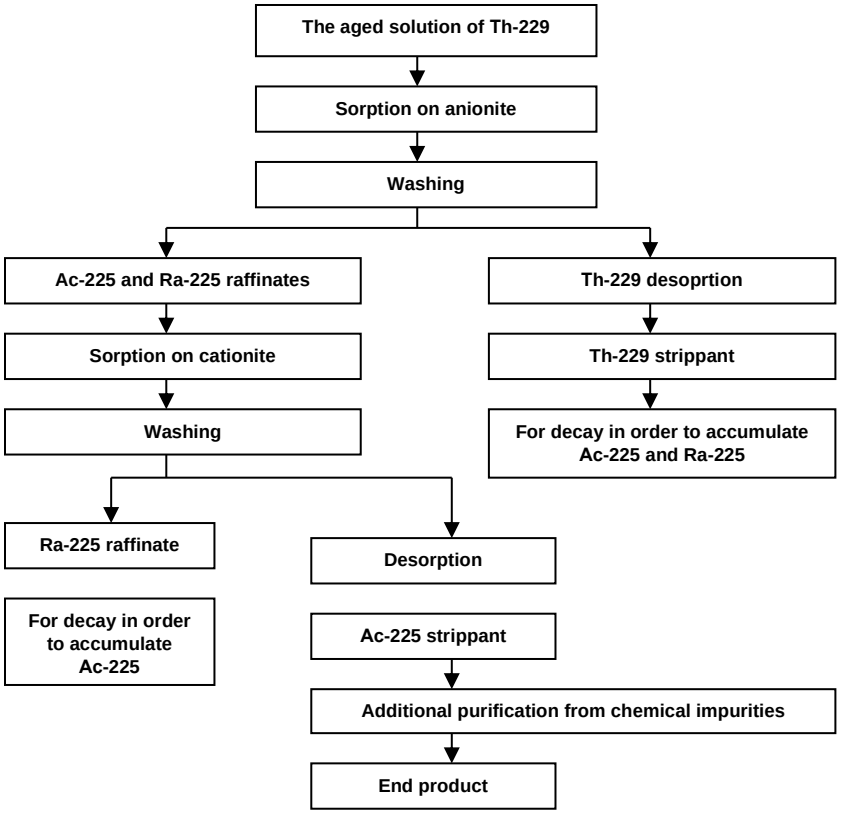
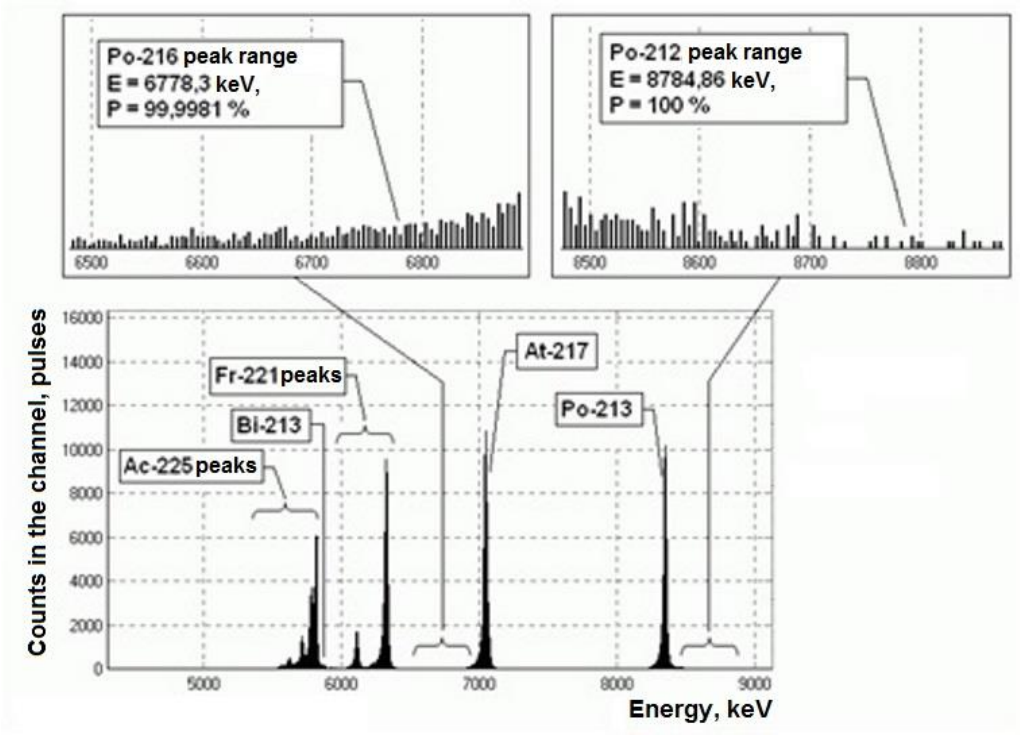


SUPPLEMENTAL FIGURE 1. In-growth of ^{225}Ra and ^{225}Ac from ^{229}Th generator, with milking performed at 60 days (left), and in-growth of ^{225}Ac from ^{225}Ra generator (right).

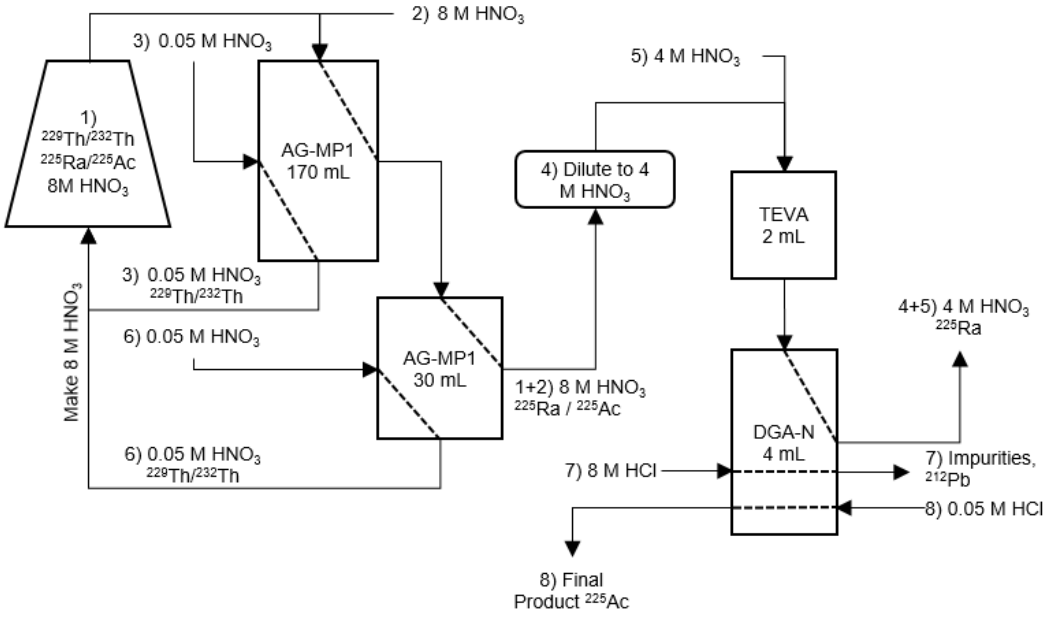


SUPPLEMENTAL FIGURE 2. Process schematic for isolation of ^{225}Ac from ^{229}Th decay as performed at ITU.

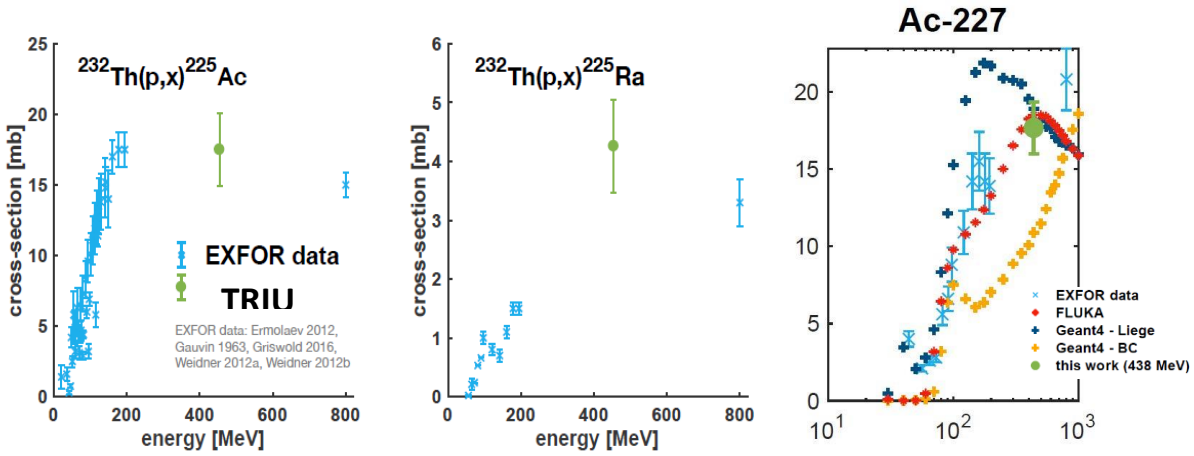

The aged solution of Th-229
Sorption on anionite
Washing
Ac-225 and Ra-225 raffinates
Th-229 desoprtion
Sorption on cationite
Th-229 strippant
Washing
For decay in order to accumulate Ac-225 and Ra-225
Ra-225 raffinate
Desorption
For decay in order to accumulate Ac-225
Ac-225 strippant
Additional purification from chemical impurities
End product


Po-216 peak range
E = 6778,3 keV,
P = 99,9981 %
Po-212 peak range
E = 8784,86 keV,
P = 100 %
Fr-221 peaks
Bi-213
Ac-225 peaks
At-217
Po-213
Counts in the channel, pulses
Energy, keV

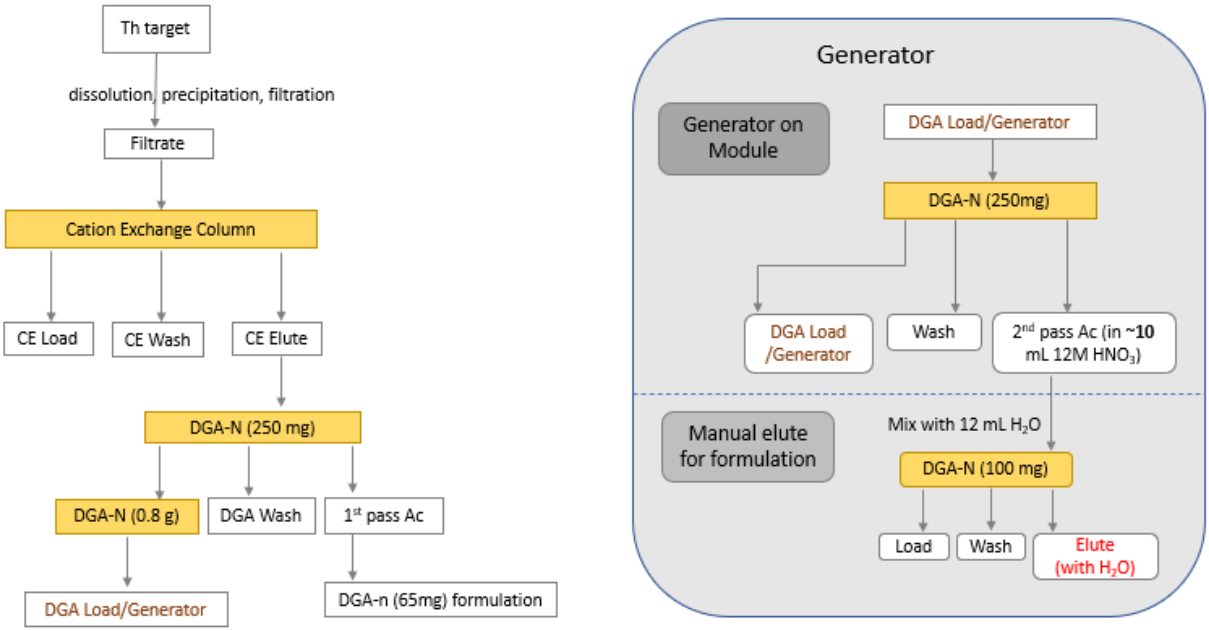
SUPPLEMENTAL FIGURE 3. Process schematic for isolation of ^{225}Ac from ^{229}Th decay as performed at IPPE (top). Alpha-spectrum of ^{225}Ac end product (no peaks of ^{216}Po and ^{212}Po) (bottom).



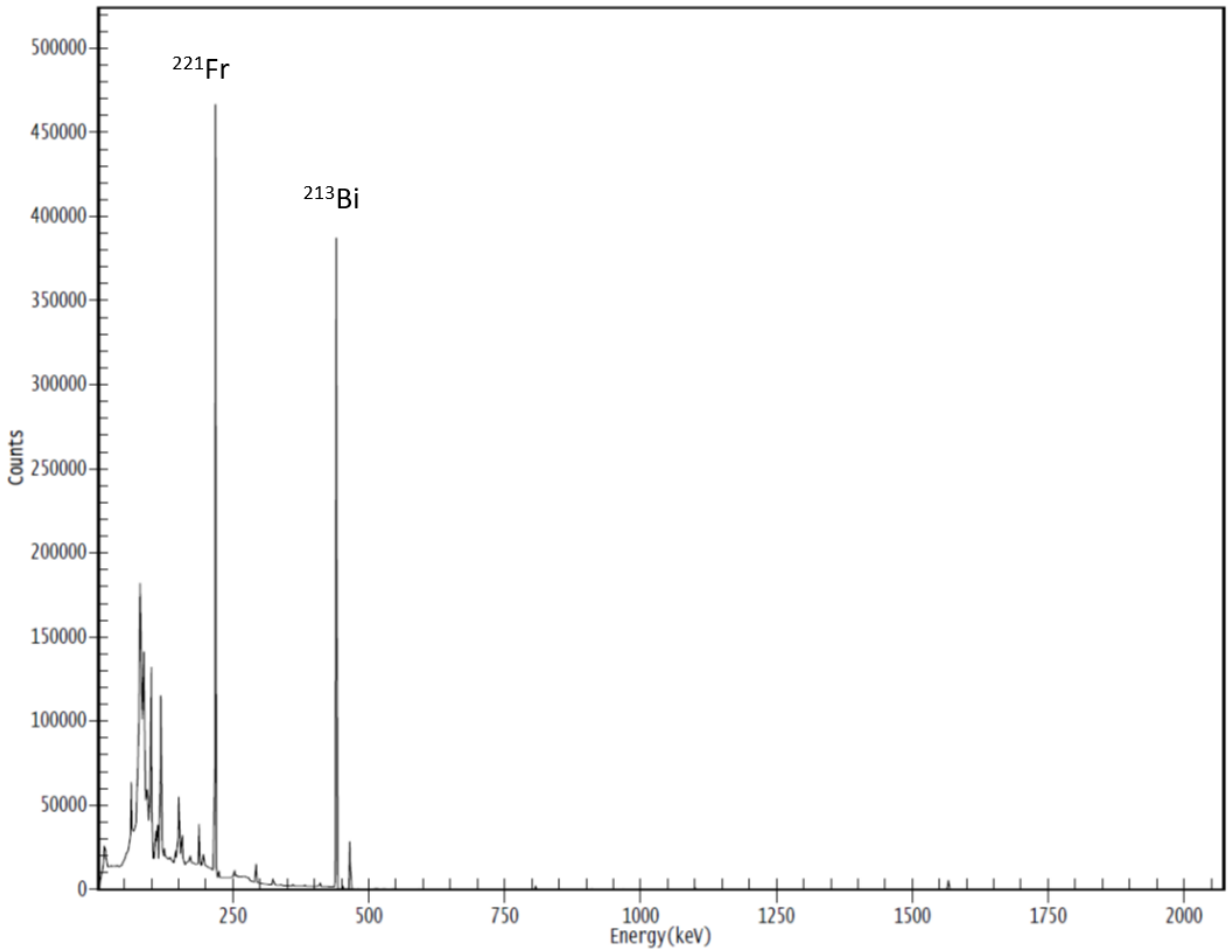
SUPPLEMENTAL FIGURE 4. Process schematic for isolation of ^{225}Ac from ^{229}Th decay as performed at CNL.



SUPPLEMENTAL FIGURE 5. Cross sections for ^{225}Ac and ^{225}Ra production via proton irradiation of ^{232}Th.



SUPPLEMENTAL FIGURE 6. Separation scheme of ^{225}Ra from irradiated ^{232}Th target and subsequent ^{225}Ra/^{225}Ac generator at TRIUMF.



SUPPLEMENTAL FIGURE 7. Gamma spectrum of purified ^{225}Ac at TRIUMF.

SUPPLEMENTAL TABLE 1. Thorium Relative Mass Isotopics and Alpha Dose for Current and New Material at ORNL.

Th source	^{228}Th	^{229}Th	^{230}Th	^{231}Th	^{232}Th	eV/s for 1 mg from alpha decay
New Material	0.0399	59.5	0.454	1.21E-12	40.0	8.92E13
Current Generator Material	0	0.66	0	0	99.34	2.49E11