

# BONUS - spektrometria

# 1 – szeregi rozpadów

<http://periodictable.com/Isotopes/086.222/>

H	Home	Background Color:	He
Li Be	Radon Main Page	Black White Gray	B C N O F Ne
NaMg	Radon Pictures Page		Al Si P S Cl Ar
K Ca	Radon Technical Data	Sc Ti V Cr Mn Fe Co Ni Cu Zn	Ga Ge As Se Br Kr
Rb Sr		Y Zr Nb Mo Tc Ru Rh Pd Ag Cd	In Sn Sb Te I Xe
Cs Ba La Ce Pr Nd Pm Sm Eu Gd Tb Dy Ho Er Tm Yb Lu Hf Ta W Re Os Ir Pt Au Hg Tl Pb Bi Po At Rn			
Fr Ra Ac Th Pa U Np Pu Am Cm Bk Cf Es Fm Md No Lr Rf Db Sg Bh Hs Mt Ds Rg Uub Uut Uuq Uup Uuh Uus Uuo			

Isotopes of Radon (click to see decay chain):

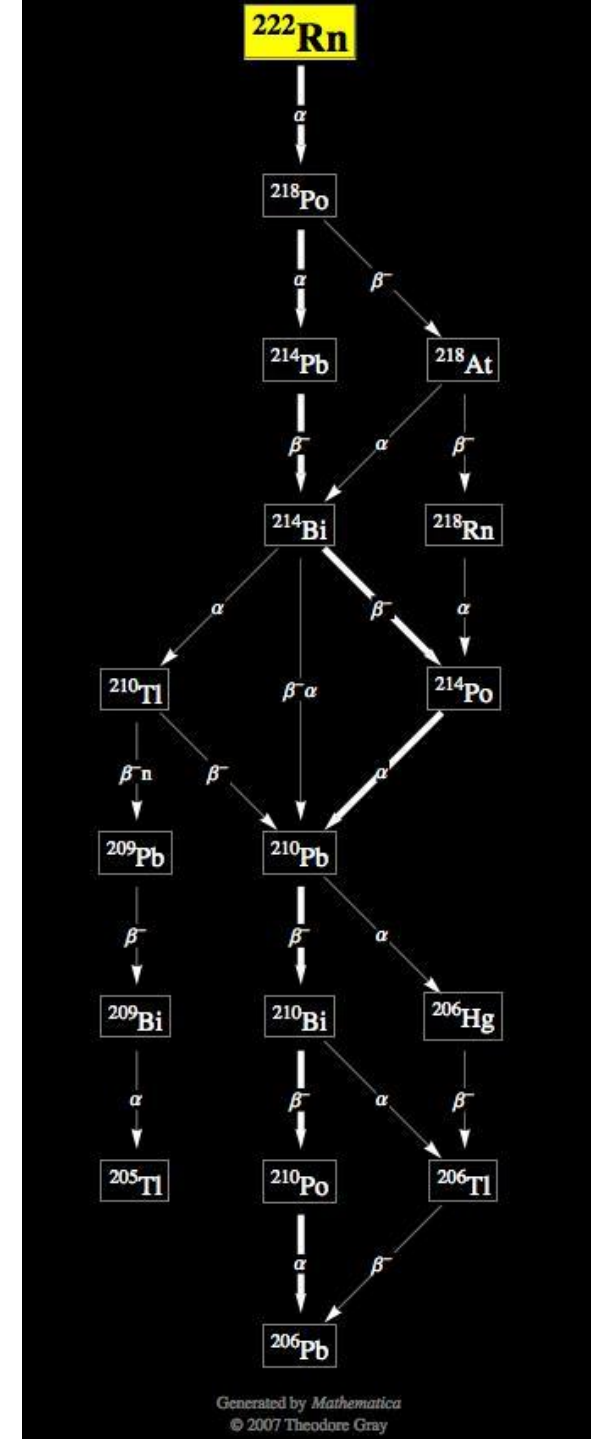
195Rn 196Rn 197Rn 198Rn 199Rn 200Rn 201Rn 202Rn 203Rn 204Rn 205Rn 206Rn 207Rn 208Rn  
 209Rn 210Rn 211Rn 212Rn 213Rn 214Rn 215Rn 216Rn 217Rn 218Rn 219Rn 220Rn 221Rn 222Rn  
 223Rn 224Rn 225Rn 226Rn 227Rn 228Rn

**222Rn** Half-life: 3.823495d Boson, 86p 136n Spin 0 Parity 1

Atomic Weight 222.01757738 Abundance None Mass Excess 16.373558MeV Binding Energy 7.694491MeV Magnetic Moment 0μ Quadrupole Moment N/A

Show Decay Modes  
 Show Ultimate Decay Products  
 Show Element Pictures  
 Also show decay chains leading to this isotope.  
 Show only decays with probability >0.1%.

Click any isotope in diagram to see its data.



# 2 – wyszukiwarka izotopów

<http://nucleardata.nuclear.lu.se/toi/nucSearch.asp>

<http://nucleardata.nuclear.lu.se/toi/radSearch.asp>



WWW Table of Radioactive Isotopes

## Nuclide search

Mass number:  -

Z:  or Element:

N:

T1/2:  s  -  s

Sort by:  A, Z  Z, A

[Main page](#) | [Radiation search](#)



WWW Table of Radioactive Isotopes

## Radiation search

Energy:  ±  keV

Type:  Alpha  Gamma

Parent:

T1/2:  s  -  s

Mass number:  -

Z:  or Element:

N:

Sort by:  Energy, Intensity  A, Z

[Main page](#) | [Nuclide search](#)

# 2 – wyszukiwarka



## WWW Table of Radioactive Isotopes

### Nuclide search

Mass number:  -

Z:  or Element:

N:

T1/2:  s  -  s

Sort by:  A, Z  Z, A

[Main page](#) | [Radiation search](#)



## WWW Table of Radioactive Isotopes

<sup>60</sup><sub>27</sub>Co<sub>33</sub>

Half life: 5.2714 y 5  
Jp: 5+  
S<sub>n</sub> (keV): 7491.93 8  
S<sub>p</sub> (keV): 8274.8 6  
Prod. mode: Fast neutron activation  
Thermal neutron activation

ENSDF citation: NDS 69,1 (1993)  
Literature cut-off date: 1-May-1992  
Author(s): M.M. King  
References since cut-off: [<sup>60</sup>Co decay from 1992-98 \(NSR\)](#)

### Decay properties:

Mode	Branching (%)	Q-value (keV)	References
b <sup>-</sup>	100	2823.9 5	<a href="#">78Ca18</a> <a href="#">88Ha03</a>

### Data sets:

Mode	Data set name	Display data
b <sup>-</sup>	<a href="#">60CO B- DECAY (5.2714 Y)</a>	
	<a href="#">Tables:</a>	<input type="button" value="Levels"/> <input type="button" value="Gammas"/> <input type="button" value="Betas"/>
	<a href="#">ENSDF data:</a>	<input type="button" value="Data"/>
	<a href="#">Java applets:</a>	<input type="button" value="Level scheme"/> <input type="button" value="Beta spectrum"/>

### Gammas from <sup>60</sup>Co (5.2714 y 5)

E <sub>g</sub> (keV)	I <sub>g</sub> (%)	Decay mode
346.93 7	0.0076 5	b <sup>-</sup>
826.06 3	0.0076 8	b <sup>-</sup>
1173.237 4	99.9736 7	b <sup>-</sup>
1332.501 5	99.9856 4	b <sup>-</sup>
2158.57 10	0.00111 18	b <sup>-</sup>
2505	2.0E-6 4	b <sup>-</sup>

# 2 – wyszukiwarka

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ENERGIA

czyli położenie na osi X

INTENSYWNOŚĆ

czyli położenie na osi Y

(ale uwaga:

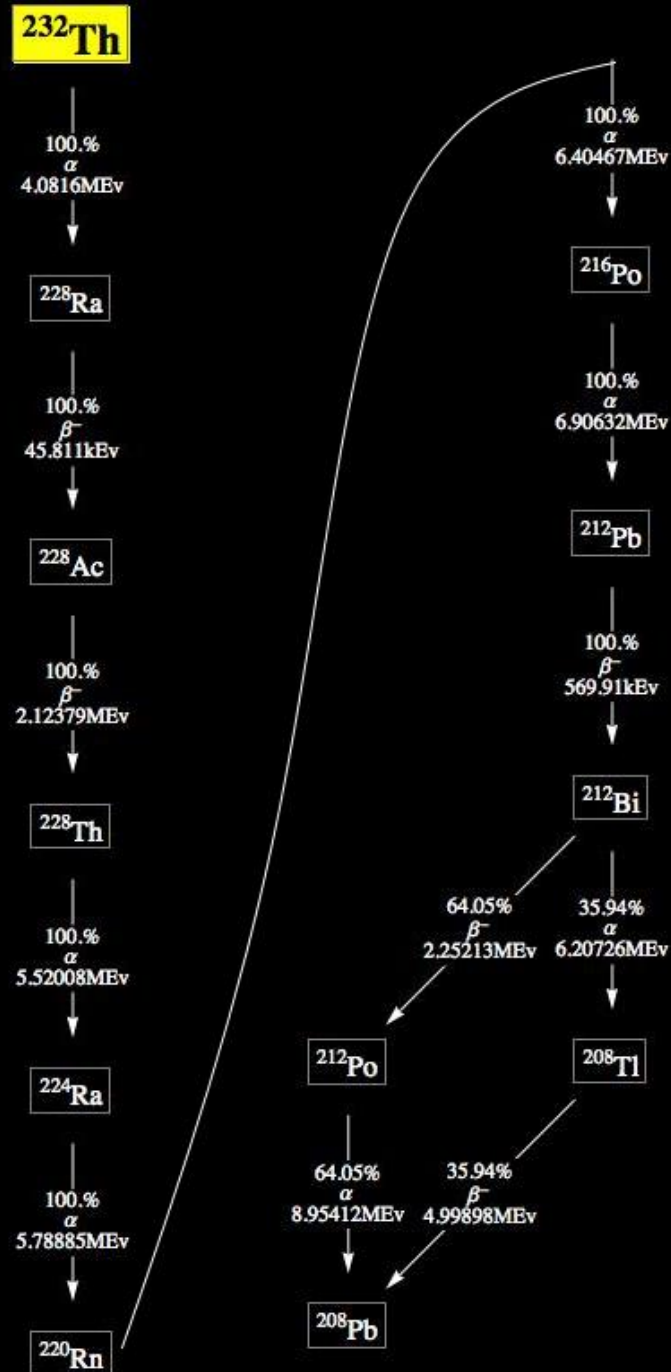
czy jest

kalibracja

wydajnościowa?)

3 – przykład Th-232

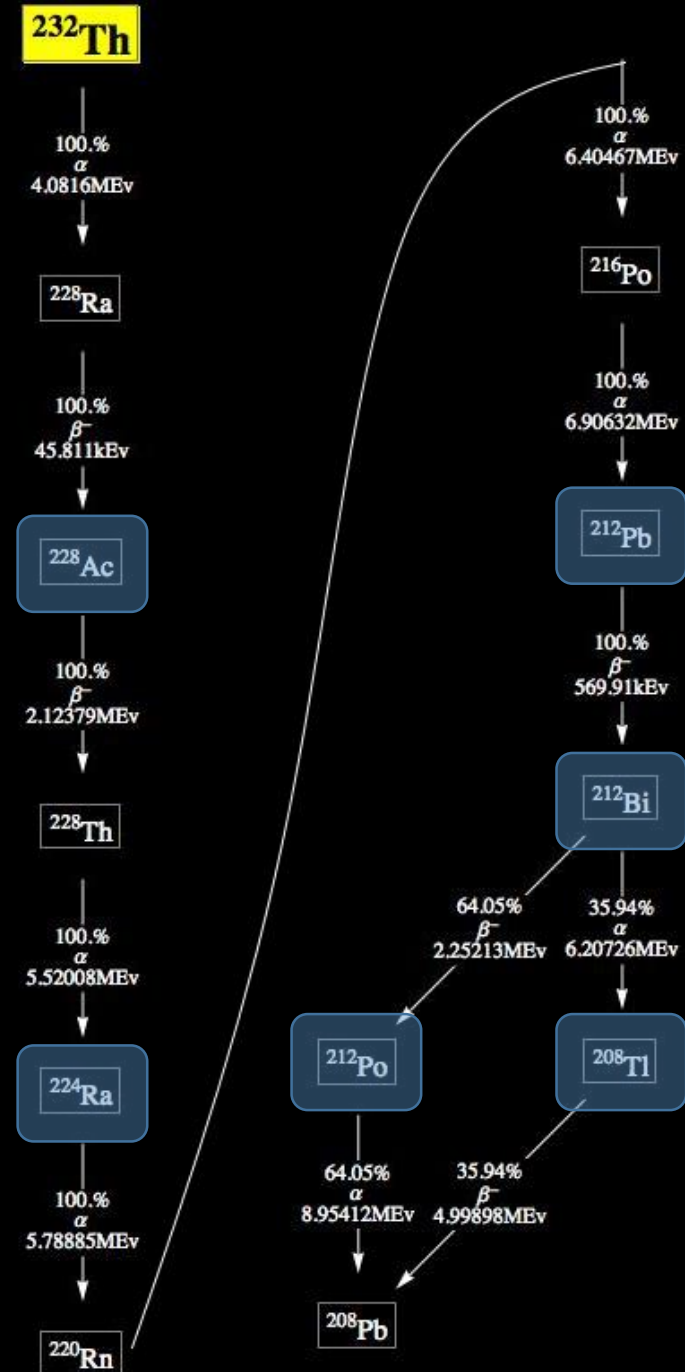
# Rzeczywiste próbki – mieszaniny izotopów

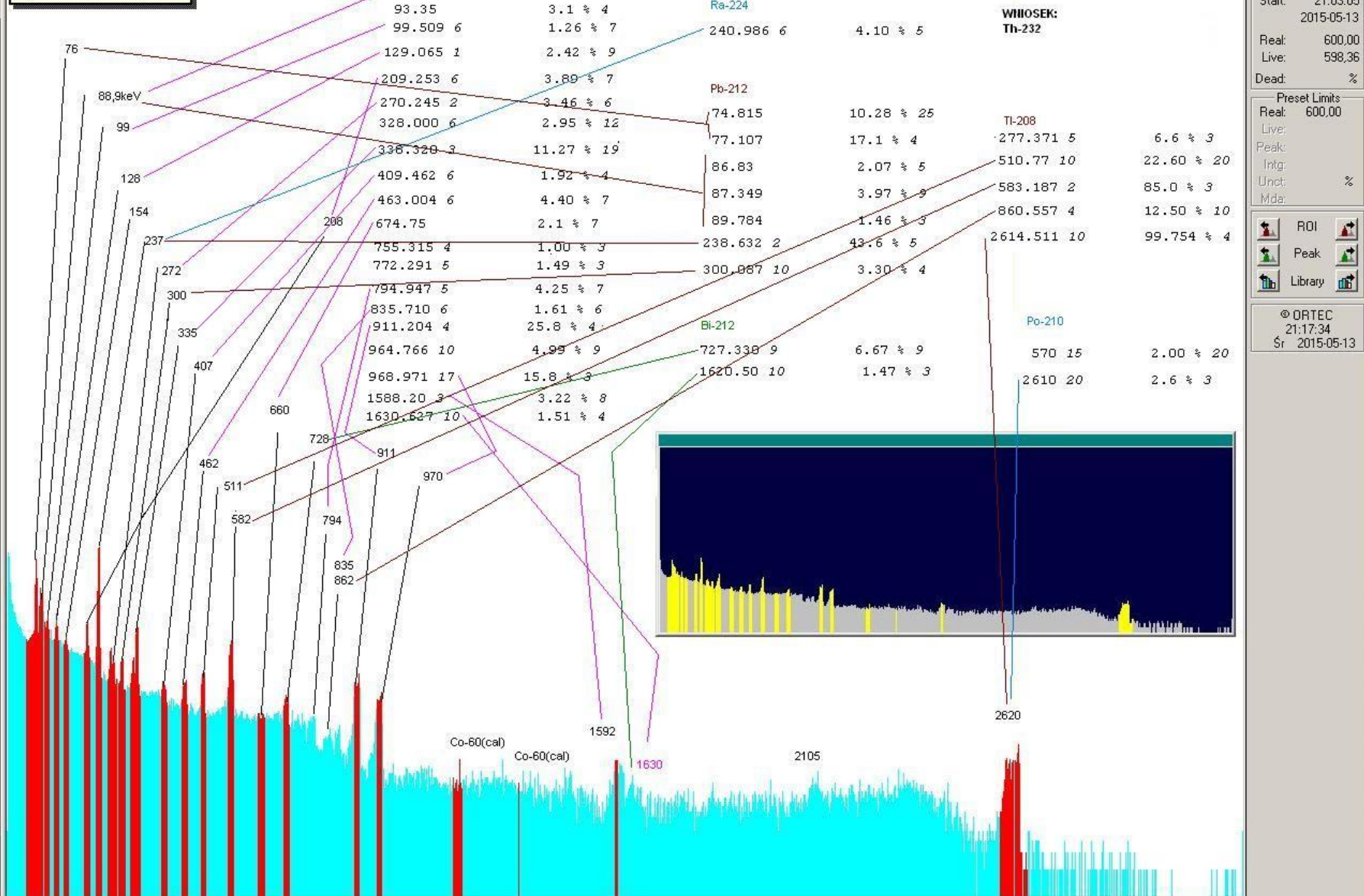




# Rzeczywiste próbki – mieszaniny izotopów

$\gamma$ -promieniotwórcze izotopy pochodne Th-232



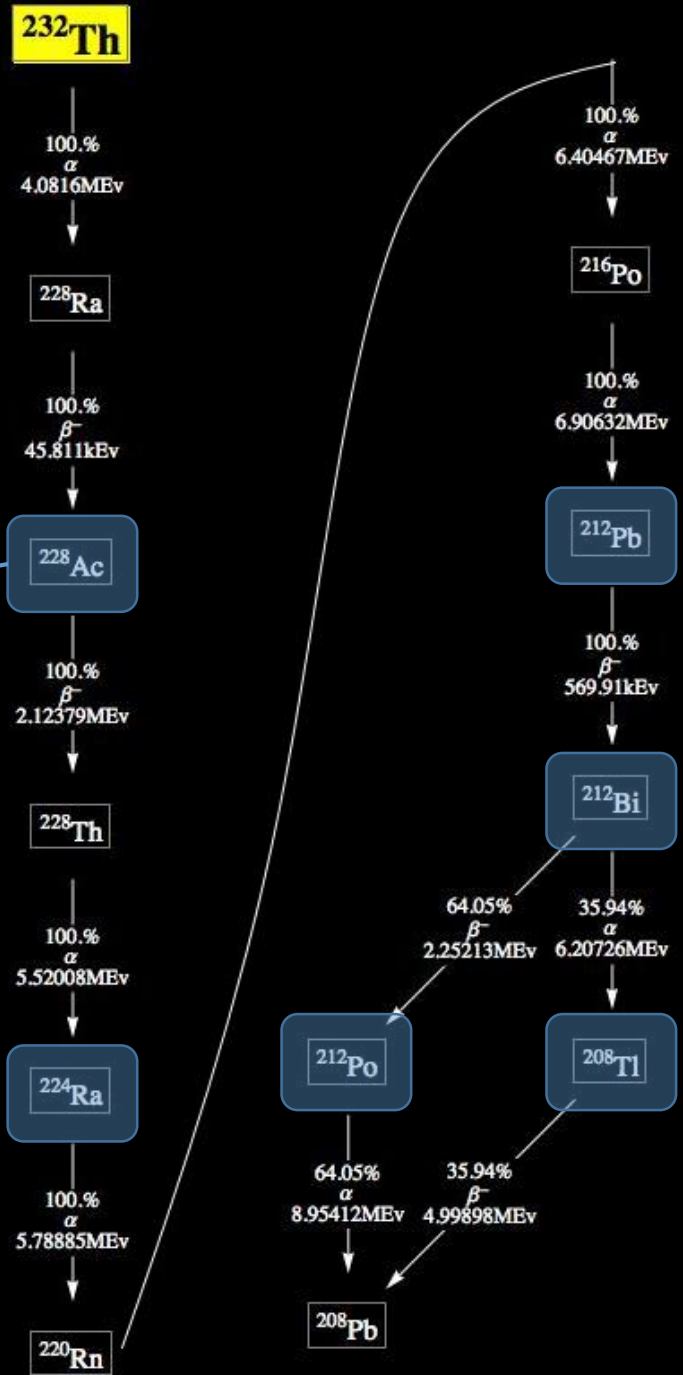
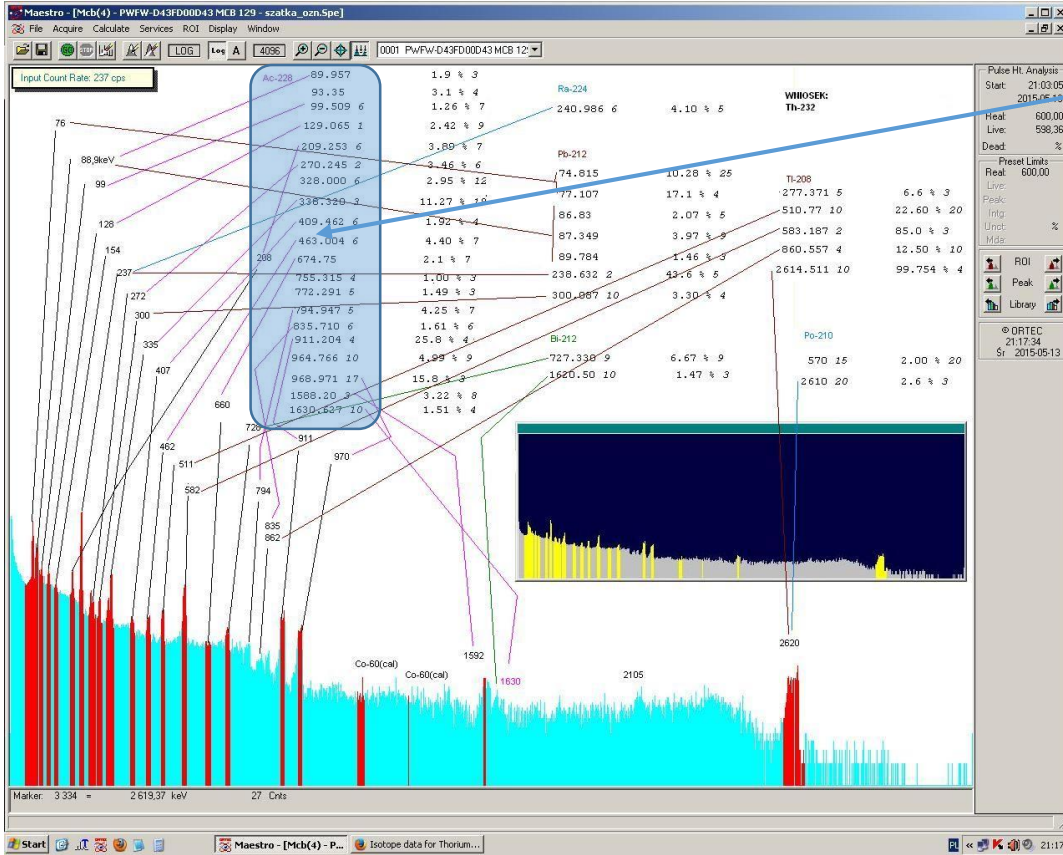


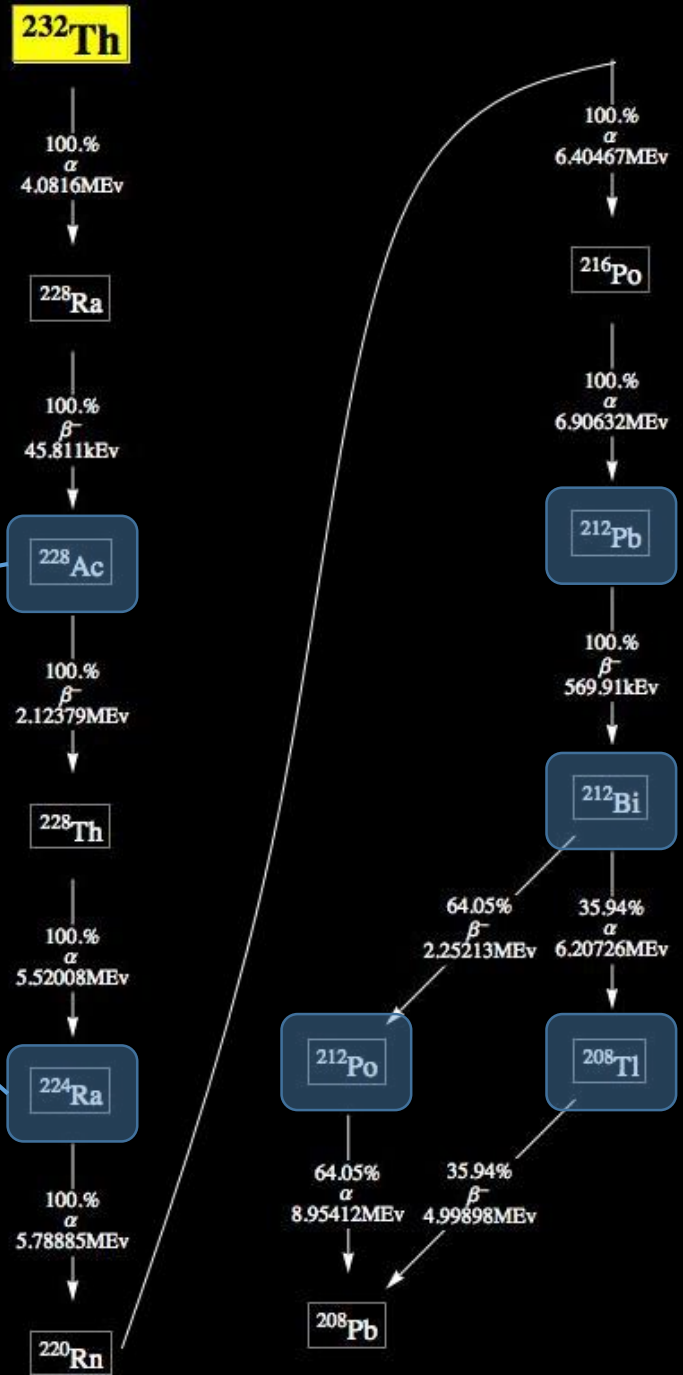
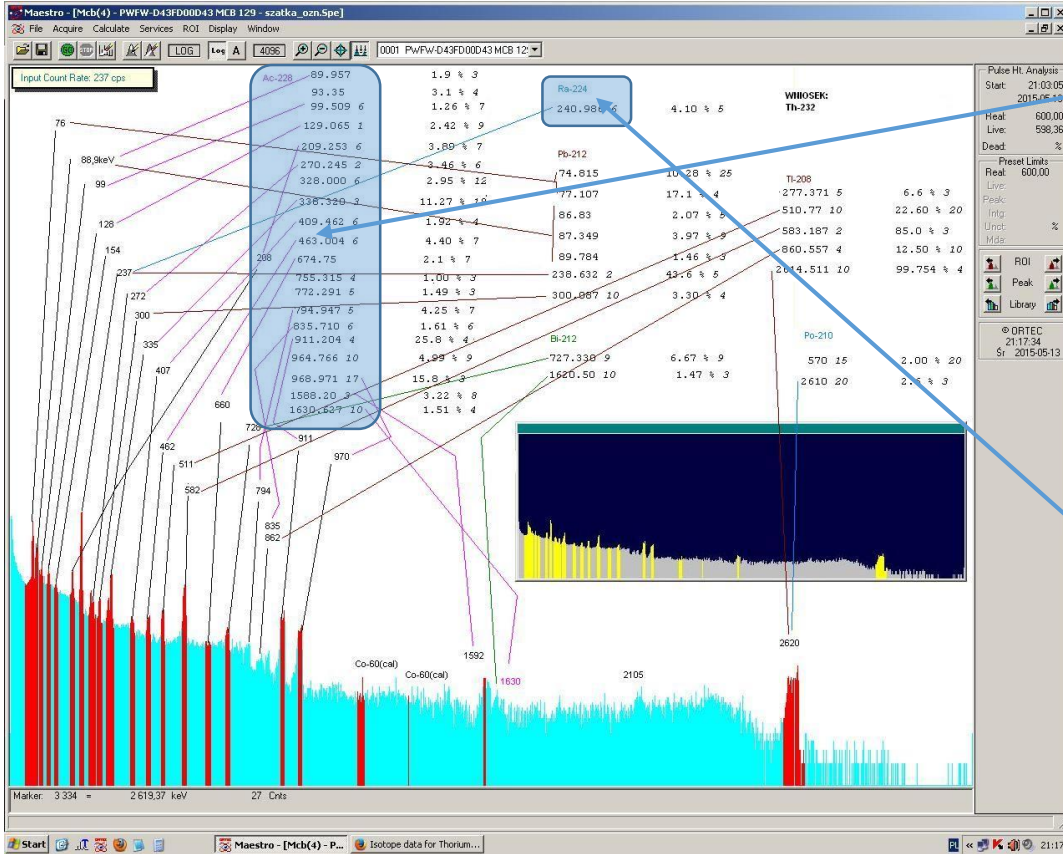
Pulse Ht. Analysis  
 Start: 21:03:05  
 2015-05-13  
 Real: 600.00  
 Live: 598.36  
 Dead: %

Preset Limits  
 Real: 600.00  
 Live:  
 Peak:  
 Intg:  
 Unct:  
 Mda:

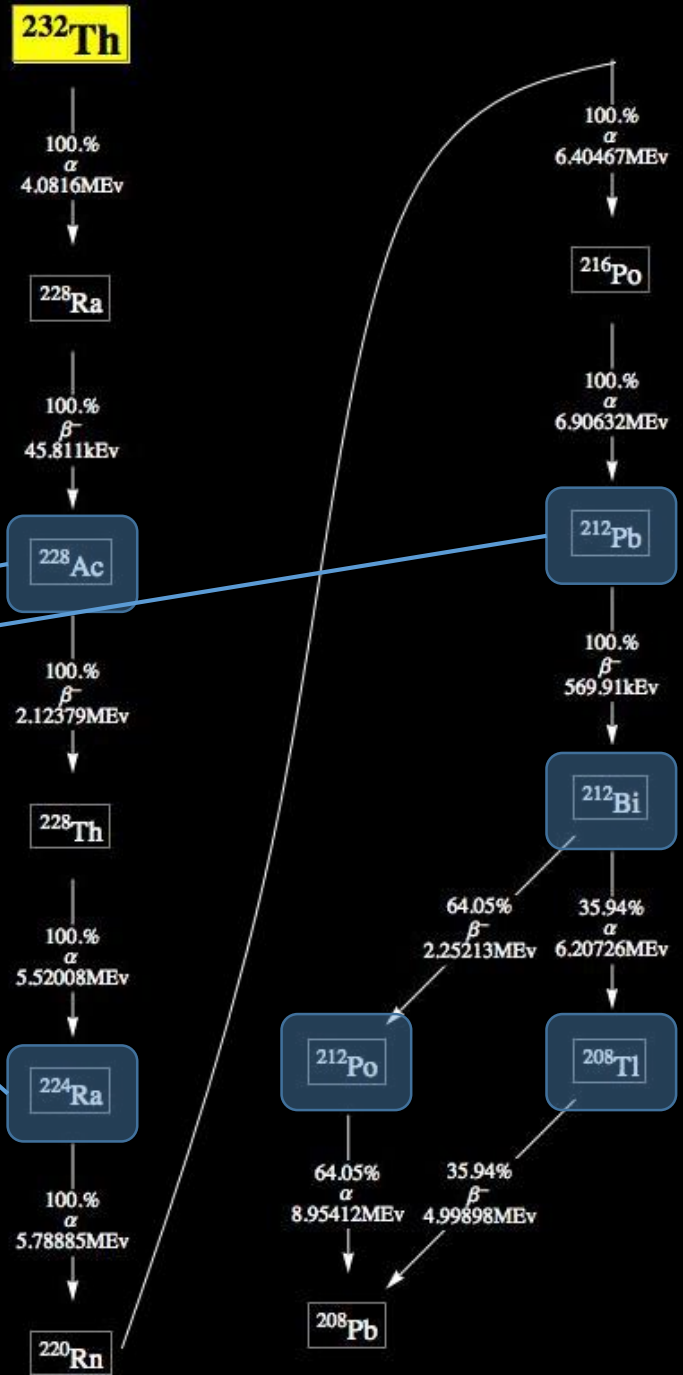
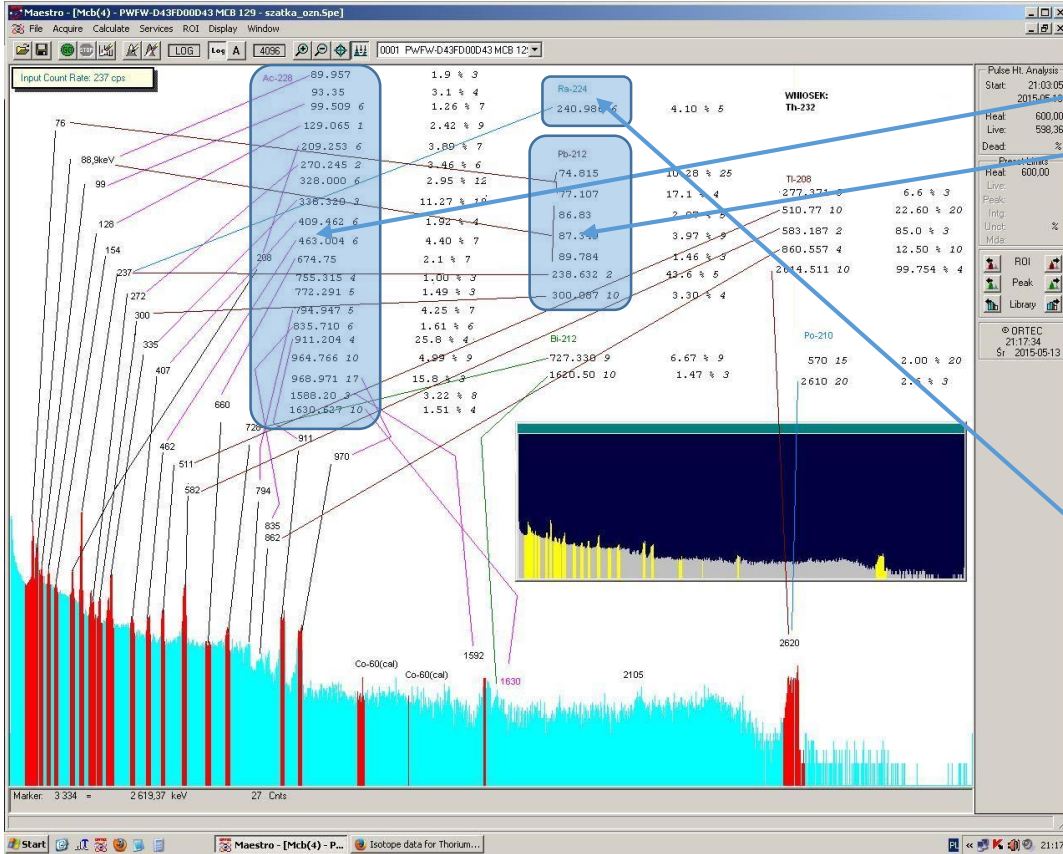
ROI  
 Peak  
 Library

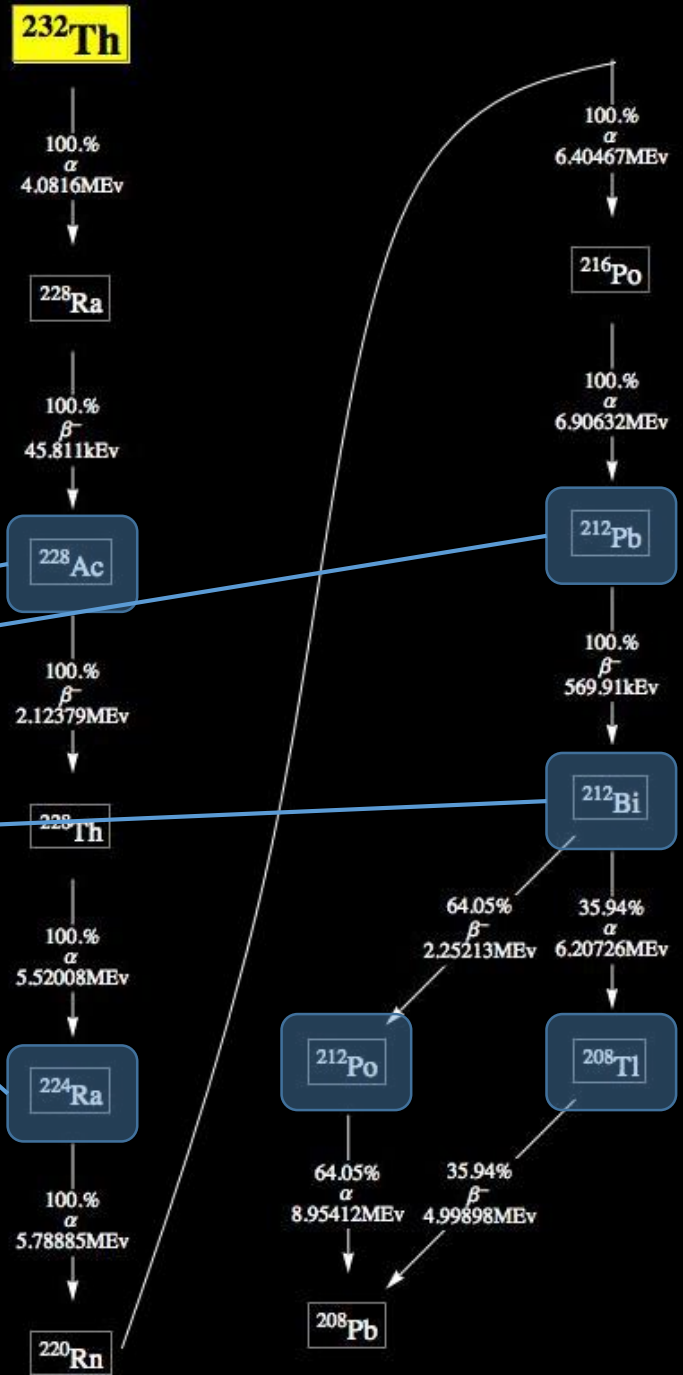
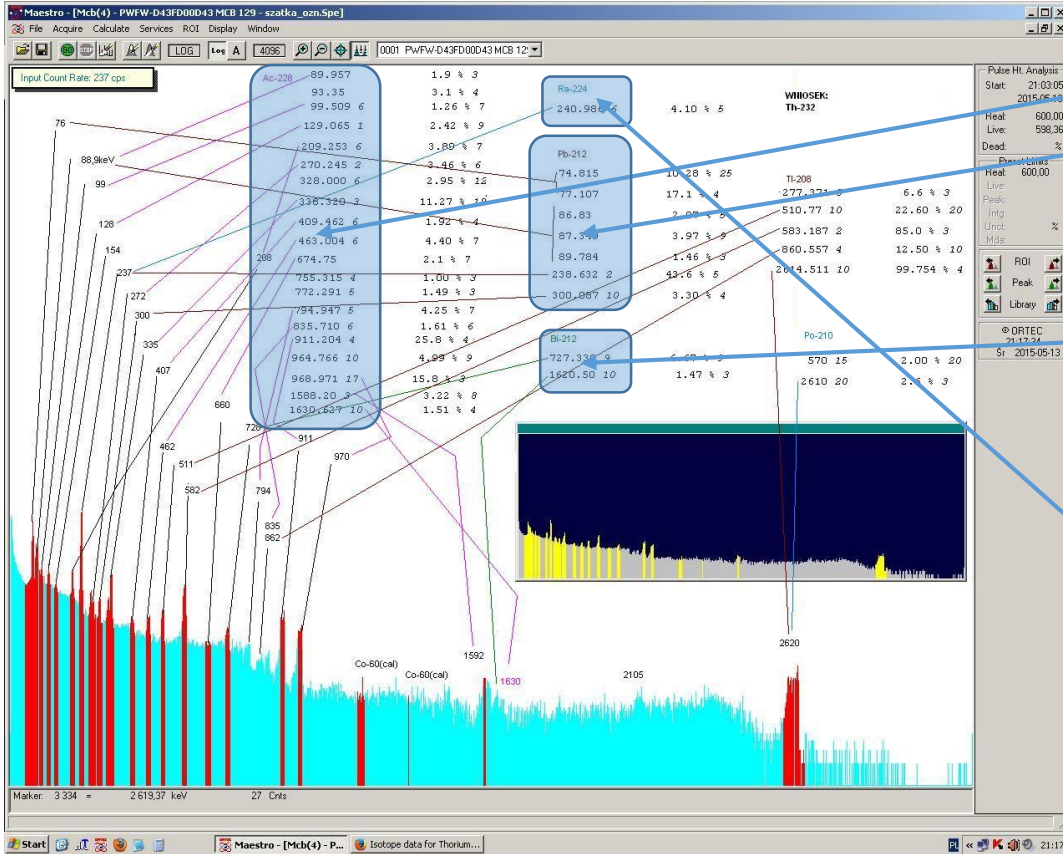
© ORTEC  
 21:17:34  
 Sr 2015-05-13

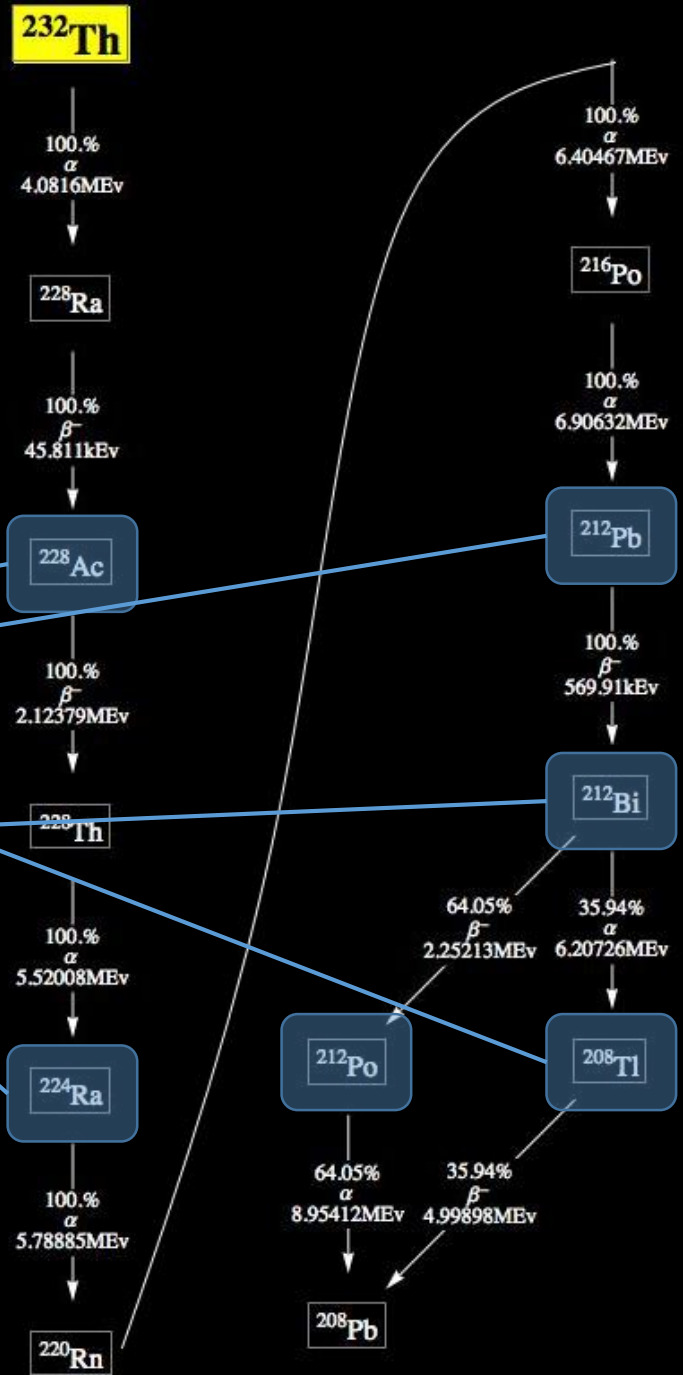
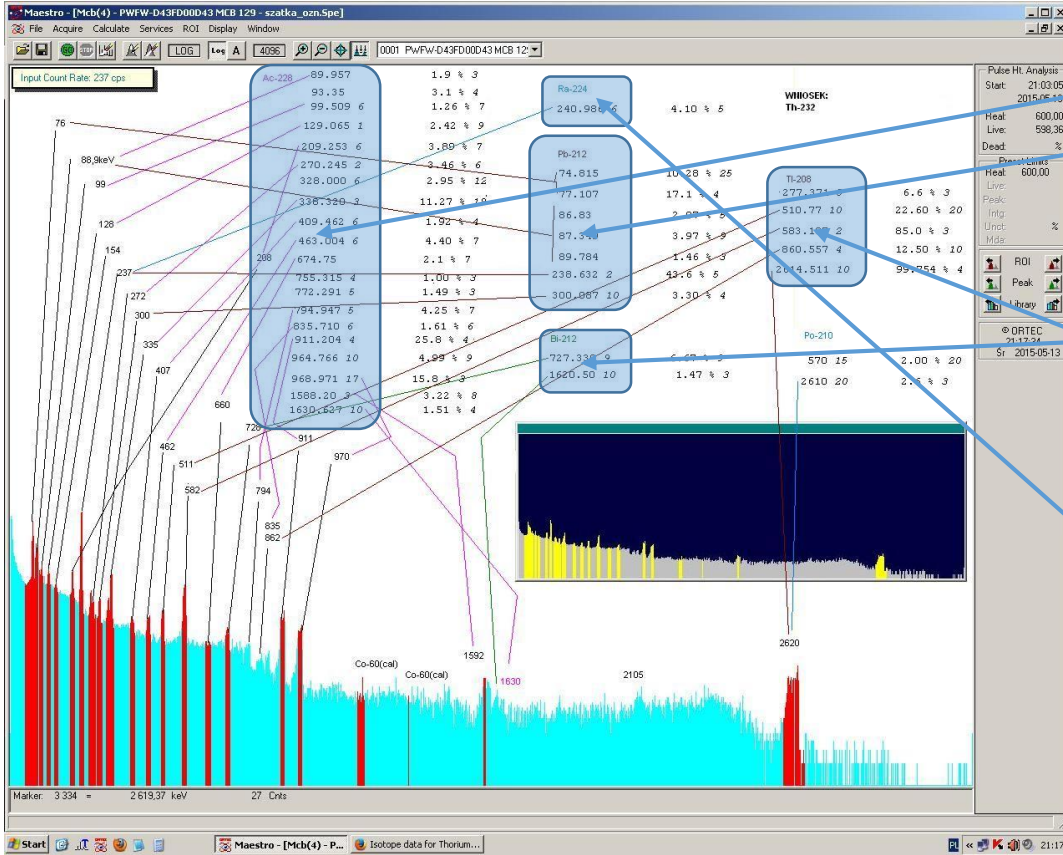




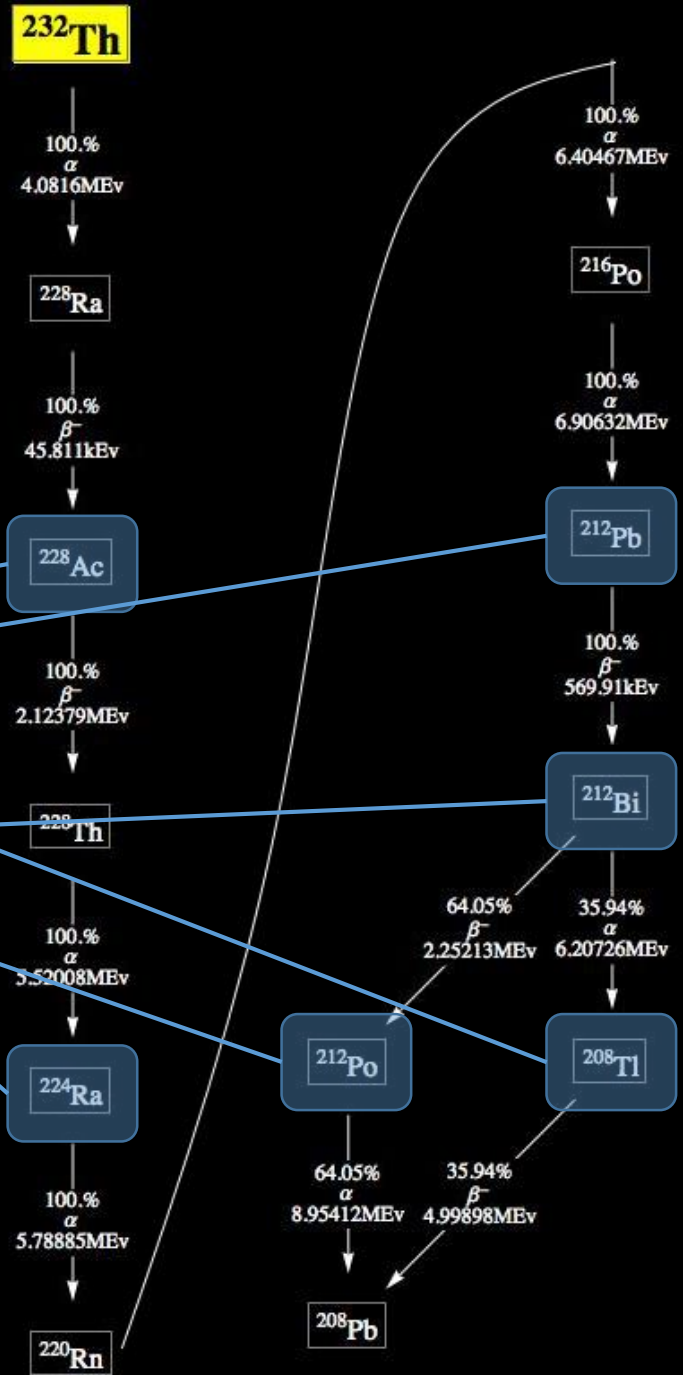
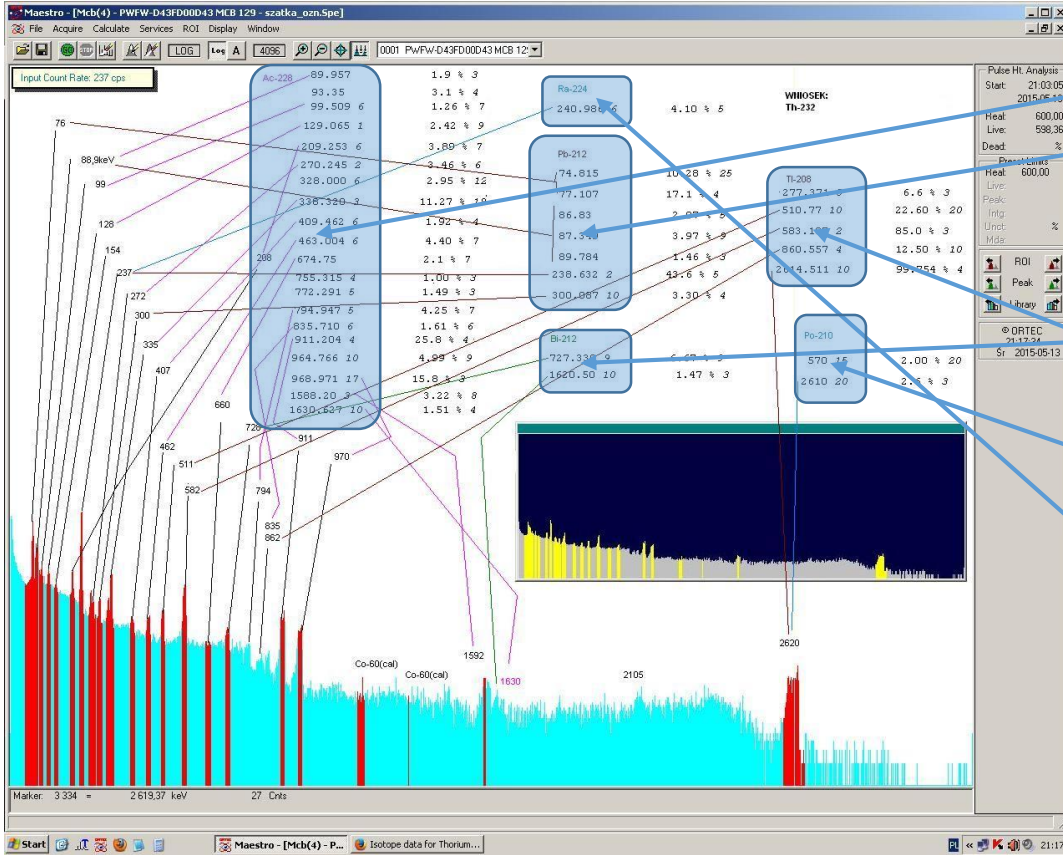














# Rzeczywiste próbki – mieszaniny izotopów

$\gamma$ -promieniotwórcze izotopy pochodne Th-232

