

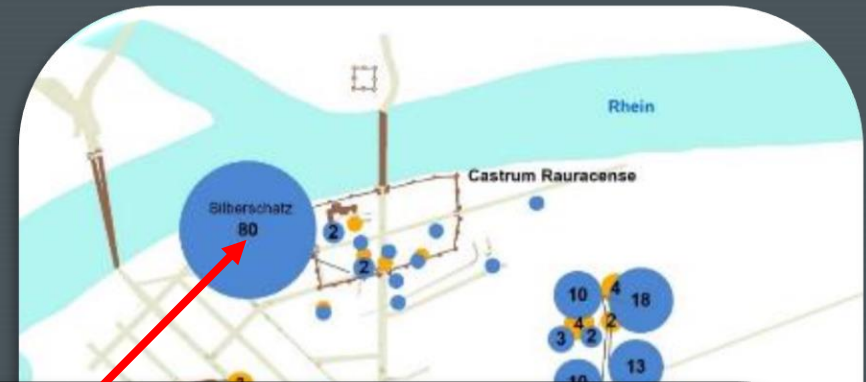
MIXE mid-term meeting, 05.12.2022, Baden/AG

Results on archaeological samples

Isabel A. Megatli-Niebel – Augusta Raurica

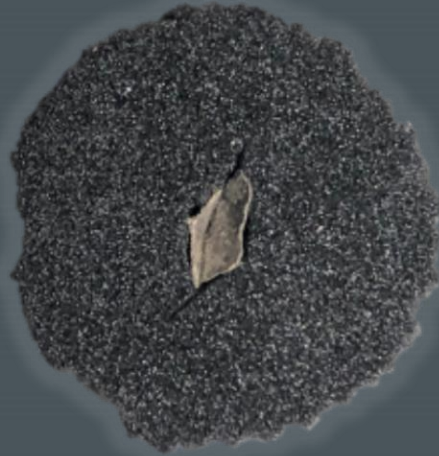
Introduction

~ 300 objects made of silver and gold



Previous campaigns: Nov. 2019

- Fibula 2018.005.G07151.2
- 5 Coins
 - 1957.3825
 - 1957.3679
 - 1958.11739
 - 1960.1530
 - 1965.4486A
- Amulet fragment „Bulla“ 1991.002.C9229.152



Testing campaign

Alloy constituents

Alloy distribution



Previous campaigns: Nov. 2020

- Menorah ring 2001.01.E05.174.1
- Spoonbill 1997.004.D06543.16
- Goldcoin 1973.1
- Beltfitting 1991.002.C09314.150

Provenance studies
Imitation?



Previous campaigns: Oct. 2021

- 3 rings
1907.1812
1959.4313
1979.2028
- 2 earrings
1985.57718
1965.2087
- Neclace pendant 1967.14574
- Hercules with pig 1983.17139
- Miverva statuette 1984.23872
- Fibula 1997.060.D05540.3



Precious metals
Togetherness?



Previous campaigns: Dec. 2021

- 5 rings
1906.730
1907.1811
1945.155
1963.6067
1972.145
- 2 earrings
1906.839.37
1906.839.38
- 2 gold pendants
1906.839.35
1906.839.36
- 7 fibulae
1906.839.33
1906.839.34
1907.589
1959.8437
1998.060.D08828.1
2014.008.G04368.22
2015.003.G05357.11
- 2 metal fittings
1906.839.56
1906.839.80
- 2 rivets
1906.839.15
1906.839.16
- 3 statuettes
1906.128
1906.85
1906.210

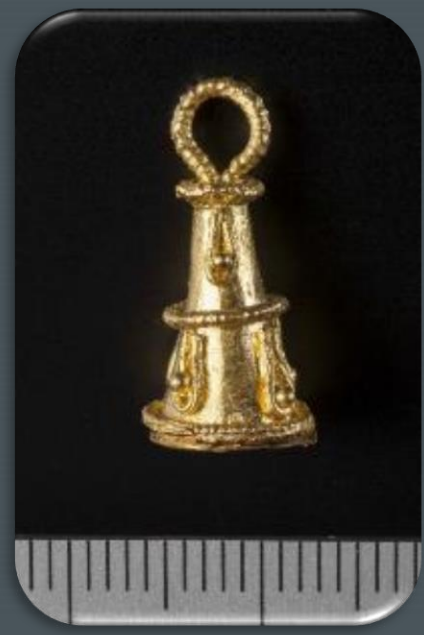
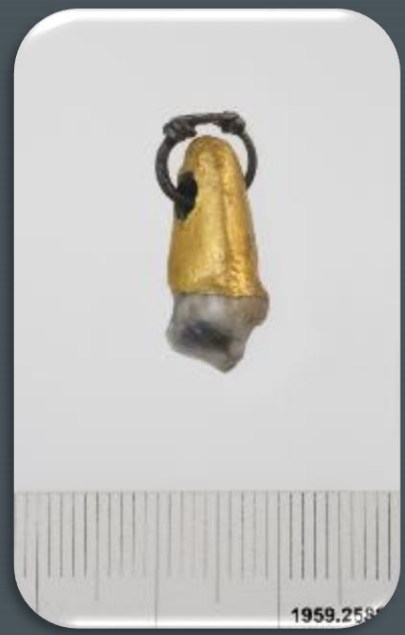


Old finds from the Historical Museum Basel



Previous campaigns: May 2022

- Necklace 1980.2633
- 4 rings
 - 1911.112
 - 1961.131
 - 1969.11300
 - 1970.3681
- 5 earrings
 - 1906.732
 - 1906.733
 - 1990.051.C05489.3
 - 1997.060.D05559.2
 - 2009.058.F012392.6
- 6 pendants
 - 1958.10699
 - 1958.4150
 - 1959.2588
 - 1967.14575
 - 1990.051.C05543.1
 - 1998.060.D09317.3
- 2 Fibulae
 - 1948.2990
 - 1978.1719
- Jewel 1969.15053
- Pb-ore A 9485
- 2 Coins
 - 1968.1732
 - 1991.051.C08145.10
- 11 Various metallic small finds
 - 1912.482
 - 1922.330
 - 1939.3804
 - 1960.2759
 - 1961.5927
 - 1967.12107
 - 1990.054.C05668.4
 - 1992.008.C09725.7a
 - 1994.090.U00220.1
 - 2008.003.F05920.32
 - 2009.058.F01392.2

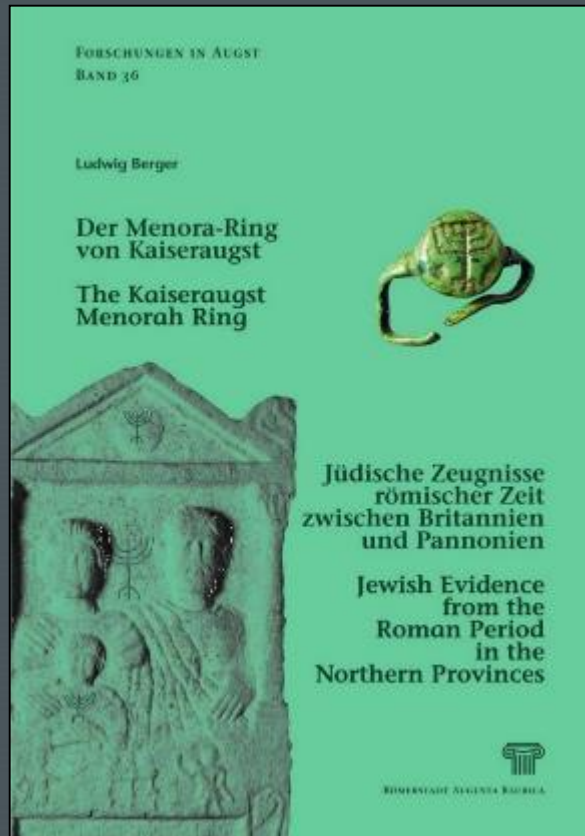


Precious metals
Lead isotopic analysis



Previous campaigns: Sept. 2022

Menorah ring 2001.01.E05.174.1



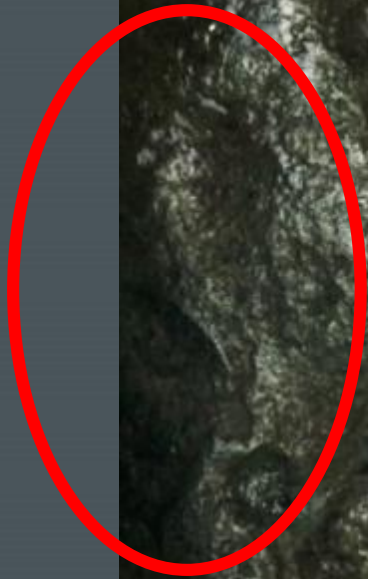
Provenance studies:
Lead isotopic analysis

- 4th century AD, excavated in 2001 in Kaiseraugst
- Continuity of Jewish presence from the Roman period into the Middle Ages in Central Europe becomes more plausible

Menorah ring



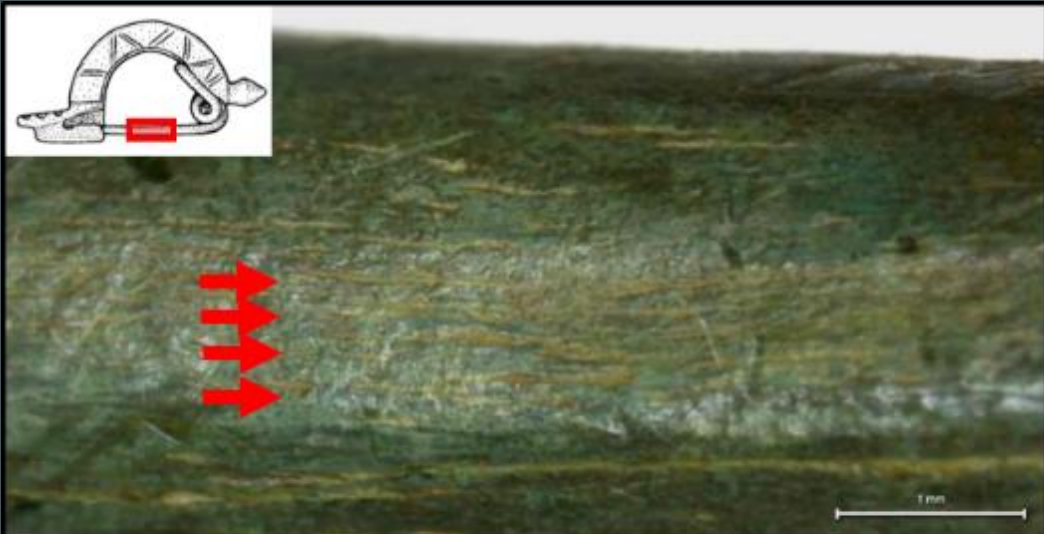
Menorah ring



Bügelknopffibel

Article submitted to *Heritage Science*

Manufacturing



Hercules with pig



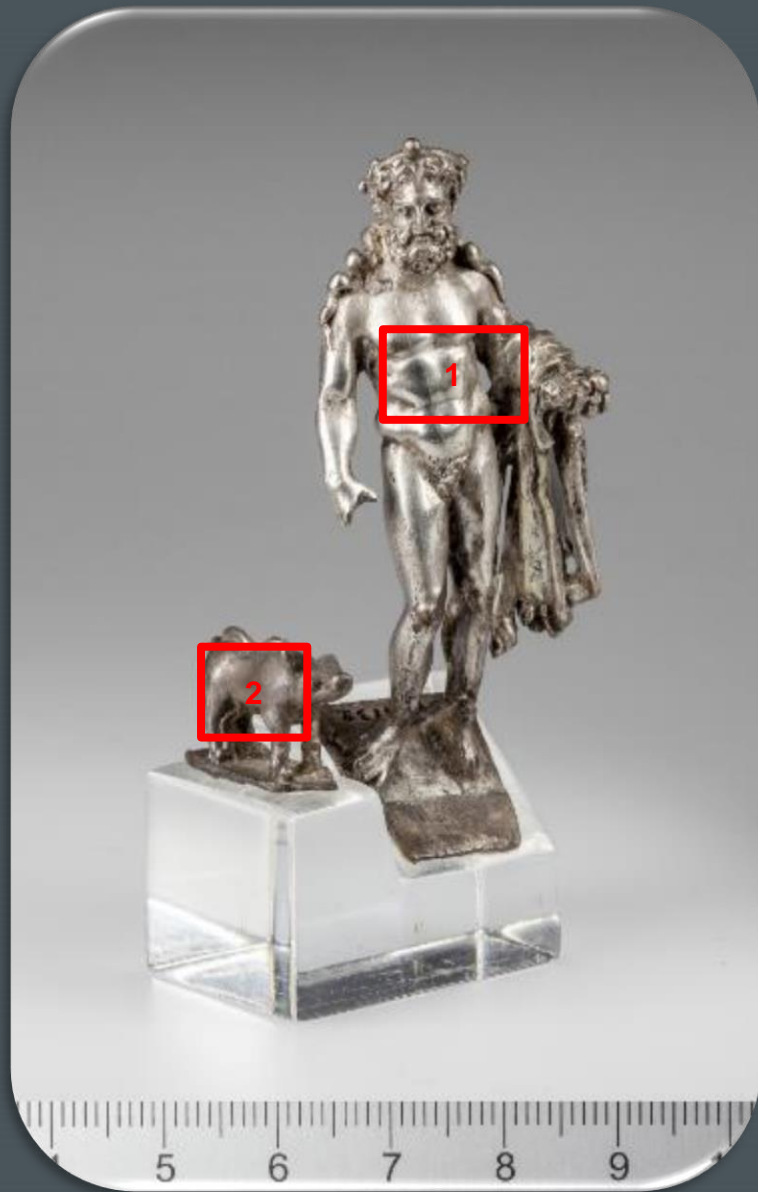
Which/Same alloy
composition?



Hercules with pig



Results

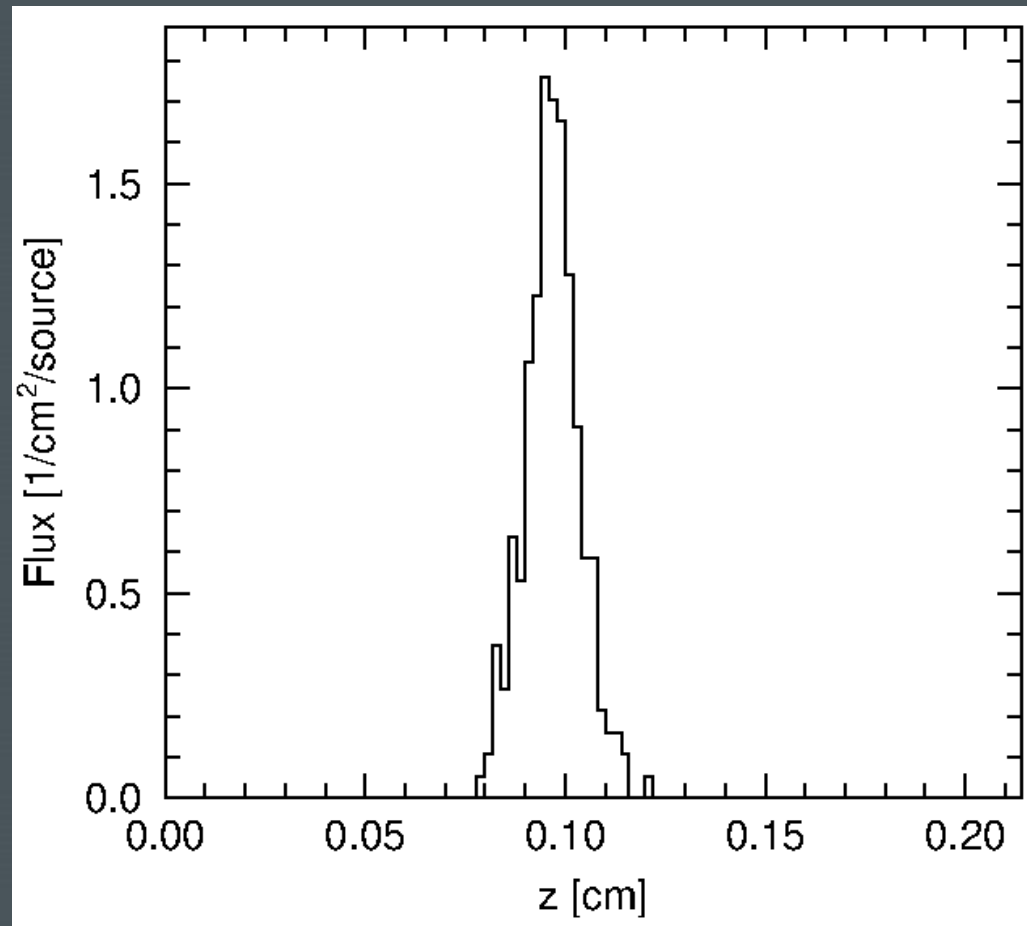


Position 1:

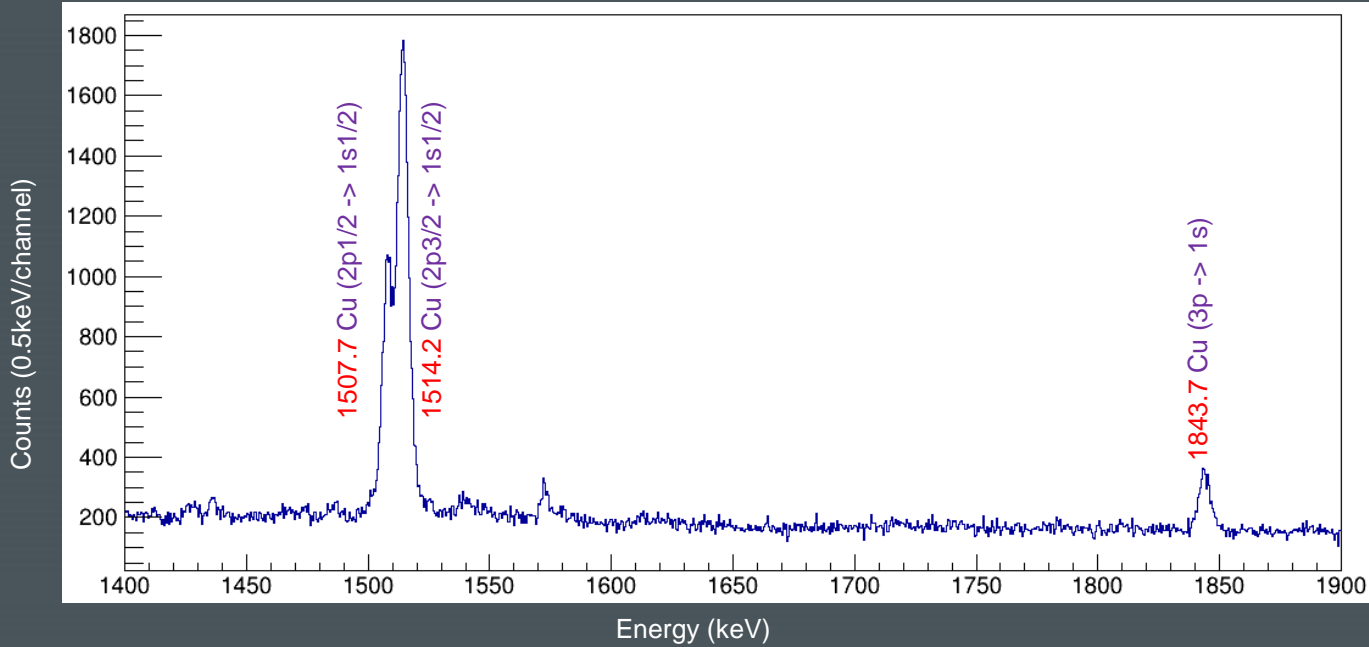
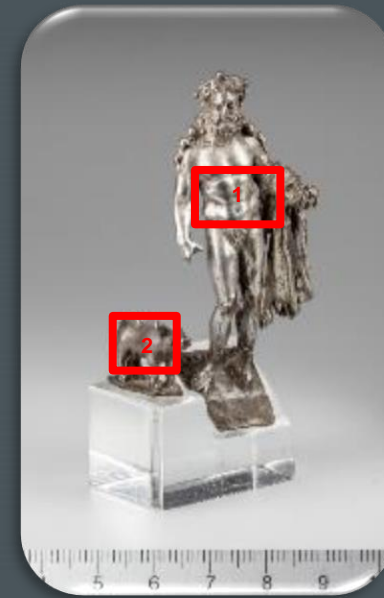
$p = 45 \text{ MeV}/c$, $dp/p = 2\%$, ~ 30 minutes, muon entrance events = 57'661'711

Position 2:

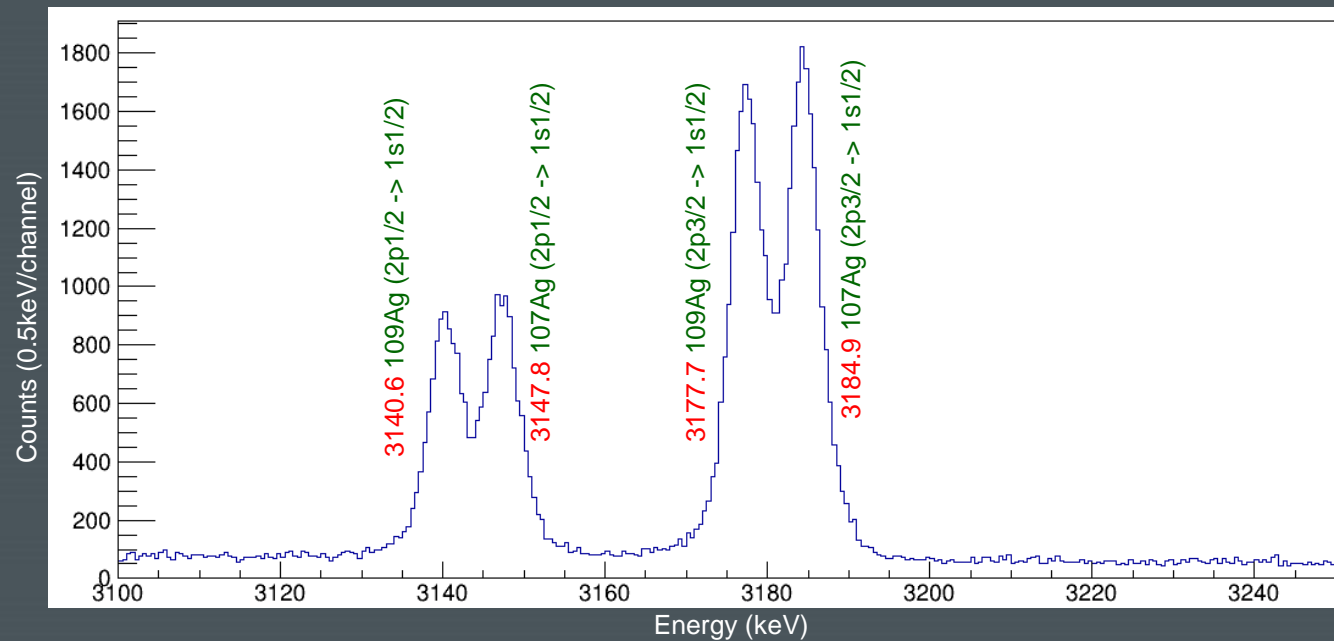
$p = 45 \text{ MeV}/c$, $dp/p = 2\%$, $\sim 1:30$ h, muon entrance events = 224'619'238



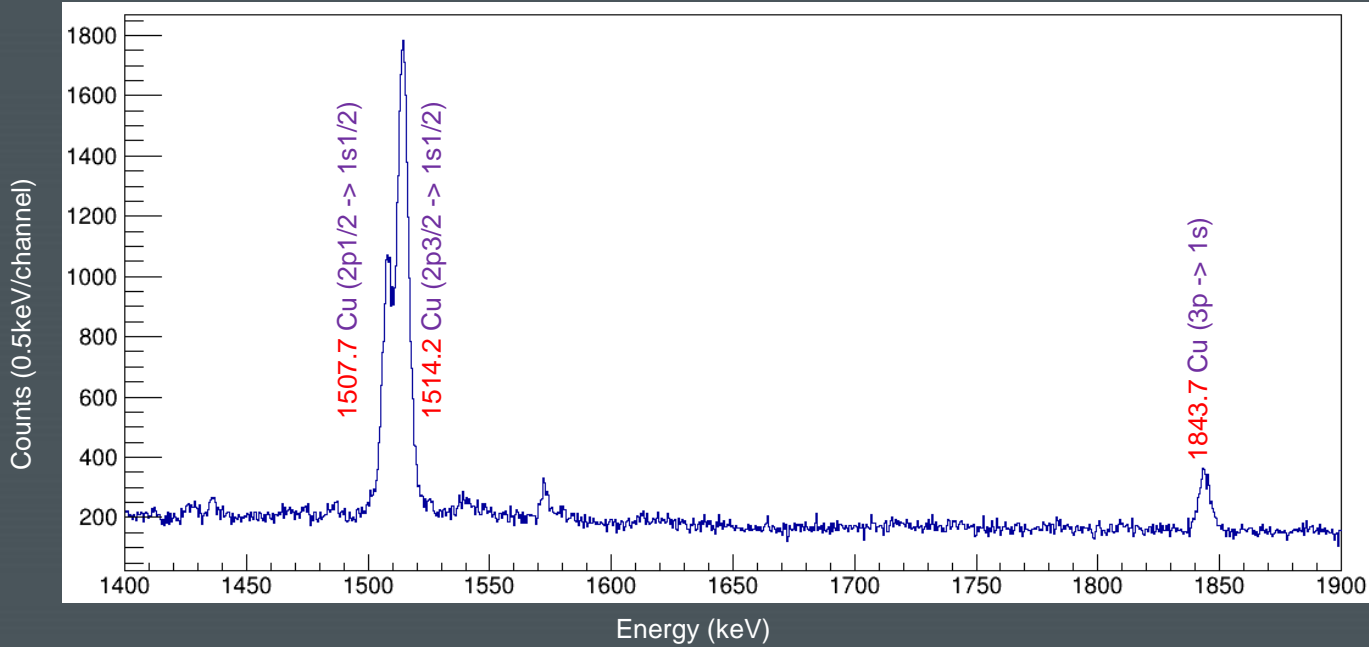
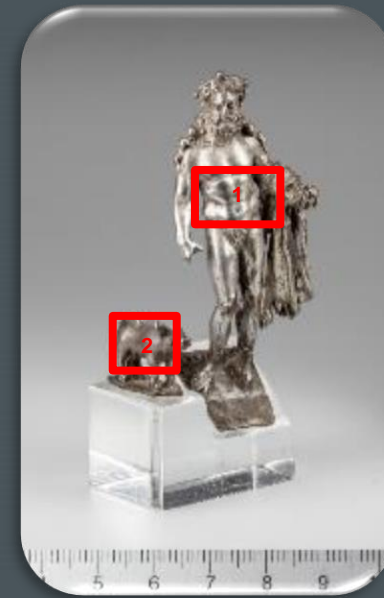
Position 1



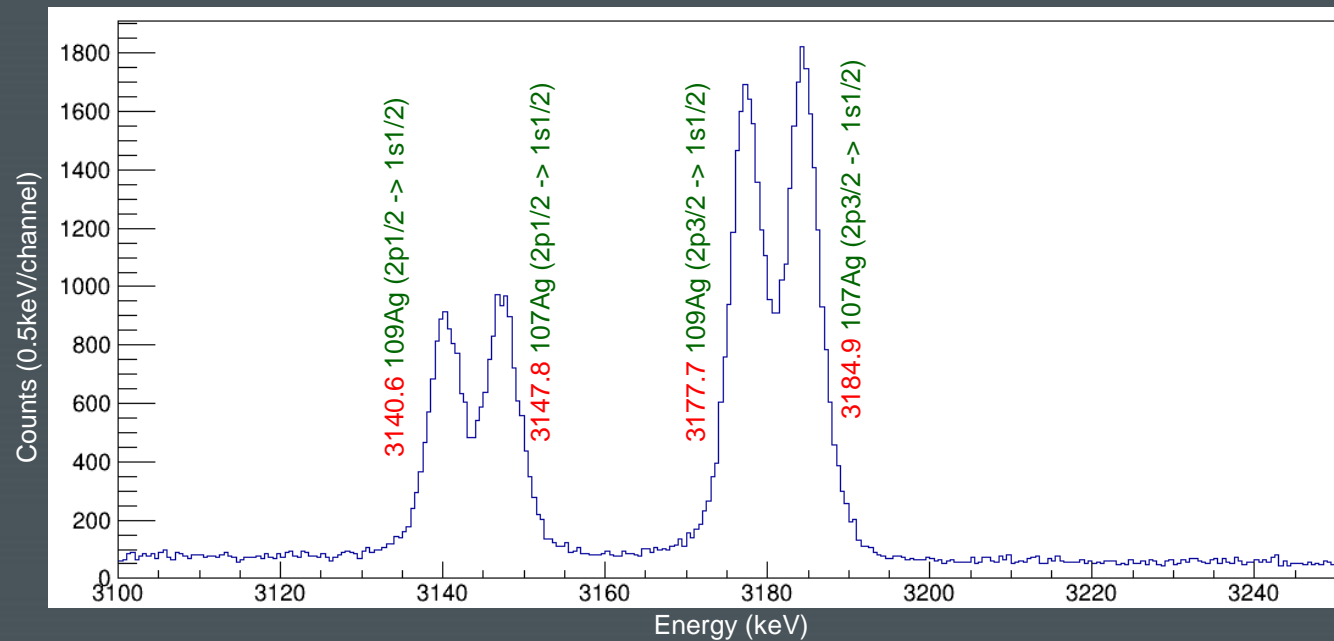
- Ag (~76.3%)
- Cu (~23.7%)



Position 2



- Ag (~86.2%)
- Cu (~13.8%)



Augusta Raurica Magazine

FOKUS Journal (Aargau Natural Science Society)

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Thank you and best regards from Lilian and Markus!