

A man with a beard and glasses, wearing a blue shirt and a watch, is looking intently at a piece of art. He is wearing a yellow glove on his right hand, which is touching the artwork. The background is a vibrant blue with a network of white and light blue dots connected by thin lines, suggesting a digital or scientific theme. The overall scene is a composite image used for a presentation or report.

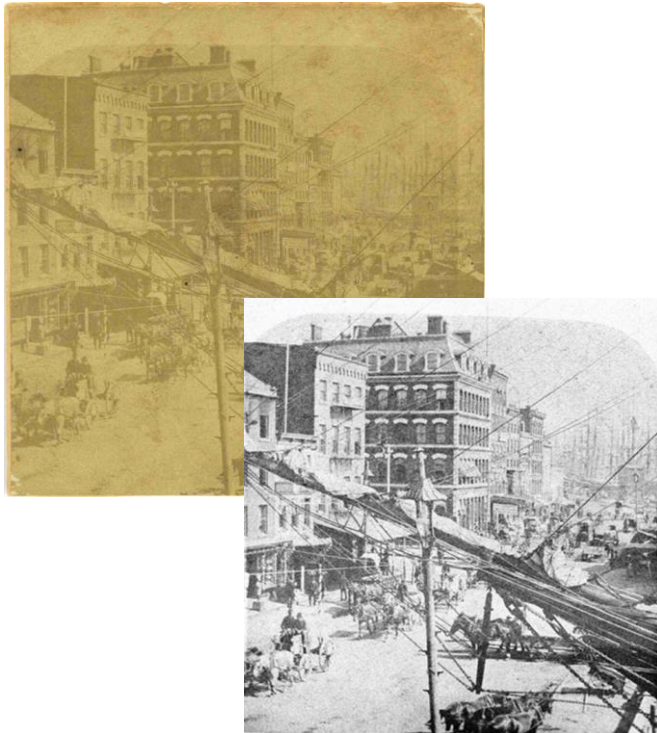
# XRF in Art – The wonder of elements

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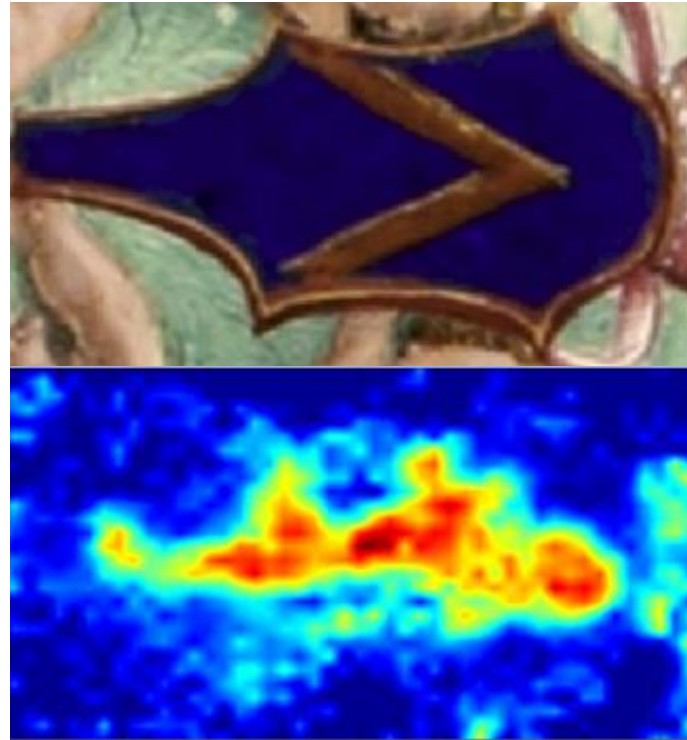
Alessandro Tocciho  
S&M Director  
Bruker Nano Analytics



# XRF in Art



Trace element sensitive



Information from depth in the sample

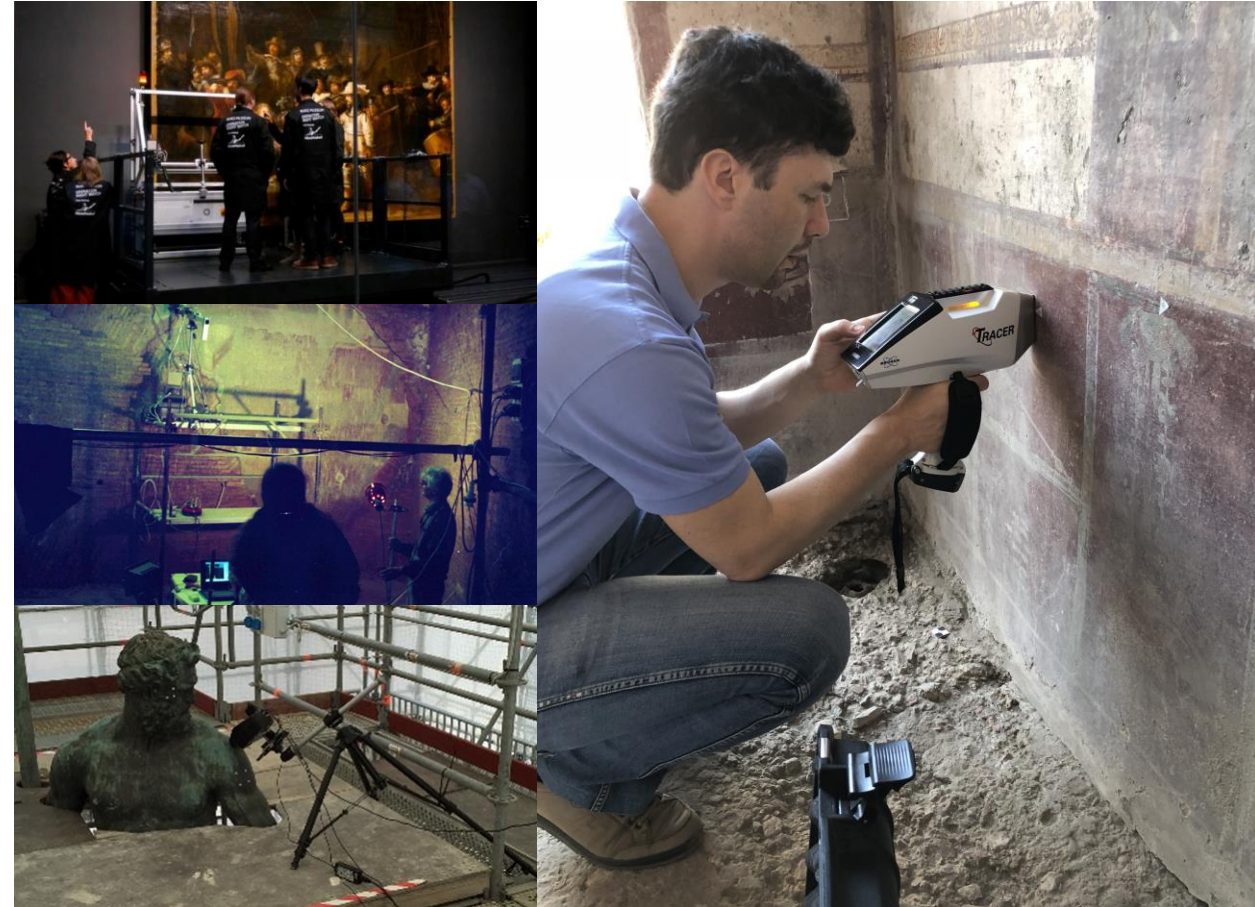


No sample preparation

# XRF in Art

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- XRF provides key information on objects:  
reliable, fast, and non-invasive
- But application needs are not always the same. They differ in crucial ways with respect to the **what**, the **where**, and the **how**.





# XRF, Art and Collections Management

Mapping



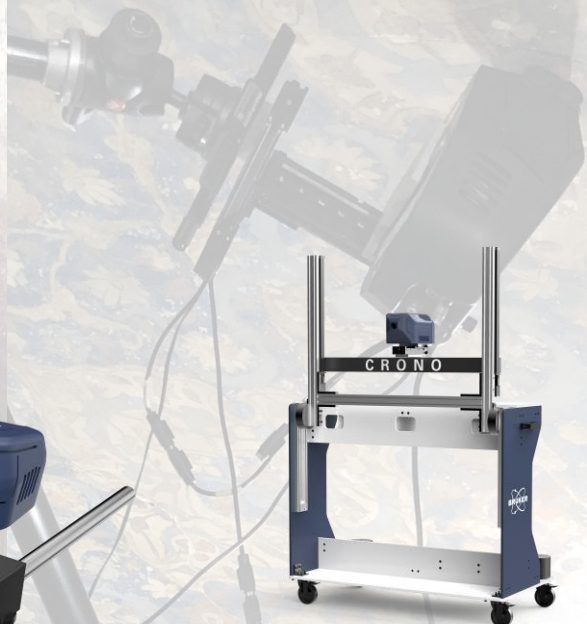
Spot



TRACER



ELIO



CRONO



M6  
JETSTREAM

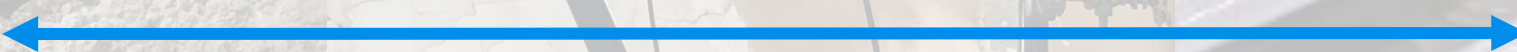


M4 TORNADO



SEM  
EDS-WDS- $\mu$ XRF

Portable

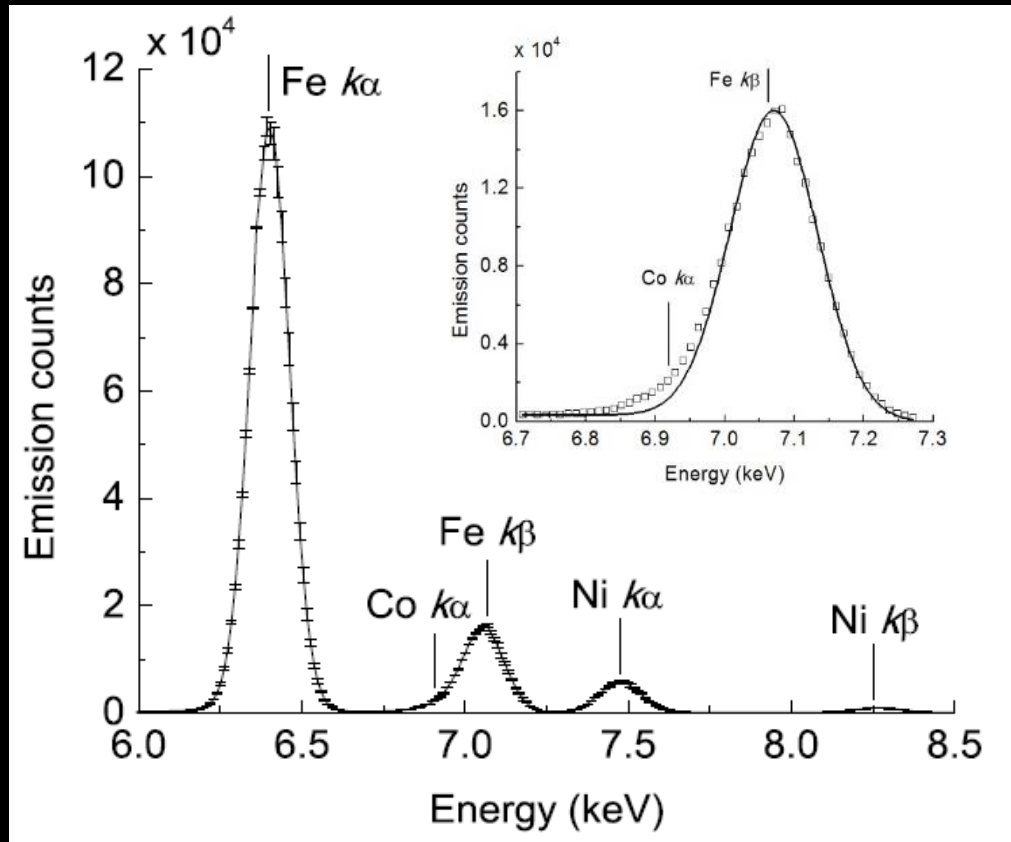


Lab based

# *ankhamun's iron dagger and its gold sheath*

*Cairo, Egypt*

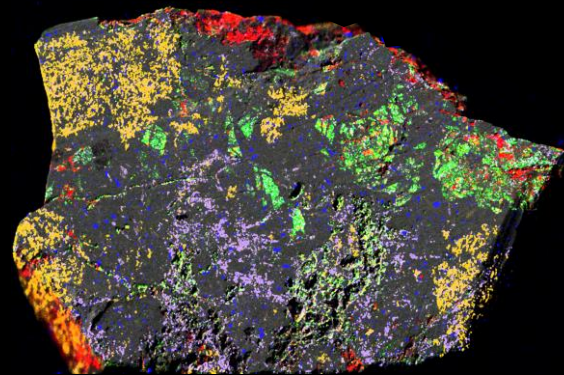
*Bruker ELIO*





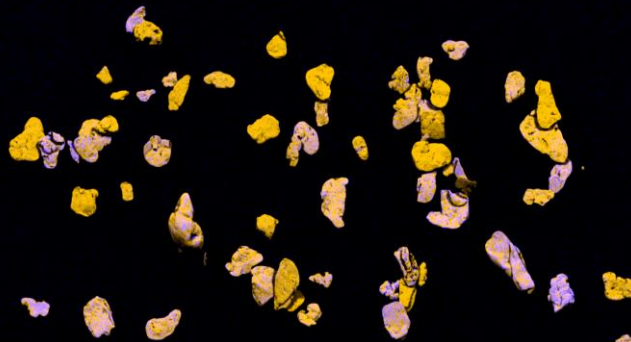
# Looking for electrum, Au-Ag alloy

*Electrum: in a rock*



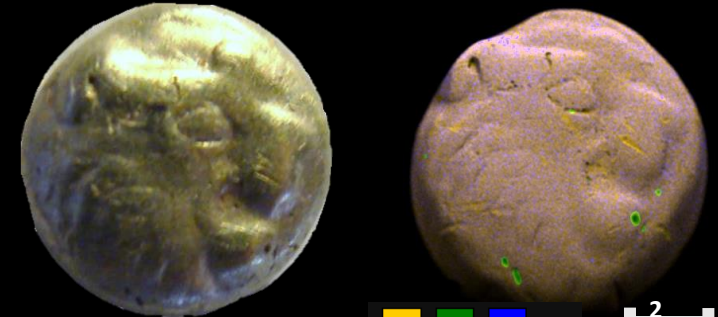
Ag Si K Ti Fe Au 20 mm

*Electrum: in river nuggets*



Au Ag 5 mm

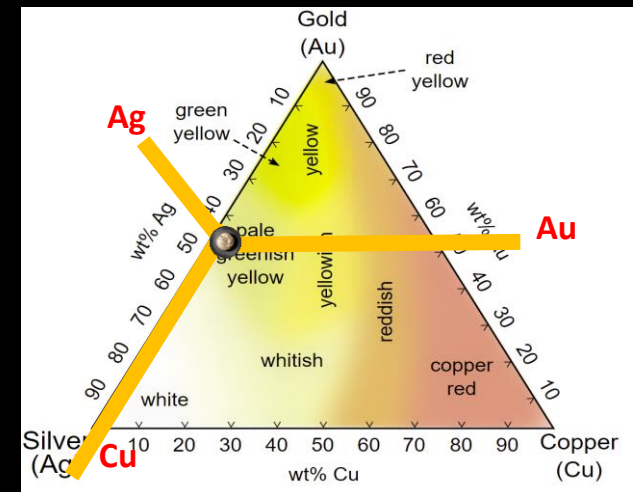
*Electrum: the first coins*



Au Ca Ag 2 mm

1/12<sup>th</sup> Stater, 1.16 g  
Lydia, Alyattes,  
610–561 BC

Au: 52.6 wt.%  
Ag: 45.7 wt.%  
Cu: 1.5 wt.%





*The Adoration of  
Saint Vincent panels  
Lisbon, Portugal*

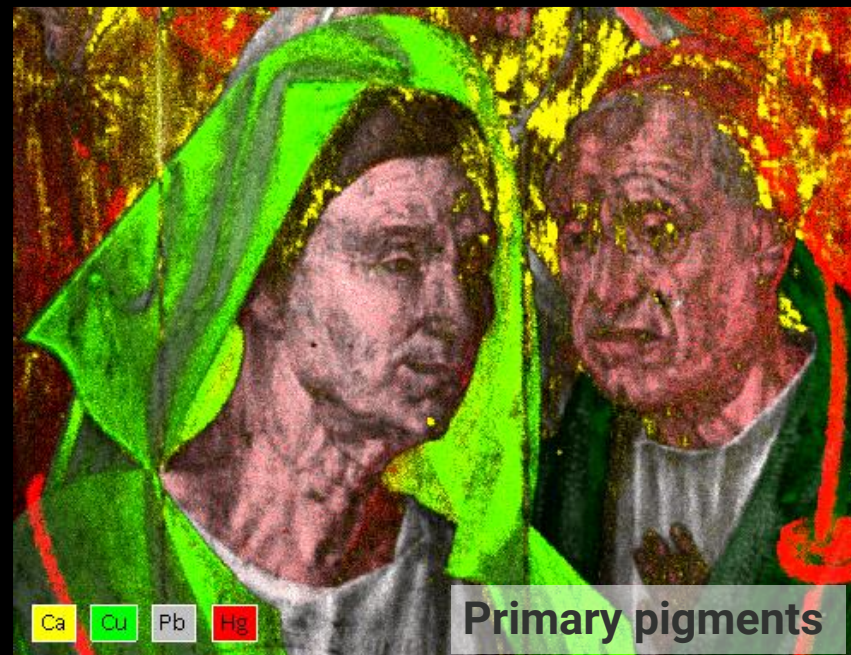
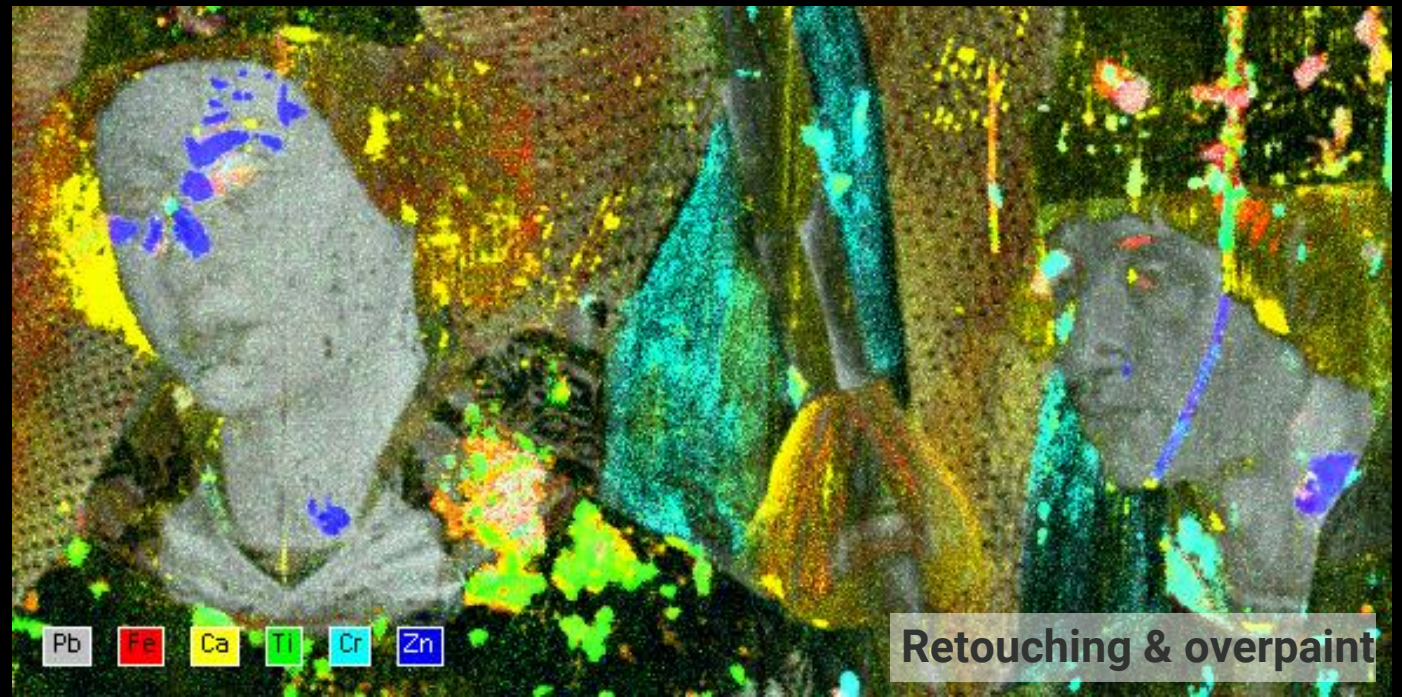
*Bruker CRONO*





# *The Adoration of Saint Vincent panels Lisbon, Portugal*

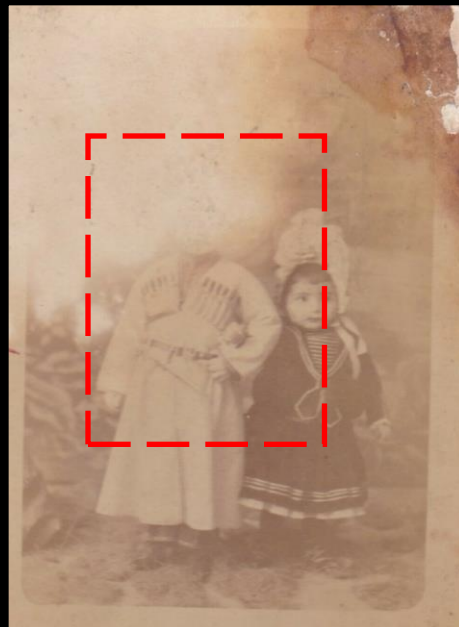
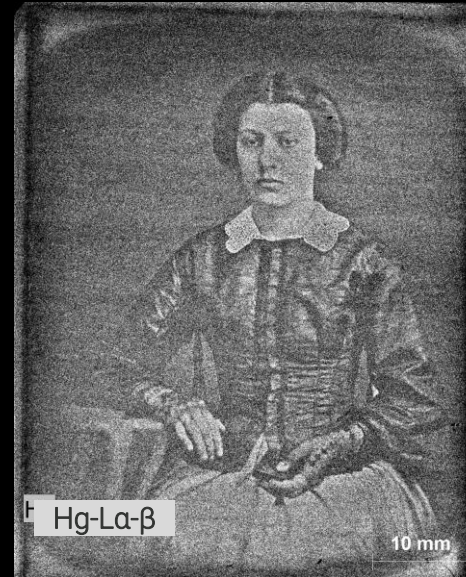
*Bruker CRONO*





*Daguerreotype  
and silver gelatin  
photographs  
reconstruction*

*Bruker M4*





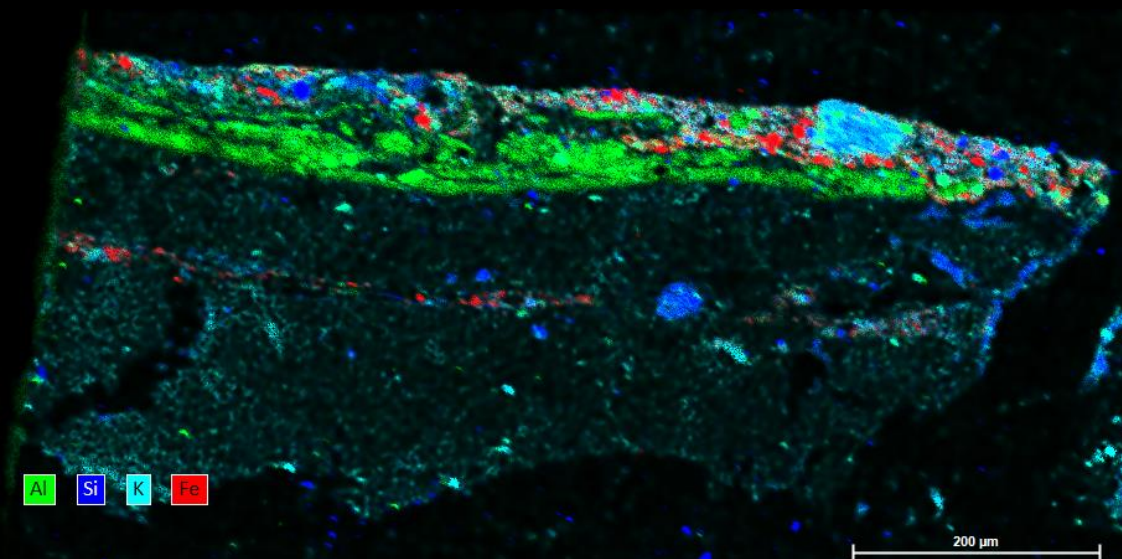
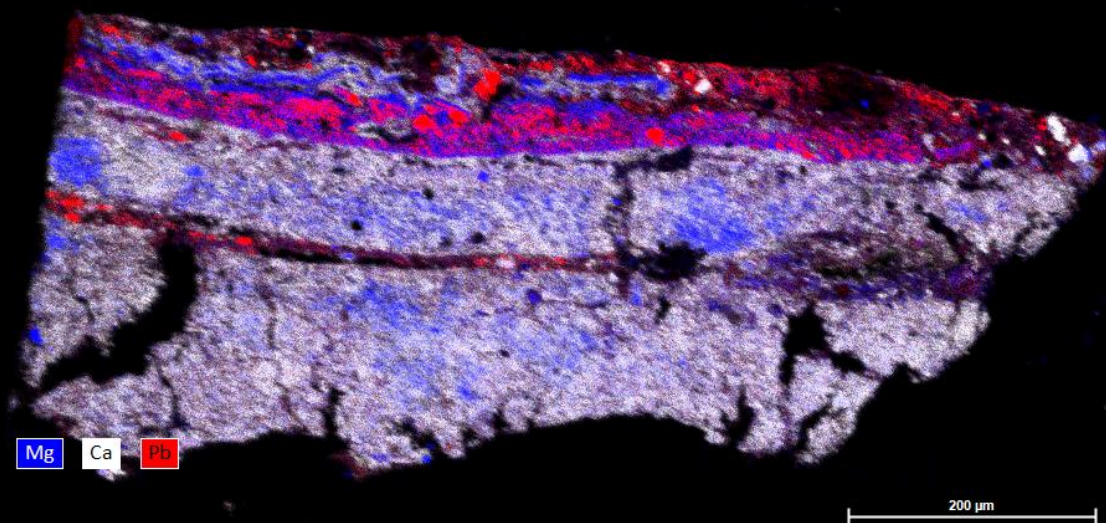
*Leonardo da Vinci  
Ultima cena (Last supper)*

*Milano – Cenacolo Vinciano*

*Bruker XFlash® Flatquad*



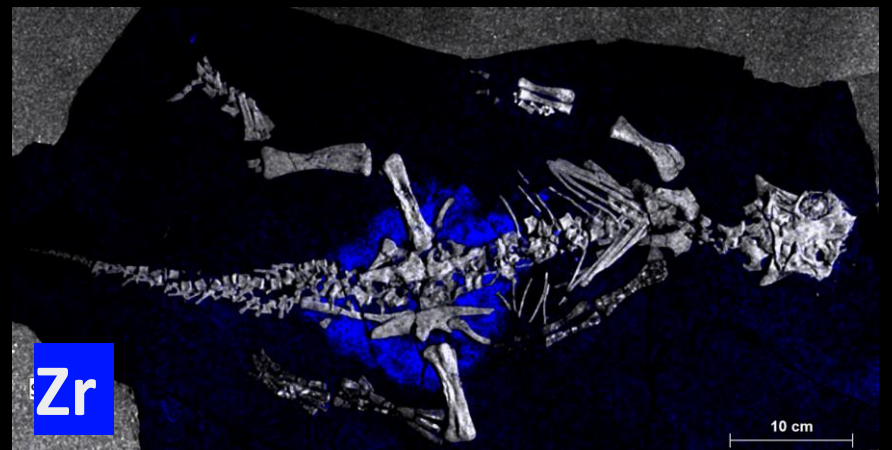
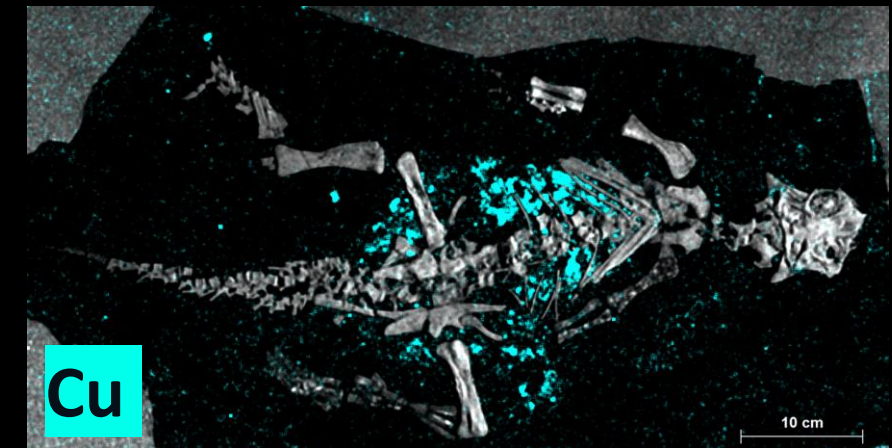
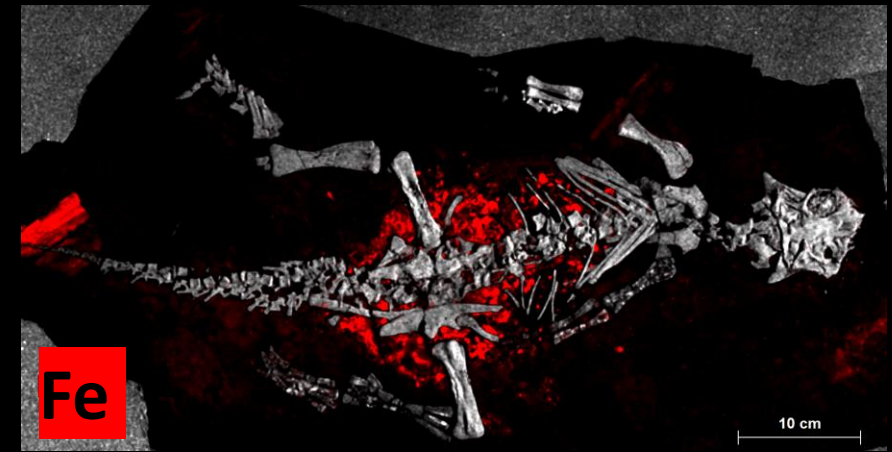
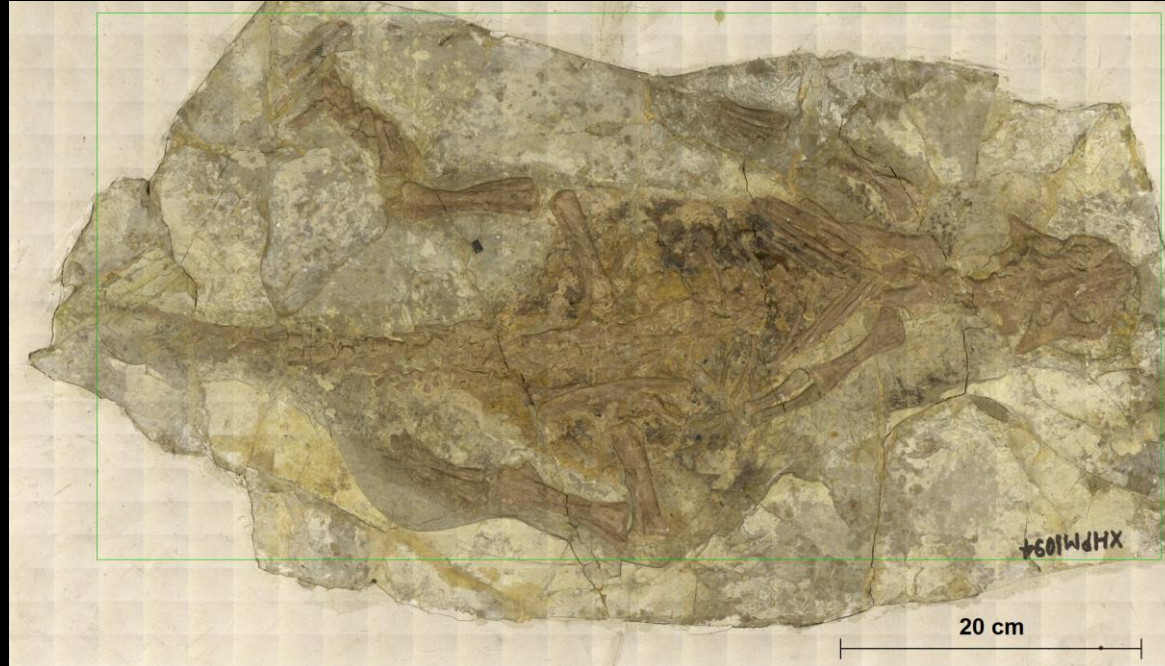
Image credit: The Museum of the Cenacolo Vinciano, Milano





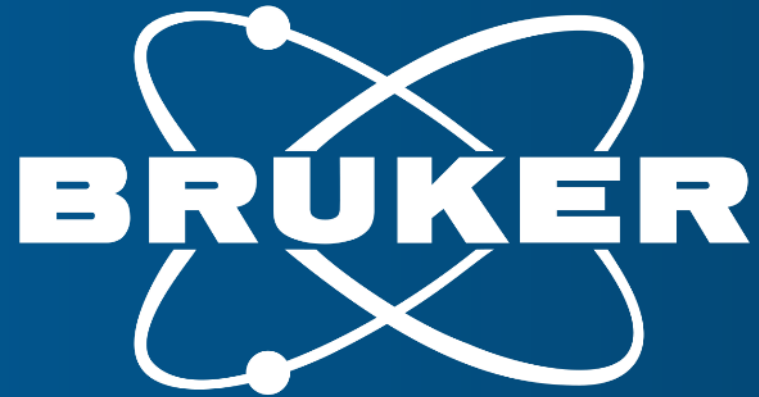
# *Psittacosaurus*

*Elements surrounding the fossil*





# Thank you!



Innovation with Integrity