



Università di Roma Tor Vergata

Dipartimento di Ingegneria Industriale



Investigation of wooden paintings by integrated spectroscopic and imaging techniques

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Analysis of a contemporary wooden painting

Analysis of a contemporary wooden painting



Combined use of spectroscopic and imaging techniques

Analysis of a contemporary wooden painting



Combined use of spectroscopic and imaging techniques



Structural investigation

Analysis of a contemporary wooden painting



Combined use of spectroscopic and imaging techniques



Structural
investigation

Paint layer
analysis

Analysis of a contemporary wooden painting



Combined use of spectroscopic and imaging techniques



Structural
investigation



Paint layer
analysis

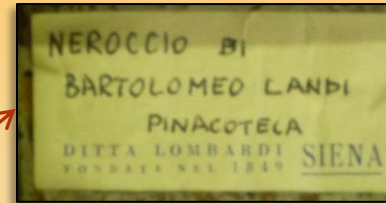


Compositional
data

Virgin and Child wooden painting



Copy

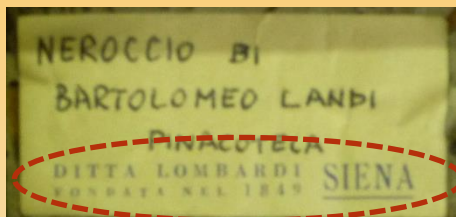


Rear side

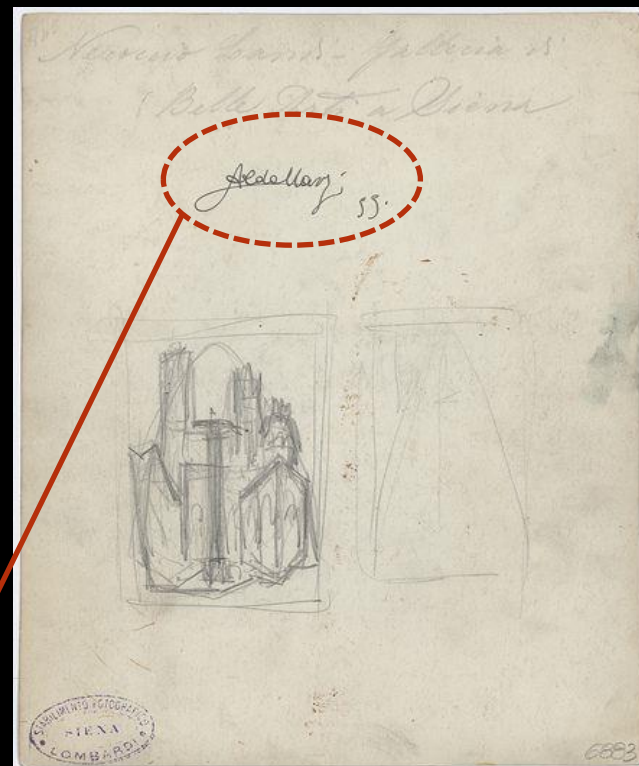


Triptych of Neroccio Di Bartolomeo De Landi, 1476, *Pinacoteca di Siena* .

Virgin and Child wooden painting

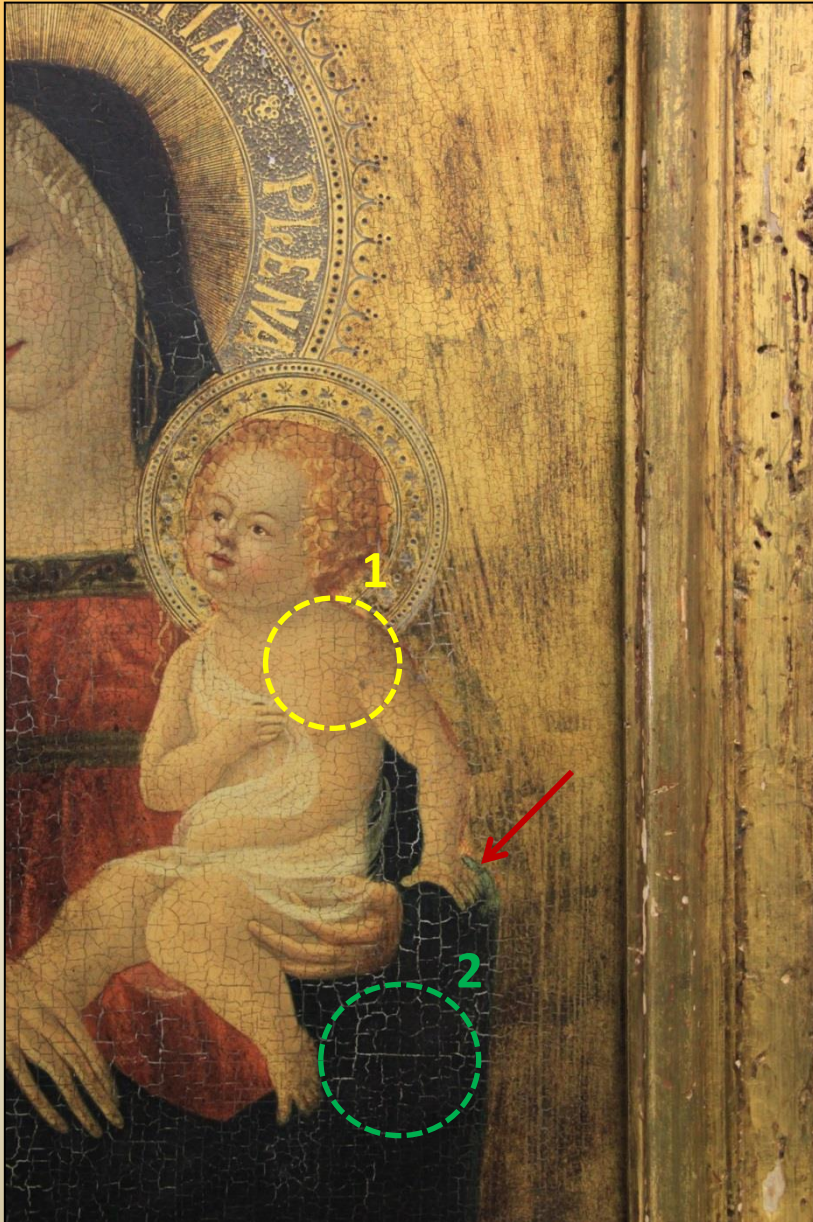


Photography



Rear side

Aldo Marzi, painter of the Siena copist school (XX century)



Conservation state

- Darkening of the paint layer
- Pentimenti
- *Craquelure*
(1. Natural /2. Artificial)

Techniques and methods

Techniques and methods

- Structural investigation



Infrared Thermography
(IRT)

Techniques and methods

- Structural investigation



Infrared Thermography
(IRT)

- Paint layer analysis



Multispectral Imaging

Techniques and methods

- Structural investigation → Infrared Thermography (IRT)
- Paint layer analysis → Multispectral Imaging
- Compositional data → X-Rays Fluorescence (XRF) and Laser Induced Fluorescence (LIF)

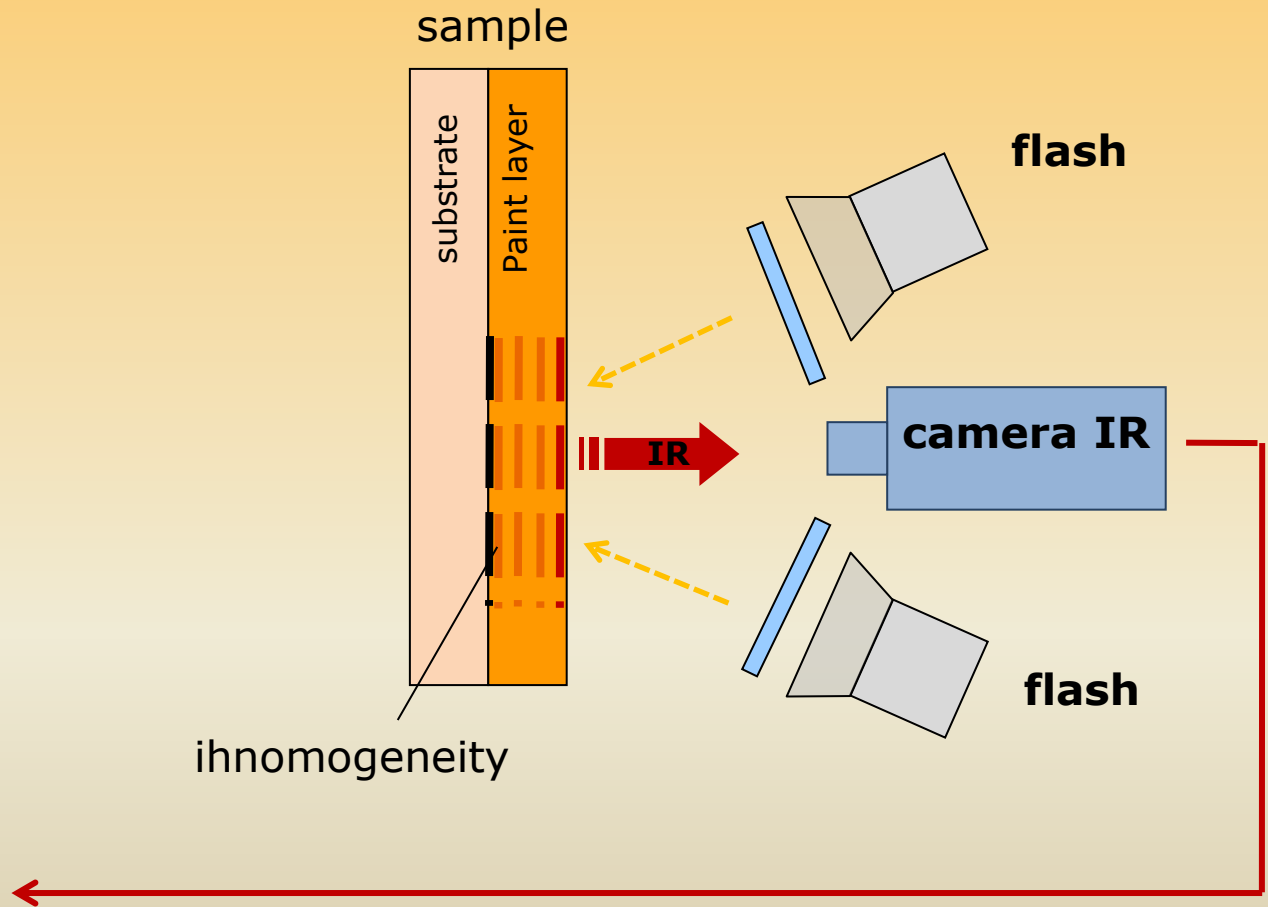
IRT



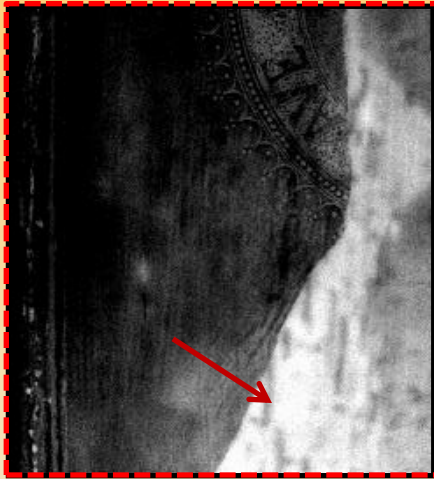
Photography



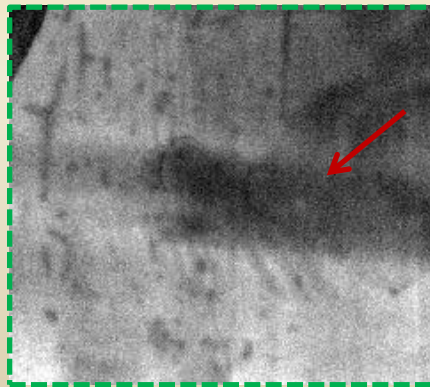
Thermogram



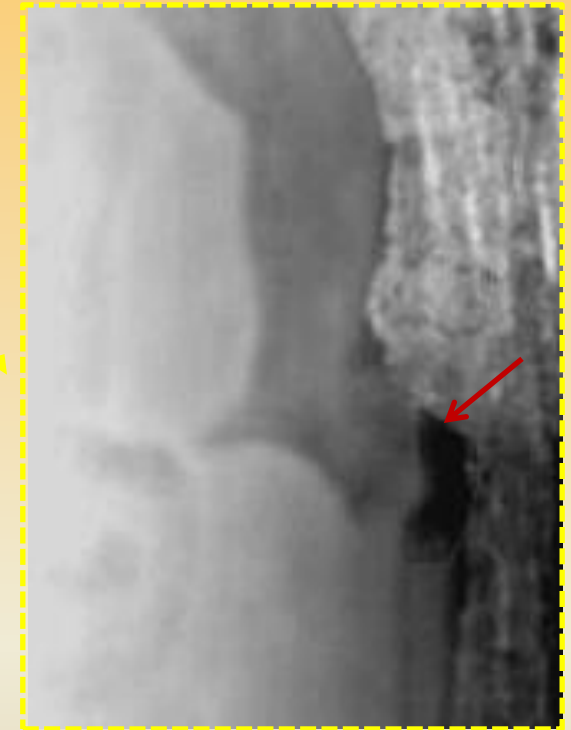
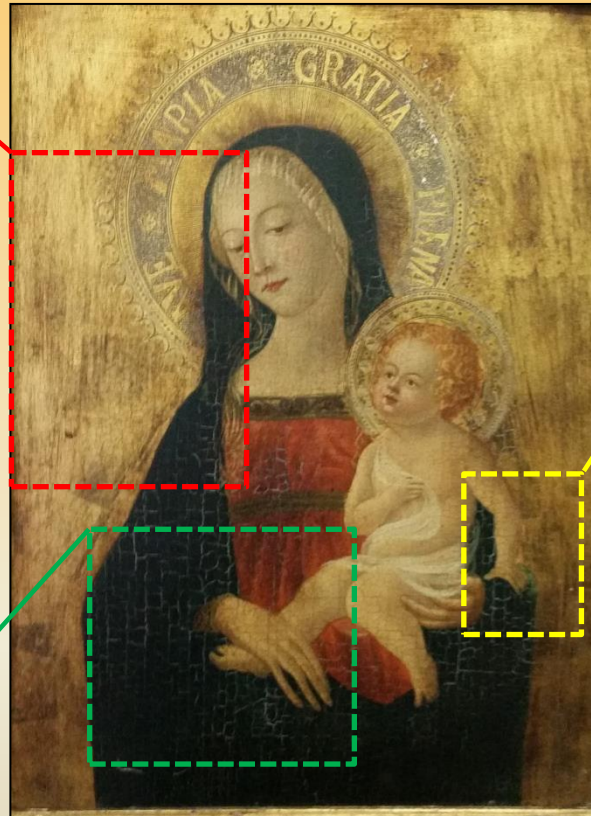
IRT



Woodworm attack



Inhomogeneity

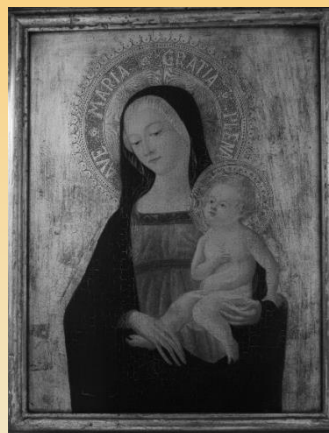


Pentimento

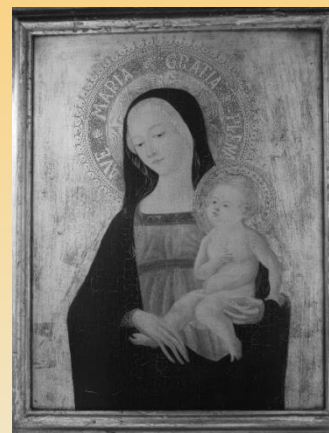
Multispectral Imaging



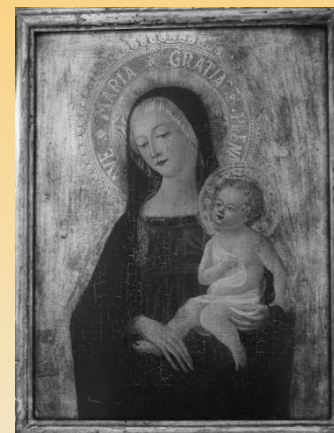
Spectral range 370-1700 nm



Without filter



370 nm (BP) filter



526 nm (BP) filter



830 nm (BP) filter

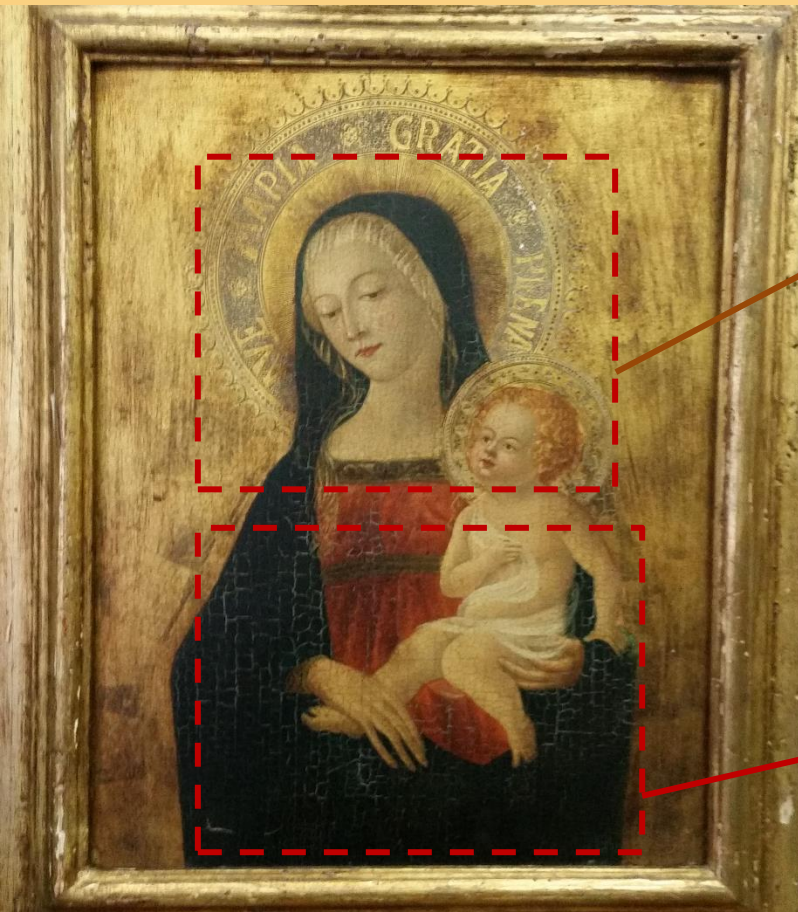


850 nm (LP) filter



1000 nm (LP) filter

Multispectral Imaging



900-1700 nm

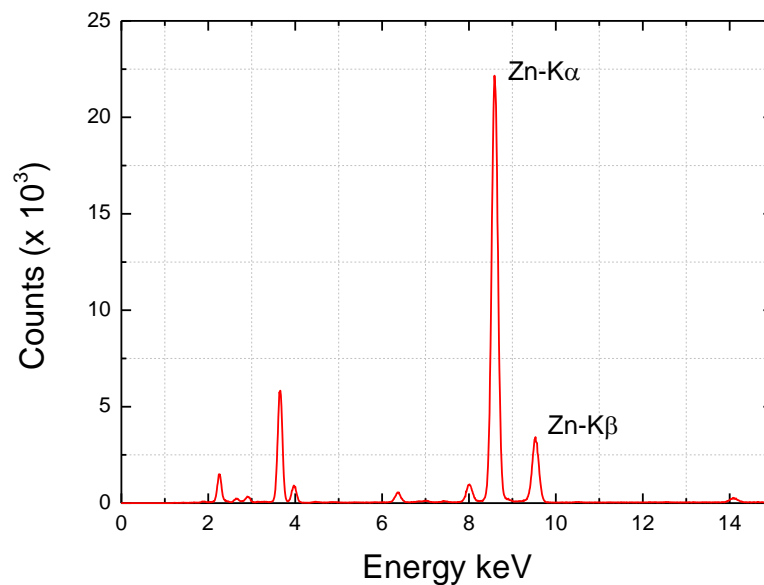
XRF



ELIO -X-Ray Spectrometer-XGLAB

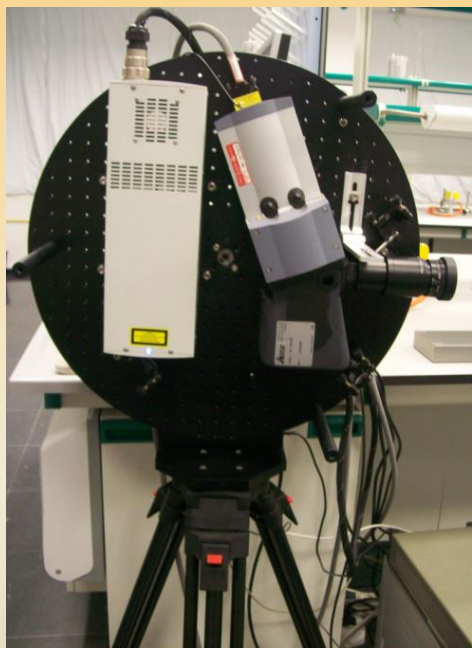
Zn present all over the
paint layer

Pigment	Chemical Elements	Identification
Dark Blue	Al, S, Cl, Fe	Ultramarine
Red	Ti, Mn, Fe,	Red Ochre
Complexion	Ti, Mn, Fe	Ochre and Titanium withe
White	Ti	Titanium White
Gilding	Fe, Cu	Purpurine
Hair	Ti, Fe	Yellow Ochre and Titanium White



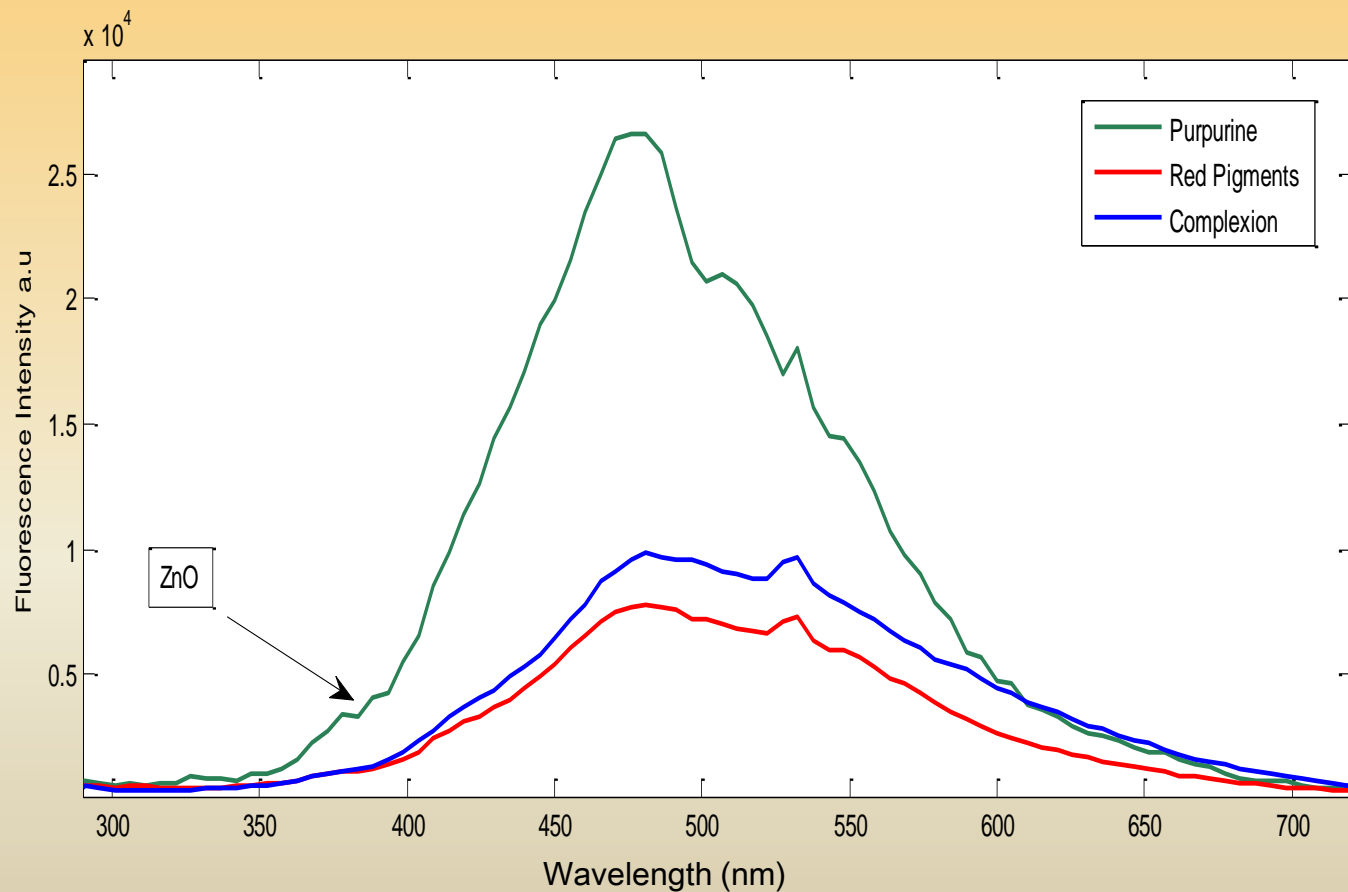


Centro Ricerche ENEA
Frascati; FSN-TECFIS-DIM



LIF line scanning
ENE A patent

LIF



Final comments

- Conservation state



- Woodworm damage
- Craquelure

Final comments

- Conservation state



- Woodworm damage
- Craquelure

- Artistic elements



- *Pentimenti*
- Original Aspect

Final comments

- Conservation state



- Woodworm damage
- Craquelure

- Artistic elements



- *Pentimenti*
- Original Aspect

- Compositional information



- Pigment identification
- Homogeneous presence of Zn
- Presence of Titanium white

Final comments

IRT

Multispectral
Imaging

XRF and LIF

Contemporary wooden painting

Thank you for the attention!