

ANALYTICAL RESULTS – OBJECT 3

PARTNER:	UNITO - CCR
TYPE OF WORK:	Mural (Object 3)
COUNTRY:	Italy
CITY:	Turin
ADDRESS:	Cso Valdocco corner Via Santa Chiara
OWNER / CUSTODIAN:	Municipality of Turin and State Archives
ARTIST:	Various
TITLE OF THE WORK:	Memorial Thyssen victims' tragedies
YEAR OF EXECUTION:	2008
MATERIALS:	Spray painting on plaster

SAMPLING POINTS LOCATION



TABLE OF ANALYTICAL RESULTS

	Name of the sample	Original materials	No original materials	Pigments / dyes		Organic binders		Type of support*		Other**	
				Identification methods	Results	Identification methods	Results	Identification methods	Results	Identification methods	Results
1	Black paint layer	x		ATR-FTIR	Calcite, kaolin	ATR-FTIR Py-GC/MS	Styrene-acrylic			Py-GC/MS	VA/VeoVa (Protective coating)
2*	Grey paint layer	x		ATR-FTIR XRF SEM-EDS	Kaolin, Ti white	ATR-FTIR	Alkyd-nitro				
*	Cross section										
3	Light yellow paint layer	x		ATR-FTIR XRF	Talc, PY74, Ti white	ATR-FTIR	Alkyd-nitro				
4	Red paint layer	x		ATR-FTIR	Calcite, kaolin	ATR-FTIR Py-GC/MS	Styrene-acrylic			Py-GC/MS	VA/VeoVa (Protective coating)
5	Orange paint layer	x		ATR-FTIR XRF	PO36, Kaolin, Ti white	ATR-FTIR Py-GC/MS	Alkyd-nitro			Py-GC/MS	VA/VeoVa (Protective coating)
6*	Light grey paint layer	x		ATR-FTIR XRF SEM-EDS	Kaolin, Ti white	ATR-FTIR	Alkyd-nitro			ATR-FTIR	Oxalates
*	Cross section										
7	Light yellow paint layer	x		ATR-FTIR XRF	Kaolin, calcite, Ti white	ATR-FTIR	Possibly* styrene-acrylic			ATR-FTIR	Oxalates

8*	White paint layer	x		ATR-FTIR XRF SEM-EDS	Kaolin, calcite, Ti white	ATR-FTIR	Possibly* styrene-acrylic			ATR-FTIR	Oxalates
*	Cross section										
9	Light yellow paint layer	x		ATR-FTIR XRF	Silicates, Ti white	ATR-FTIR	Alkyd-nitro				
10	Light grey paint	x		ATR-FTIR XRF	Calcite, silicates, Ti white	undetected	undetected				
11*	Red paint layer	x		ATR-FTIR XRF SEM-EDS	Possibly PR48 or PV 19, kaolin, Ti white	ATR-FTIR Py-GC/MS	Alkyd-nitro (main) styrene-acrylic (secondary or interference)				VA/VeoVa (Protective coating)
*	Cross section										
12	Black paint layer	x		ATR-FTIR XRF	Silicates, Ti white	ATR-FTIR	Alkyd-nitro			ATR-FTIR	Oxalates
13	Grey paint layer	x		ATR-FTIR XRF	Silicates, Ti white	ATR-FTIR	Alkyd-nitro			ATR-FTIR	Oxalates
14*	Support	x		ATR-FTIR SEM-EDS	Calcite, silicates					SEM-EDS	Ti White (finishing layer)
*	Cross section										
15	Light yellow paint layer	x		ATR-FTIR	undetected	ATR-FTIR	Acrylic and nitrocellulose				
16	Red paint layer	x		ATR-FTIR	Calcite, silicates, trace of gypsum	ATR-FTIR	Acrylic				

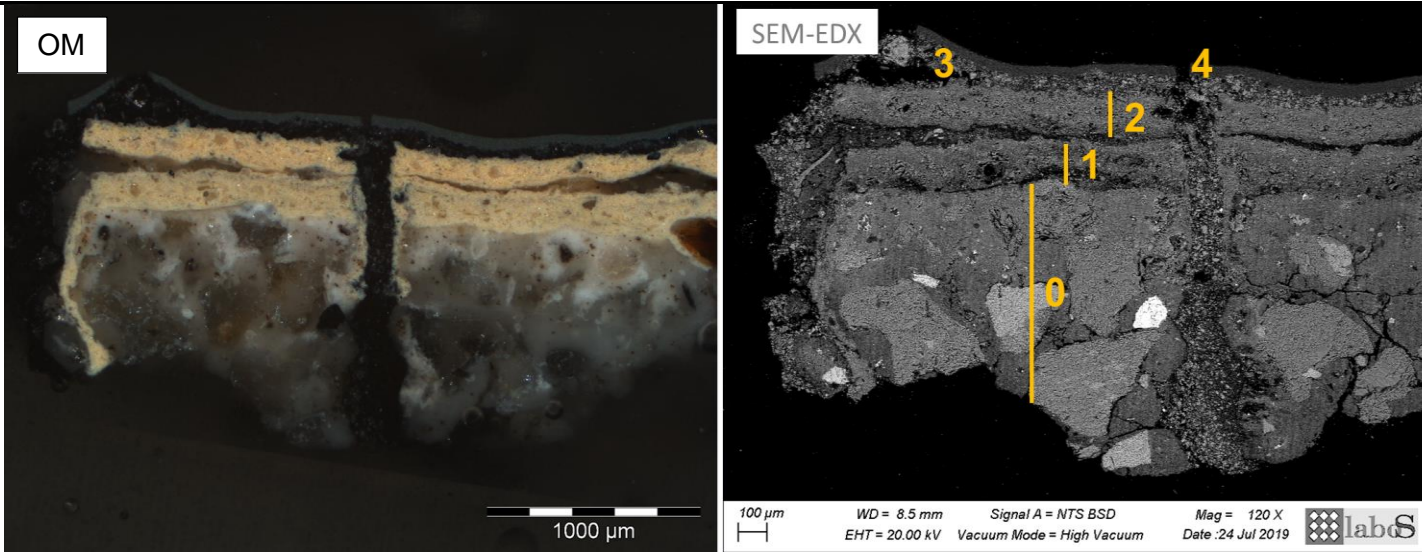
17	Red paint layer	x		SEM-EDS	Bismuth yellow, silicates						
*	Cross section										
18	Light yellow paint layer	x		ATR-FTIR	Quartz, calcite	ATR-FTIR	Acrylic				

* mortars, stone, metal ect.

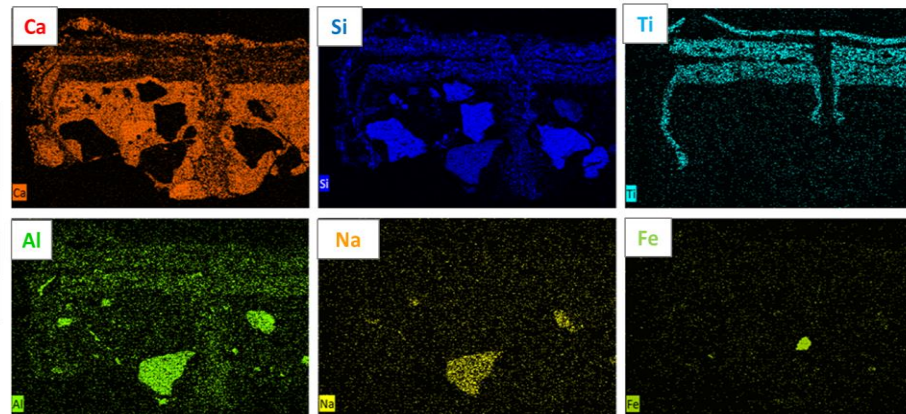
** Additional research or analyzes, for example: aging tests, colorimetry, pH...

STRATIGRAPHY OF THE MICROSAMPLES

Sample n°: OBJ3_2

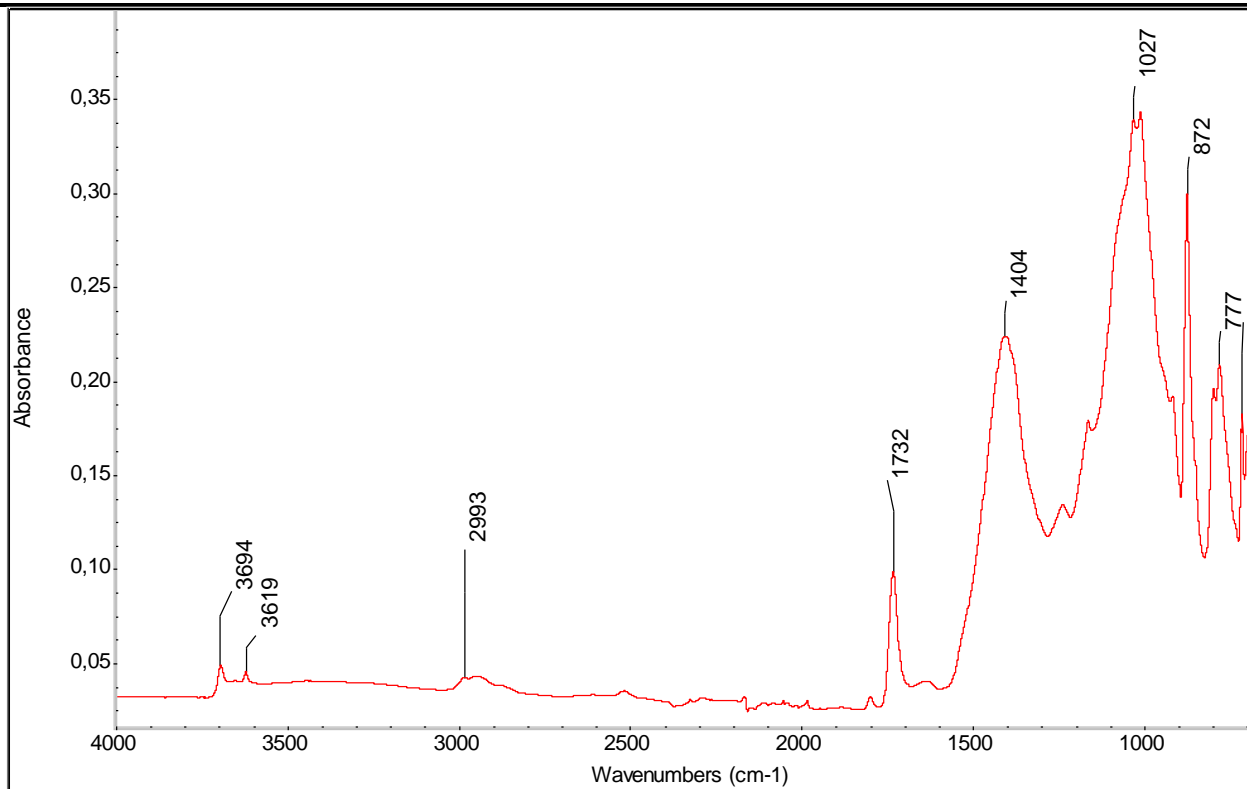


0 – support	Carbonates + and Na, Al, Mg silicate inclusions
1, 2 – yellow	Si, Ti, Ca, (K)
3 – black	Si, Ca, (K), (Mg)
4 – grey	Ti, Si, Ca, Al, Fe



FOURIER-TRANSFORM INFRARED SPECTROSCOPY (FTIR)

Sample n°: OBJ 3_1



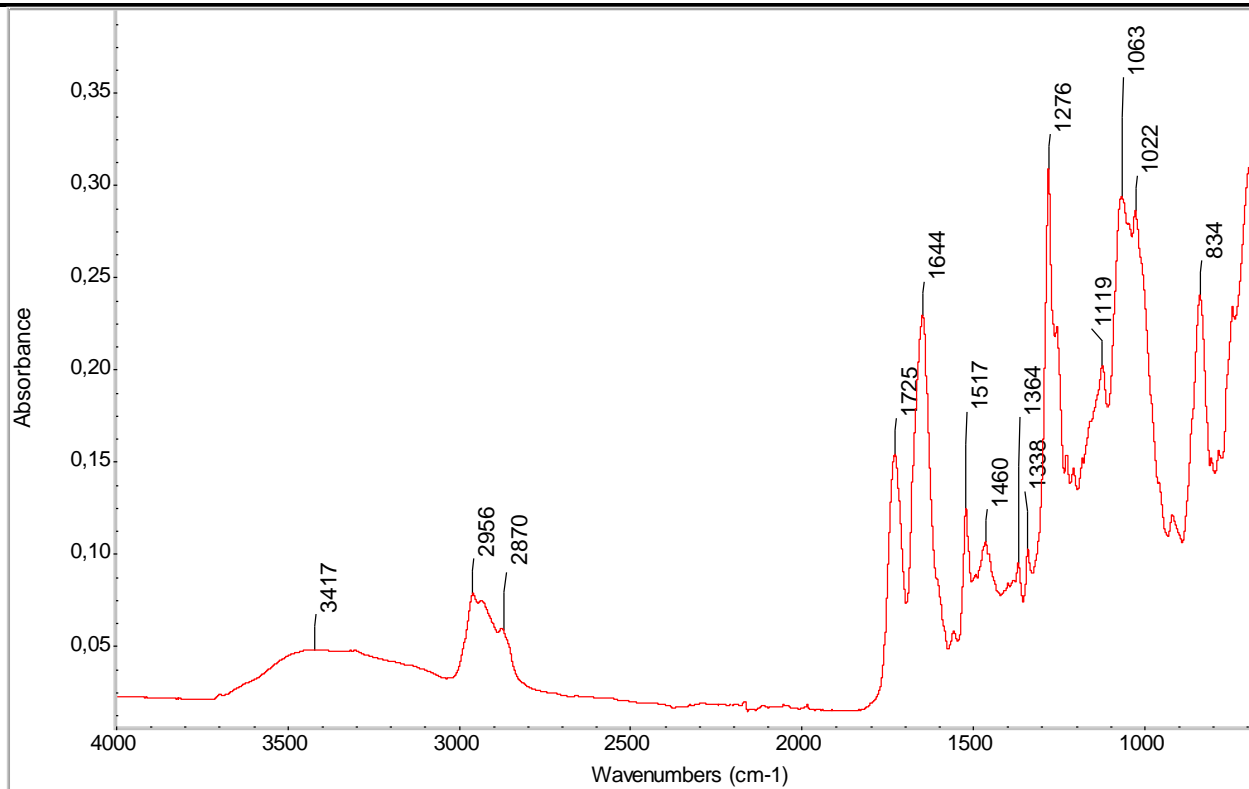
ASSIGNMENTS:

Acrylic: 2993 cm⁻¹, 2952 cm⁻¹, 2874 cm⁻¹,
 1732 cm⁻¹, 1240 cm⁻¹, 1161 cm⁻¹, 1067 cm⁻¹,
 989 cm⁻¹

Calcite: 1796 cm⁻¹, 1404 cm⁻¹, 877 cm⁻¹, 712
 cm⁻¹

Kaolin: 3694 cm⁻¹, 3619 cm⁻¹, 1113
 cm⁻¹, 1027 cm⁻¹, 1012 cm⁻¹, 701 cm⁻¹

Sample n°: OBJ 3_3



ASSIGNMENTS:

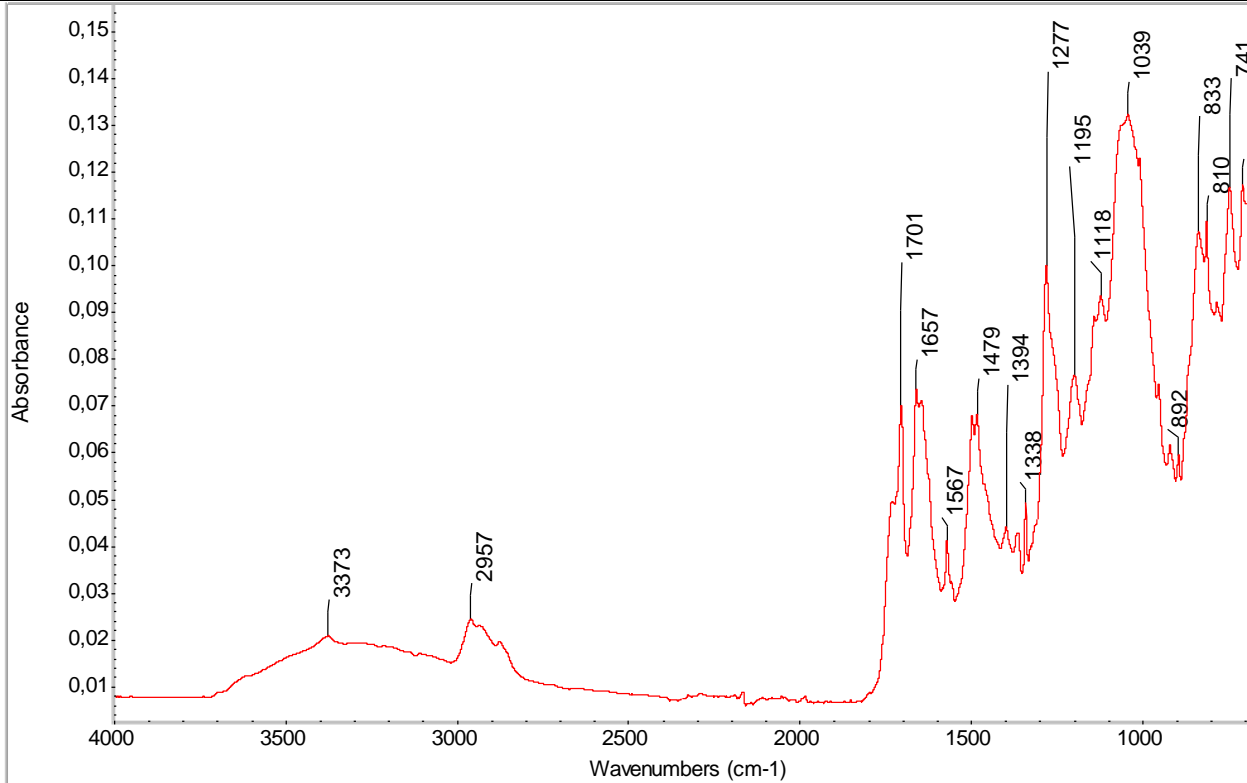
Alkyd: 2957 cm⁻¹, 2870 cm⁻¹, 1725 cm⁻¹, 1465 cm⁻¹, 1260 cm⁻¹, 1116 cm⁻¹, 1065 cm⁻¹, 742 cm⁻¹

Nitrocellulose: 1657 cm⁻¹, 1276 cm⁻¹, 1065 cm⁻¹, 893 cm⁻¹

Talc: 1022 cm⁻¹

Titanium white: < 600 cm⁻¹

Sample n°: OBJ 3_5



ASSIGNMENTS:

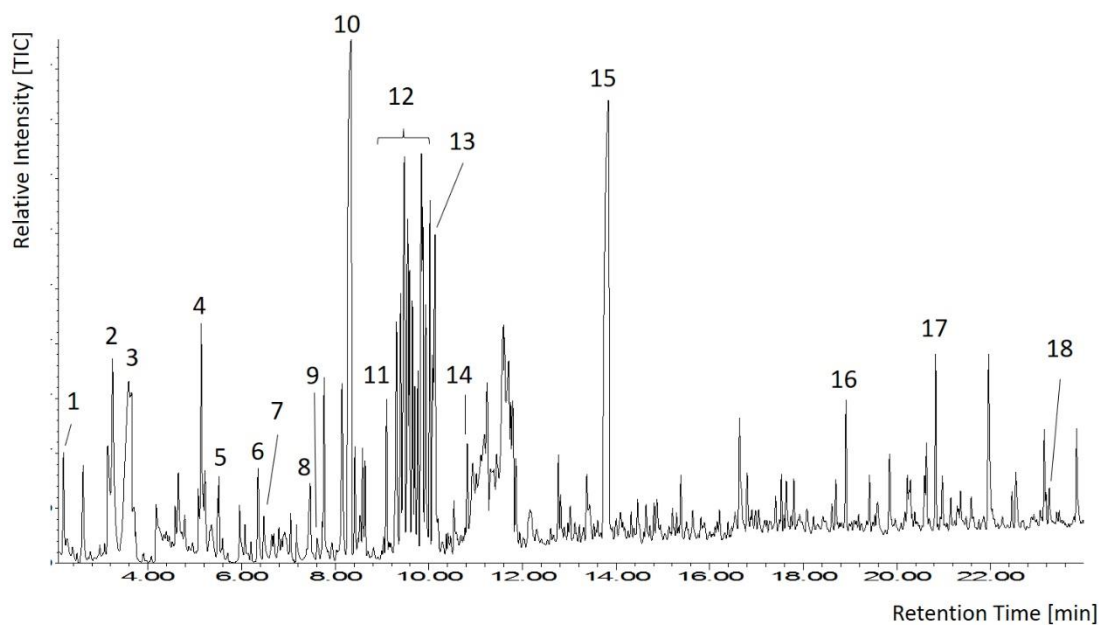
Alkyd: 2957 cm⁻¹, 2870 cm⁻¹, 1725 cm⁻¹, 1492 cm⁻¹, 1465 cm⁻¹, 1260 cm⁻¹, 1116 cm⁻¹, 1065 cm⁻¹, 742 cm⁻¹, 702 cm⁻¹

Nitrocellulose: 1657 cm⁻¹, 1276 cm⁻¹, 1065 cm⁻¹, 893 cm⁻¹

Kaolin: 3676 cm⁻¹, 1113 cm⁻¹, 1027 cm⁻¹, 1012 cm⁻¹, 802 cm⁻¹, 701 cm⁻¹

PYROLYSIS-GAS CHROMATOGRAPHY/MASS SPECTROMETRY

Sample n°: OBJ 3-5



Peak N.	Assignment	Rt (min)
1	benzene	2.2
2	toluene	3.2
3	acetic acid	3.6
4	styrene	5.1
5	1,3-dimethoxy-2-propanol	5.5
6	benzaldehyde	6.4
7	2,2-dimethoxy-1,3-propandiol	6.5
8	2-ethyl-1-hexanol	7.5
9	unidentified branched acid, methyl ester	8.3
10	benzoic acid, methyl ester	8.6
11	1,3-dimethoxy-2,2-bis(methoxymethyl)-propane	9.1
12	vinyl versatates	9.2-10.1
13	3-methoxy-2,2-bis(methoxymethyl)-propanol	10.1
14	hexandioic acid, dimethyl ester	10.8
15	dimethyl phthalate	13.8
16	hexadecanoic acid, methyl ester	18.9
17	octadecanoic acid, methyl ester	20.8
18	hexandioic acid, bis(2-methylheptyl) ester or diisooctyl adipate	23.2

This document was produced within the project ***Conservation of Art in Public Spaces (CAPuS)***.

Authors:

Moira Bertasa, Tommaso Poli, Chiara Riedo, Dominique Scalarone (University of Torino)

Paola Croveri, Chiara Ricci (Fondazione Centro Conservazione e Restauro “La Venaria Reale”)



**Education, Audiovisual and
Culture Executive Agency**
Erasmus+: Higher Education-Knowledge
Alliances, Bologna Support, Jean Monnet

CAPuS project has received funding from the
European Commission, Programme Erasmus+
Knowledge Alliances 2017, Project N°
588082-EPP-A-2017-1-IT-EPPKA2-KA

The European Commission's support for the production of this publication does not constitute an endorsement of the contents, which reflect the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.