

<b>NUMBER OF PARTNER:</b>	P3 Cesmar7, P4 An.t.a.res srl Unipersonale
<b>TYPE OF WORK:</b>	Mural painting
<b>COUNTRY:</b>	Italy
<b>CITY:</b>	Milan
<b>ADDRESS:</b>	Via Ettore Majorana/Via Graziano Imperatore
<b>OWNER / CUSTODIAN:</b>	Municipality of Milan
<b>ARTIST:</b>	VolksWriterz
<b>TITLE OF THE WORK:</b>	Niguarda Antifascista
<b>YEAR OF EXECUTION:</b>	2014
<b>MATERIALS:</b>	housepaint and spray

	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	1	X		$\mu$ - Raman on the cross-section sample	Calcite and Rutile are ubiquitous, pigments not yet fully identified			-		Stereomicroscopy	
2	2		X?								
3	3		X			FTIR-ATR	Poly vinyl acetate,				

							Calcite			
			X			Py-GC/MS	PVAc- VeOVA  Styrene Acrylic resin  Organic pigments			
4	4		X							
5	5		X							
6	6	X		$\mu$ - Raman Spectroscopy on the cross- section sample	Naphtol AS (PR22) or family (es. PR8, PR18)	FTIR-ATR	Alkyd resin			
						Py-GC/MS	Alkyd resin  (organic pigments and styrene resin)			

\* mortars, stone, metal ect.

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



Sample 1 was collected from a black area painted by brush (**fig.1-2**) completely detached (scaling).

The study of the sample has shown the following structure and composition:

- a)** Concrete based plaster support, thickness > 1 cm, at low quality (full of glass and rust fragments) containing crystalline silica mineral Quartz;
- b)** Yellow ground layer at irregular thickness, 300 µm max thick, containing Calcite, Rutile and probably PY74 acetoacetic arylide;
- c)** White paint layer (prime coating) with the same composition of layer *b*, irregular feature, average thickness of 50 µm;
- d)** Black paint layer at regular feature, average thickness of 70 µm, the black pigment has not yet been identified.

Sample 2 was collected from a white area painted by brush (**fig.1**) completely detached (scaling).

The study of the sample has shown the following structure (**fig.3**):

- a)** Concrete based plaster support, thickness > 1 cm, at low quality (full of glass, rust fragments, insect nest);
- b)** White paint layer, irregular thickness, 230 µm thick;
- c)** (Thin red paint layer, discontinuous, only sometimes);
- d)** White continuous paint layer, average thickness of 180 µm;
- e)** White paint layer, average thickness of 140 µm, it seems a not original paint color.

Sample 3 was collected from a deteriorated red area painted by brush (**fig.1**); it is not original.

The sample has shown the presence of a poly vinyl acetate resin, Calcite and the following structure (**fig.4**):

- a)** Red and glossy chip, about 100 µm thick;
- b)** Thin whitish patina, irregular feature

This sample has been addressed to Py-GC-MS.

Sample 4 was collected from a biodeteriorated red area painted by brush (**fig.1**); it is not original.

The sample is similar to sample 3 with dark bio patina (**fig.5**).

Sample 5 was collected from a white area painted by brush (**fig.1**) completely detached (scaling).

The study of the sample has shown the following structure (**fig.6-7**):

- a)** Concrete based plaster support, thickness > 1 cm, at low quality;
- b)** Yellow ground layer at irregular thickness, 315 µm max thick;
- c)** White paint layer (prime coating);
- d)** Thin white paint layer, irregular thickness, 30-45 µm thick;
- e)** Thin white paint layer, irregular thickness, 30-45 µm thick, realized after the *d*) layer.

Additional layers have been observed in a portion of the sample without the *c*) primer, likely due to a vandalism:

- b1)** Red ground layer, irregular feature, 120-187 µm thick;
- b2)** Thick black paint layer (130-150 µm up to 193 µm), irregular feature, due a graffito (swastika).

Sample 6 was collected from a red area painted by brush (**fig.1**) detached and a bit faded.

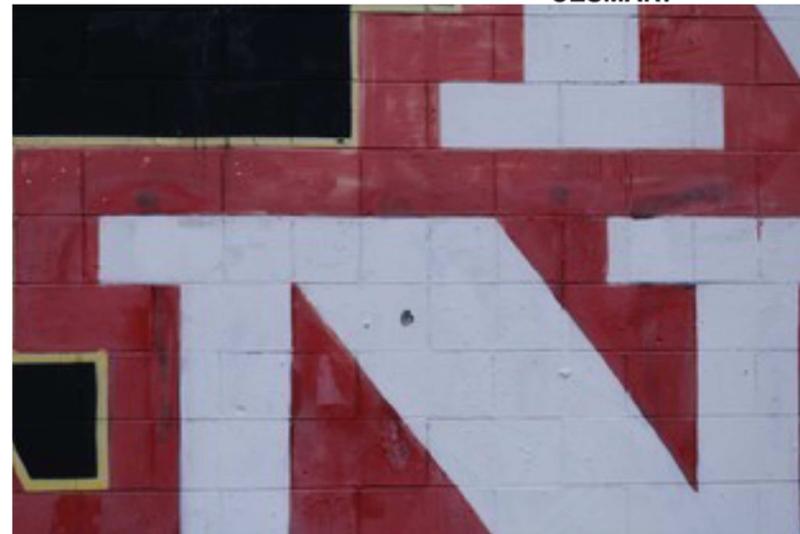
The study of the sample has shown the following structure (**fig 8-10**):

- a)** Concrete based plaster support;
- b)** Very thin (4-7  $\mu\text{m}$ ) magenta paint layer, irregular, it is probably the original outline of the letter before painting;
- c)** Yellow ground layer, continuous, irregular thickness, from 150 to 400  $\mu\text{m}$  thick;
- d)** White paint layer (prime coating), up to 300  $\mu\text{m}$  thick;
- e)** Red paint layer, about 70  $\mu\text{m}$  thick, continuous, containing alkyd resin with Calcite, likely silicates and pigment as Naphtol AS (PR22) or family (es. PR8, PR18). Whitish patina has been observed on the top the micro-sample. This paint layer has been addressed to Py-GC-MS.

Sample	Color	Yellow ground layer	Red Primer	White Primer	Binder
1	Black	YES	NO	YES	
2	White (not original)	NO	NO	YES	
3	Red (not original, altered)	-		-	Poly vinyl acetate
4	Red (not original, altered)	.		-	
5	White (not original)	YES	YES	YES	-
6	Red (altered)	YES	NO	YES	Alkydic



“Niguarda Antifascista” – sample 1



“Niguarda Antifascista” – sample 2



Niguarda Antifascista” – sample 3



Niguarda Antifascista” – sample 4



“Niguarda Antifascista” – sample 5



“Niguarda Antifascista” – sample 6

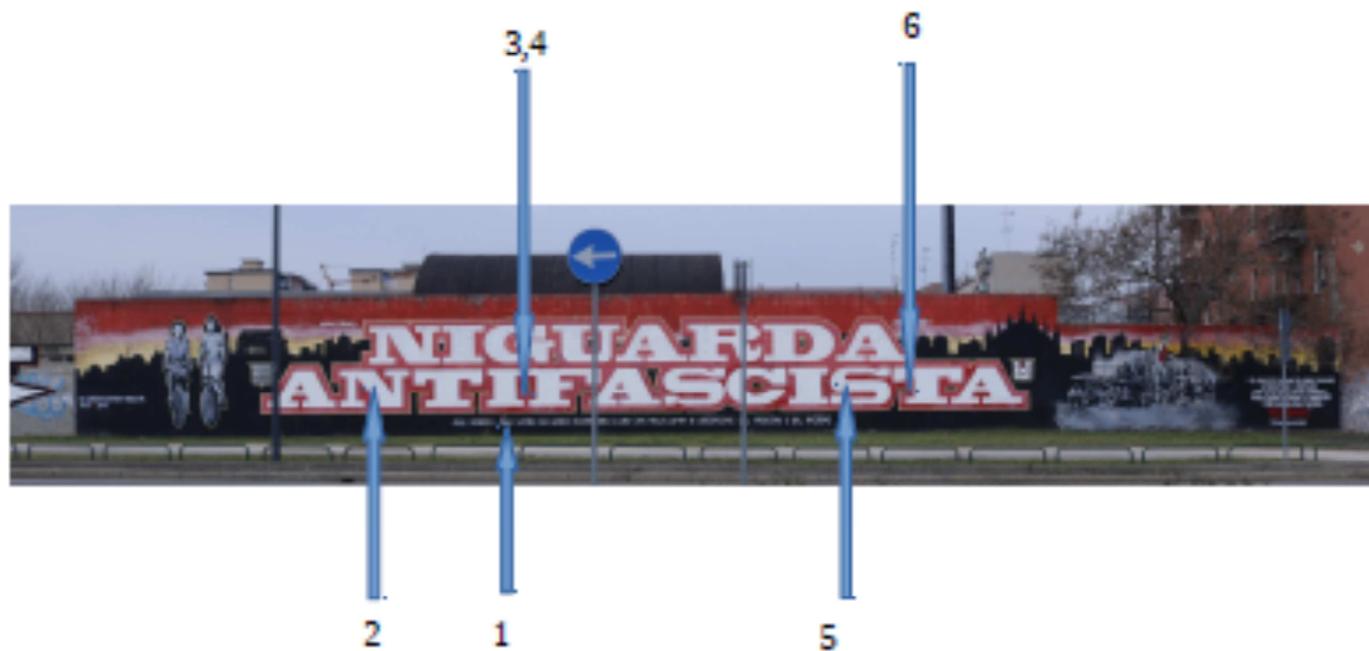
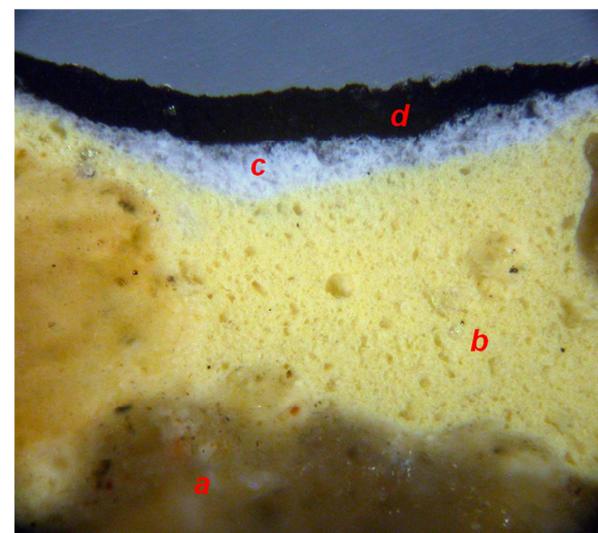
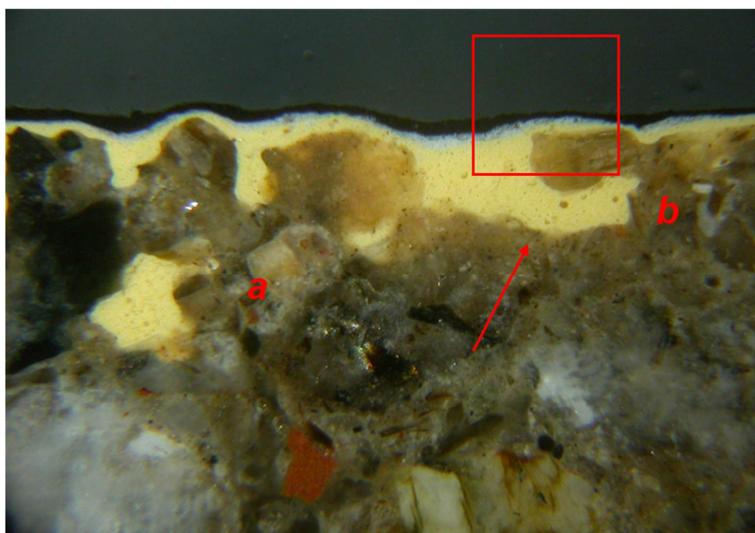
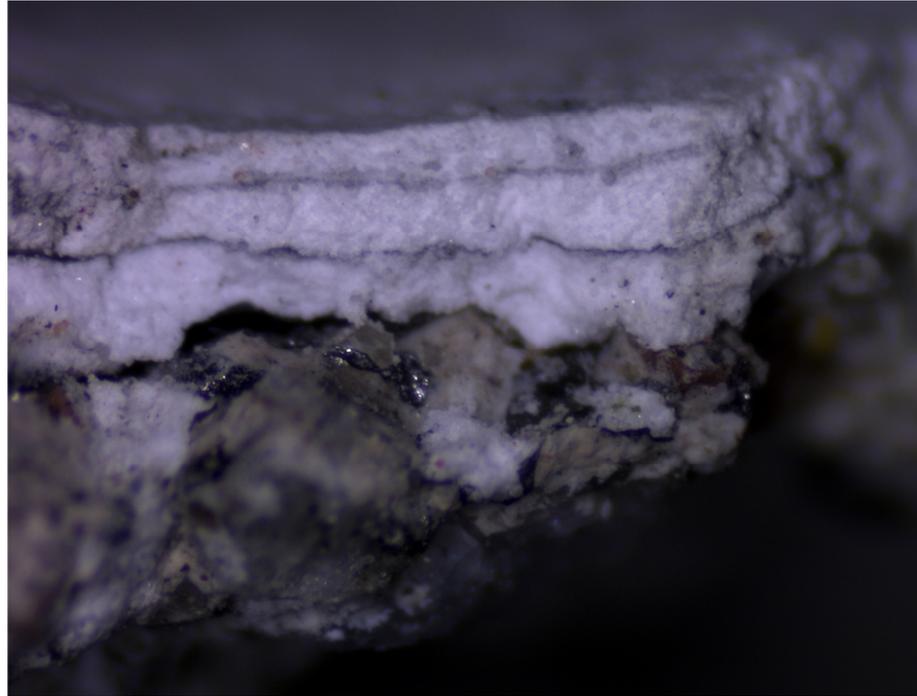


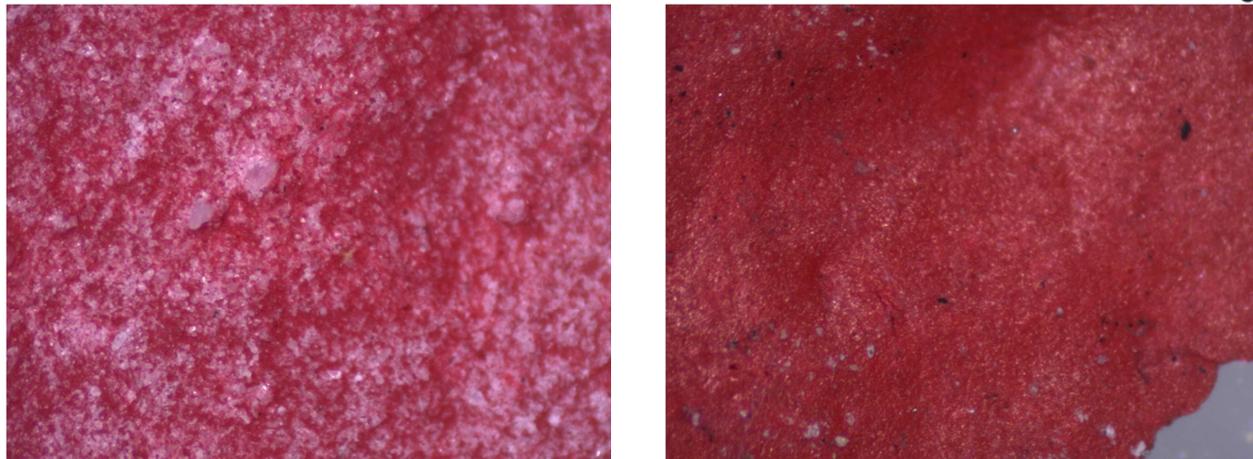
Fig. 1 "Niguarda Antifascista" – sampling location



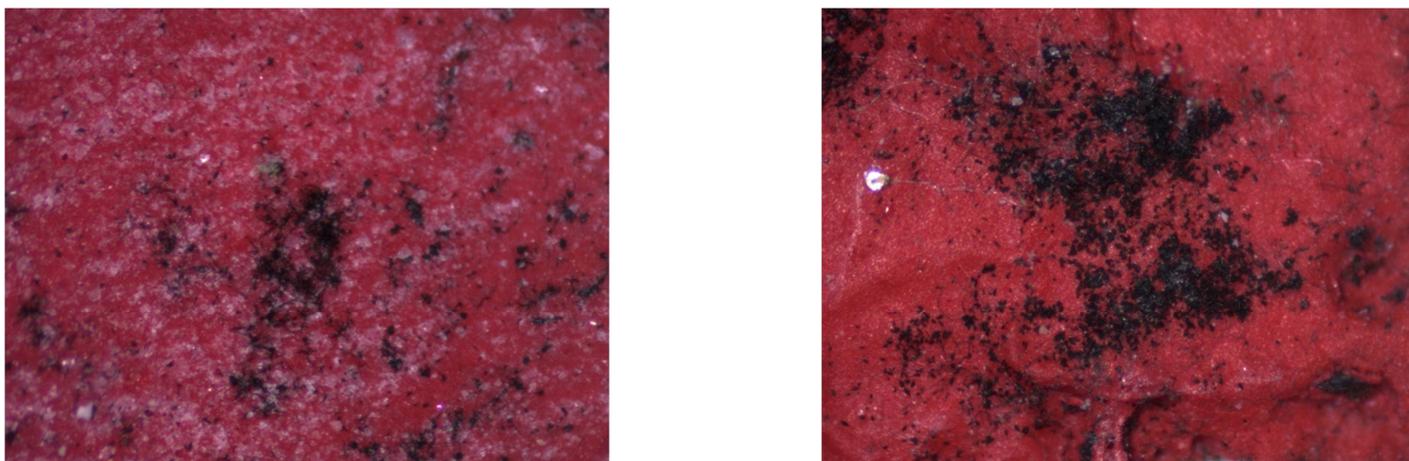
**Fig. 2** “Niguarda Antifascista” – sample 1 – cross section – reflected Visible light – magnification 35 x (left) 150 x (right)



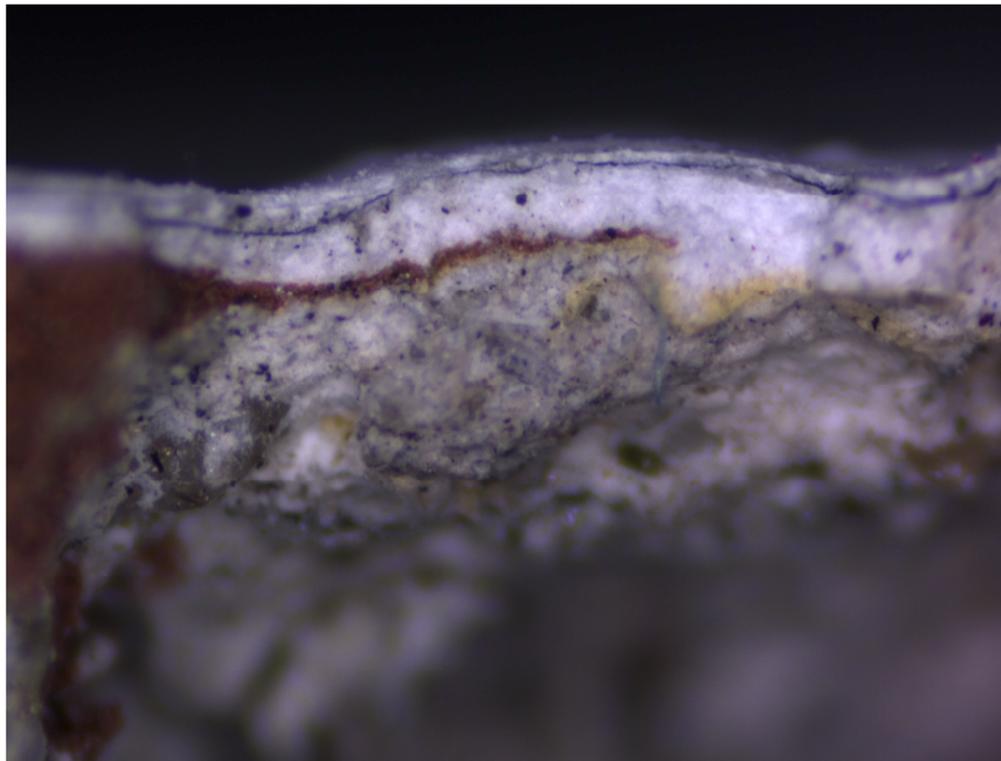
**Fig. 3** "Niguarda Antifascista" – sample 2 – reflected Visible light – magnification 45 x



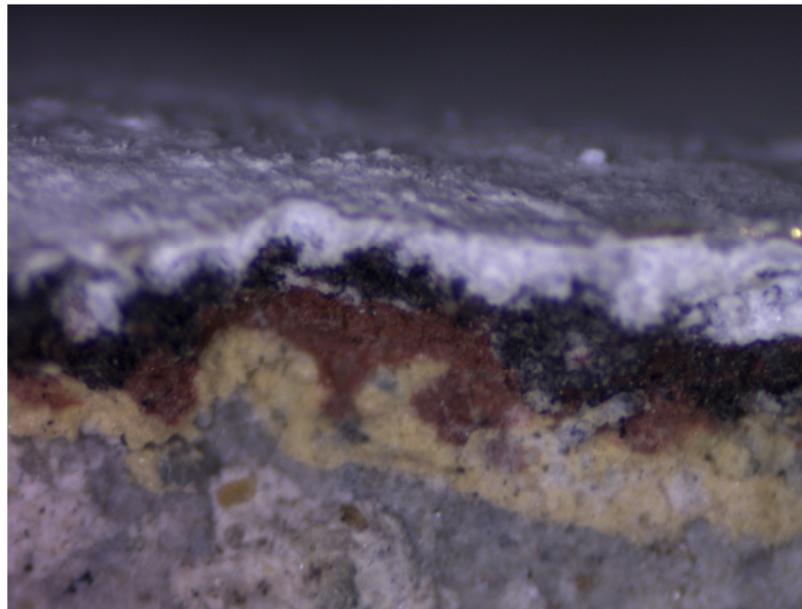
**Fig. 4** “Niguarda Antifascista” – sample 3 - reflected Visible light – recto (left) e verso (right)- magnification 45 x



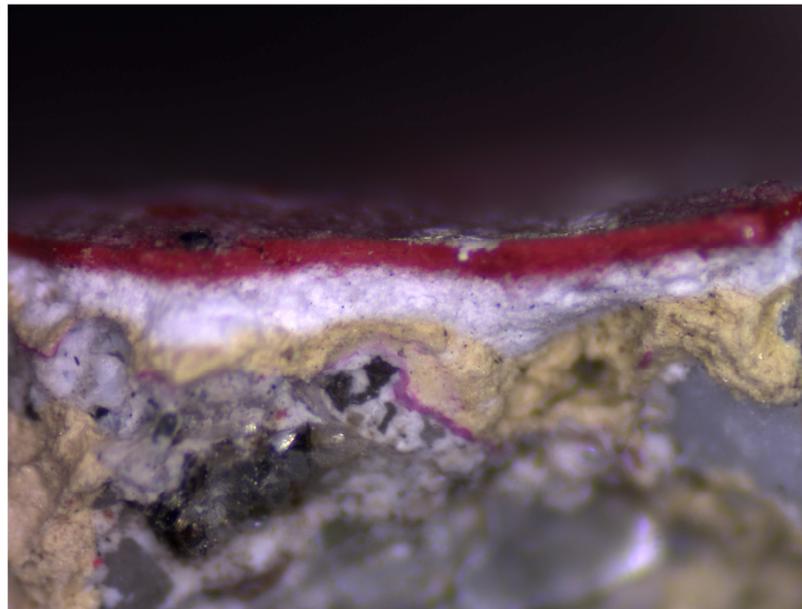
**Fig. 5** “Niguarda Antifascista” – sample 4 - reflected Visible light – recto (left) e verso (right)- magnification 45 x



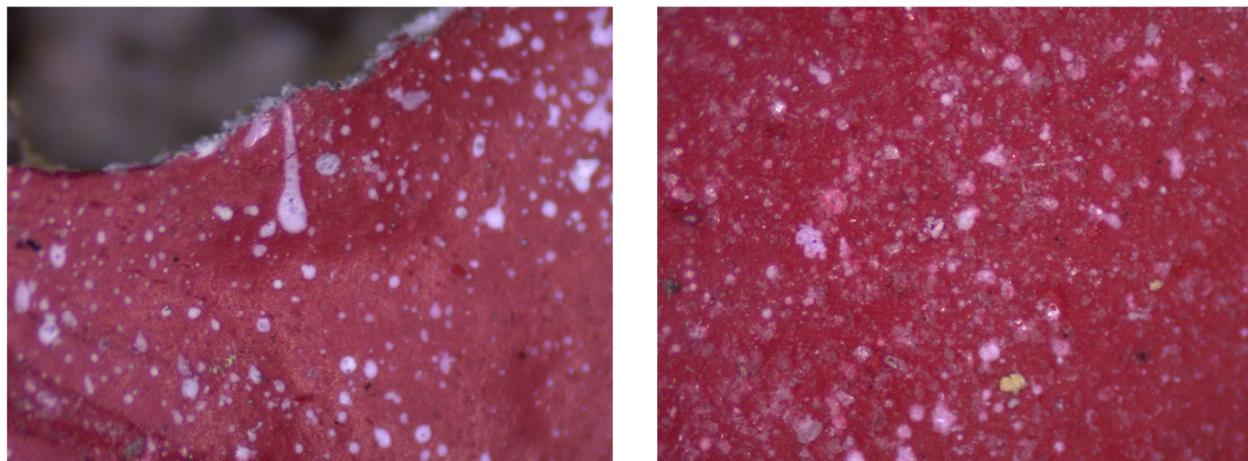
**Fig. 6** “ Niguarda Antifascista ” – sample 5 - reflected Visible light - magnification 45 x



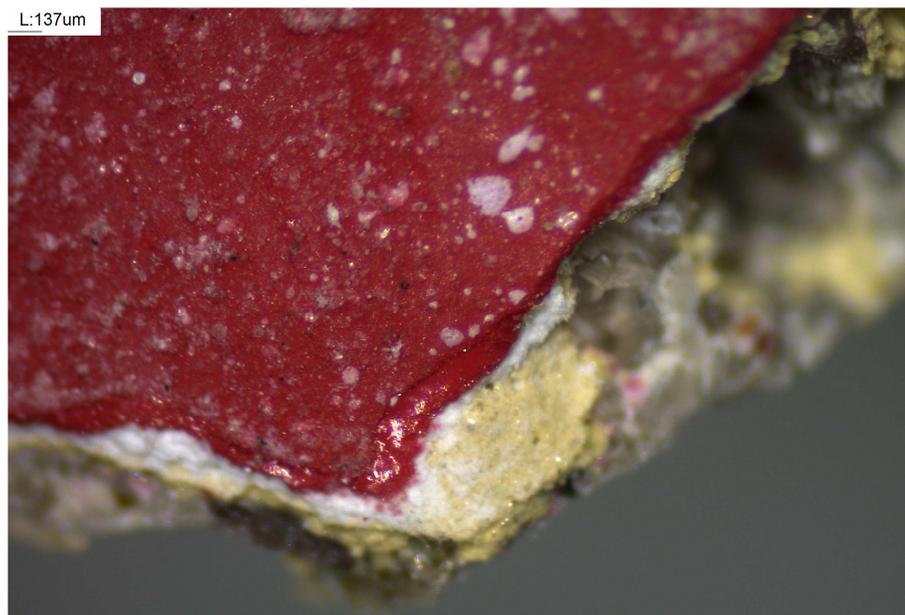
**Fig. 7** “ Niguarda Antifascista ” – sample 5 - reflected Visible light - magnification 45 x



**Fig. 8** " Niguarda Antifascista " – sample 6 - reflected Visible light - magnification 45 x



**Fig. 9** " Niguarda Antifascista " – sample 6 - reflected Visible light - magnification 45 x



**Fig. 10** “Niguarda Antifascista” – sample 6 - reflected Visible light - magnification 30 x



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