The conservation of a feather imprint from Abric Romaní (Spain)

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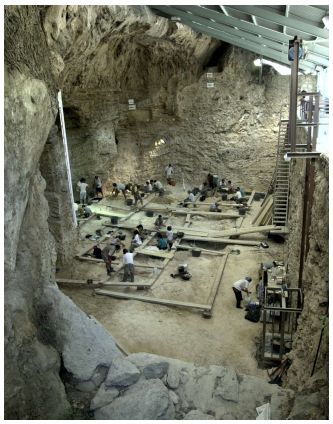
The site



- Location: Capellades (Barcelona, Spain)
- Rock shelter / 50 m of well-stratified travertine sediments [1]
- Middle Palaeolithic / 115 to 40 kyr
- Several imprints of wood and other vegetal remains recovered in all the sequence [2]. So far, only one feather imprint.

- Level Ra (ca 62 Ka BP)
- Origin of the feather still unknown (ongoing research); likely natural, but recovered in a layer with anthropic evidence and bird remains.

Initial condition & goal of treatment

The feather imprint was in a block of travertine. The imprint was solid, but the block presented some granular disintegration.

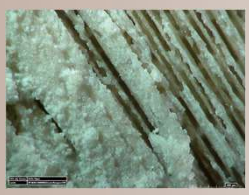
The goal was to improve the stability of the block to avoid accumulation of consolidant in the imprint, and to pack the block in a way that allowed showing it without further handling.

The consolidation

- Silica nanoparticle-based product Nanoestel® diluted 1:1 in water.
- 2 batches of partial immersion in 500 cc of consolidant (the product covered up to 3 cm of the block; 1 week gap between the two applications).
- Dispersion into the block by capillarity: the consolidant ascended quickly (observed by naked eye the change of colour during the ascension).
- Dried inside a desiccator to slow down evaporation (no desiccant agent added, just used as a container, and with space for the stopcock free and open to avoid condensation.

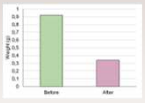
Evaluation of the consolidation and results

- The consolidation treatment stabilized the block and stopped the detachment of rock grains during handling
- Microscopic observation before and after the consolidation showed that there were not significant consolidant accumulation on the feather imprint surface.



- The tape test [3] before and after the consolidation corroborated the improvement of the cohesion of the surface of rock (the amount of material detached decreased after the consolidation).

	Before	After	
Mean	0,918818	0,338434	
St. Desv.	0,02115626	0,0034609	
I.C. 95%	0,00586411	0,00095929	
	50	50	
Max	0,92468211	0,33939329	
Min	0,91295389	0,33747471	
	Mean	Max	Min
Before	0,918818	0,92468211	0,91295389
After	0,338434	0,33939329	0,33747471



Final remarks

PROS

- The silica nanoparticle product Nanoestel® was effective.
- Non toxic
- When compared to acrylic resins or other polymeric consolidants, the nanoparticle based product barely changes the appearance or the travertine (there is a slight rise in tone).
- The dispersion of the consolidant by capillarity is effective along the 20 cm block.

CONS

- It takes 3-4 days to reach reasonable consolidant potential. This also means that to assess the condition and to decide whether to apply more, we have to wait, making the treatment slower than with other products in regards to time.

Block containing the feather imprint consolidated and placed on a polyethylene foam inside a tailor-made methacrylate box.

References

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