

Nanomagnetic sponges to clean precious works of art

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Nanomagnetic sponge. Credit: Courtesy of Piero Baglioni, University of Florence, Italy

Chemists in Italy are reporting “a real breakthrough” in technology for cleaning and conserving priceless oil paintings, marble sculptures and other works of art in an article in the Aug. 14 issue of *ACS’ Langmuir*, a bi-weekly journal.

In the report, Piero Baglioni and colleagues describe development and successful testing on artworks of “nanomagnetic sponges” that could have a range of other applications in cosmetics, detergents, and biotechnology.

Highlighting potential uses in art conservation, the report explains that conservators often use solvents and other cleaning agents in a gel formulation, somewhat similar in consistency to gelatin dessert. Compared to liquids, gels have less of a tendency to soak deep into the surface of artwork and cause damage. Gels, however, are difficult to remove from painted surfaces and may leave behind undesirable residues.

The new nanomagnetic sponges — made from nanoparticles so small that about 10,000 would fit across the diameter of a human hair — overcome that problem, the report states. The sponges can be loaded with solvents and other cleaning agents, and cut with a knife or scissors into desired shapes for application to specific, soiled areas of a painting. When the cleaning is done, conservators can remove the gel with a magnet.

“The nanomagnetic gel represents the most advanced and versatile system for cleaning and will have a dramatic impact on the conventional methods used in the conservation field and in several other fields where fine tuning of the release or uptake of confined material is required,” the report states.

Source: American Chemical Society

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