

Isothermally rheoreversible gels: the art of science applied to art

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We have developed several “latent” organogelators^[i] whose amino functionalities are transformed by CO₂ into ammonium carbamates.^[ii] Prof. Luigi Dei and Dr. Emiliano Carretti of the University of Florence in Italy, Dr. Barbara Berrie of the National Gallery in Washington, and we are exploiting the rheoreversibility of these gels for art conservation. Examples include the successful removal of a varnish coat from a XIV century oil-on-wood painting^[iii] and materials from gold-leaf coated wooden sculptures. The painting, one of the spots cleaned, and the 1-pentanol gel system employed are shown at right. We thank Dr. A. M. Guiducci and Mr. D. Rossi of the National Gallery in Siena for their assistance during the tests.

^[i] (a) George, M.; Weiss, R. G. *J. Am. Chem. Soc.* **2001**, *123*, 10393-10394. (b) *ibid. Langmuir*, **2002**, *18*, 7124-7135 and **2003**, *19*, 1017-1025.

^[ii] Bannister, W. W.; Pennance, J. R.; Curby, W. A. *U.S. Patent 3,684,733* (Aug. 15, 1972).

^[iii] Carretti, E.; Macherelli, A.; Dei L.; Weiss, R. G. *Langmuir* **2004**, *20*, 8114-8118.

