

SUMARIES

(ARCHAEOOMETRY – ORGANIC MATERIALS)

Coniferous Wood Pulp in Traditional Korean Paper Between the 15th and 18th Centuries AD. One hundred and sixty-nine fibre samples from books in the Korean collection and 68 samples from books in the Japanese collection at the British Library were analysed. A further 15 samples of Korean paper from a private collection were also examined. The analysis confirmed that most of the papers contained mulberry species (Moraceae family) as the main papermaking material, and other materials, such as hemp, rice straw and reed, which have been commonly known as supplements to traditional Korean papermaking. However, 15 Korean papers and one Japanese paper dating between ad 1498 and 1798 appeared to include coniferous wood fibres. This substantial find supports a previous single find of a coniferous wood fibre in Korean paper. The dates of most of these papers containing wood fibres precede the use of wood pulps in European paper.

H. Yum, B.W. Singer, A. Bacon, *ARCHAEOOMETRY*, **51**, 3, 467-479, JUN 2009

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New Evidence for Early Silk in the Indus Civilization. Silk is an important economic fibre, and is generally considered to have been the exclusive cultural heritage of China. Silk weaving is evident from the Shang period c. 1600-1045 bc, though the earliest evidence for silk textiles in ancient China may date to as much as a millennium earlier. Recent microscopic analysis of archaeological thread fragments found inside copper-alloy ornaments from Harappa and steatite beads from Chanhu-daro, two important Indus sites, have yielded silk fibres, dating to c. 2450-2000 bc. This study offers the earliest evidence in the world for any silk outside China, and is roughly contemporaneous with the earliest Chinese evidence for silk. This important new finding brings into question the traditional historical notion of sericulture as being an exclusively Chinese invention.

I.L. Good, J.M. Kenoyer, R.M. Meadow, *ARCHAEOOMETRY*, **51**, 3, 457-466, JUN 2009

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Provenance of Ancient Textiles - A Pilot Study Evaluating the Strontium Isotope System in Wool. Strontium isotopes are used in archaeology to reconstruct human and animal migration routes. We present results of a pilot study applying strontium isotope analyses to modern sheep hair as a basis for its potential use as a provenance tracer for ancient woollen textiles. Our hydrofluoric acid-based, lipid soluble analytical protocol, also tested on a number of ancient textile fibres, allows for contamination-free, low blank strontium isotope analysis of minimal amounts of archaeological material. Sr-87/Sr-86 ratios of decontaminated sheep hair agree well with the compositions of biologically available (soluble) strontium fractions from the respective feeding ground soils, a translatable requirement for any potentially successful provenance tracing applied to wool textiles.

K.M. Frei, R. Frei, U. Mannering, M. Gleba, M.L. Nosch, H. Lyngstrom,
ARCHAEOOMETRY, **51**, 2, 252-276, APR 2009

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Pine Resins and Pottery Sealing: Analysis of Absorbed and Visible Pottery Residues from Central New York State. Analysis was performed on absorbed and visible residues from 21 New York State prehistoric pottery sherds dating from 2905 +/- 35 bp (Intcal04) (1256-998 cal bc) to 425 +/- 40 bp (Intcal04) (1417-1626 cal ad). The use of pine resin was detected in 10 of 12 absorbed residue samples and 11 of 17 sherds subjected to visible residue analysis. It seems likely that the pots were resin-sealed to make them more impermeable, constituting the first chemical evidence of extensive resin-sealing in North America. A comparison of the results of absorbed and visible residues from eight of the sherds indicates that the two kinds of residue provide complementary evidence of vessel use.

E.A. Reber, J.P. Hart JP, *ARCHAEOOMETRY*, **50**, 6, 999-1017, DEC 2008

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Analytical Studies of Contaminated Documents Cleaned by Nd:YAG Laser Treatment. The study is focused onto characterization of historical documents samples belonging to XIV-XIX century, by means of the optical spectroscopy. The influence of pulsed laser cleaning by means of the Q-switched Nd:YAG laser emitting at wavelength of 532 nm on the spectra and also cleaning results of stained paper documents are reported and considered. From the absorption spectra, the minima around 280 and 370 nm are identified and luminescence reveals a characteristic band around 430 nm. The diagnosis of the laser cleaning tests, by the recording of the LIF spectra with 266 nm excitation shows a profile of increasing intensity and preserved structure. Sharp emission lines belonging to LIPS spectra, recorded at 612.5, 644.2, 646.5, 671, 714.9, 720.2 nm (CaI), 589.4, 616.4, 780 nm (Na I), and 7665: 769.9 nm (Mg I), are ascribed to the surface contaminations. The intensity decrease of these peaks is in accordance with successive laser pulses and monitors the cleaning progress of the stained paper, as well.

N.Vrinceanu, I. Sandu, A. Grigoriu, D. Coman, C. Fotakis, P. Pouli,
REVISTA DE CHIMIE, **60**, 3, 231-236, MAR 2009

Integrated Analytical Study for the Authentication of Five Russian Icons (XVI-XVII centuries). This article presents an integrated approach for the authentication of five Russian icons through the study of their paint materials (elemental composition and stratigraphic mapping), state of conservation and artistic technique. The results of the applied analytical protocol, involving optical and scanning electron microscopy coupled with energy-dispersive X-ray spectrometry and Fourier transformed infrared spectroscopy/microspectroscopy, led to the conclusion that the five icons belong to the same group and iconographic school (from Northern Russia) and date from the end of the 16th century to the beginning of 17th century. Because of massive overpainting, the icons "suffered" a change in iconographic style and significance, and restoration treatment brought to light the original painting and its attribution. Identification of the composition of the original chromatic palette used by the iconographer, the stratigraphic mapping and the conservation state of the painting materials, along with the features of the original artistic technique, furnished key elements for the icons' authentication. Here, we present the first experimental data concerning the identification of the authentication characteristics, being part of a large project that has as its final aim the evaluation of the effectiveness and effects of the cleaning agent on the paint layers.

I.C.A. Sandu, S. Bracci, I. Sandu, M. Lobefaro,
MICROSCOPY RESEARCH AND TECHNIQUE, **72**, 10, 755-765, OCT 2009

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Expanding the Conservation Canon Assessing Cross-Cultural and Interdisciplinary Collaborations in Conservation. This paper explores some of the dilemmas that relate to the existence of collections of cultural material and efforts to preserve them. It examines issues that arise when multiple points of view are focused on the origins, ownership, custodianship and meaning of such material. Such an investigation is impossible without exploring the landscape in which cultural materials conservation has developed. In doing this it is necessary to identify the boundaries of the disciplinary territory that currently frame conservation practice, and to investigate the role of conservation at the edges of this terrain; the boundary knowledge of the discipline where interdisciplinary knowledge is developed and traded. This paper argues that conservation has an important contribution to make along the axis of broader social and humanitarian concerns, and that new disciplinary and cultural intersections are a critical part of contemporary conservation practice. It also discusses some strategies that may usefully strengthen the role of conservation beyond institutions, and support collaborations for cultural replenishment and continuity.

R. Sloggett, STUDIES IN CONSERVATION, **54**, 3, 170-183, 2009

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Method for Determining the Normal Water Equilibrium Variation Domain for Wood Artifacts. The invention relates to a method for determining the normal domain of water equilibrium variation of the wood probes, on the basis of which it is determined a series of characteristics used for authentication and compatibility study of wood working used for artistic purposes or for certain old wood reduction and preservation works. The method includes sampling of the material, preliminary dehydration thereof at an atmospheric humidity of at most 10% HR, up to a constant mass, subsequent hydration of probes at an atmospheric humidity of at least 99%, up to a constant mass, with periodic weighting, afterwards there follows dehydration under the same conditions (HR<10%) up to a constant mass with periodic weighting, tracing of hydration and dehydration curves according to data obtained at weighting, determination of the normal water equilibrium variation domain, covered in the limits of the indicated curves. The result consists in the clear delimitation of the normal water equilibrium variation domain by determining the reversible hygroscopicity using simple equipment accessible for any laboratory, irrespective of fitting-out.

I. Sandu, T. Lupascu, I.C.A. Sandu, C. Luca, V. Vasilache, I.G. Sandu, M. Hayashi, A.V. Sandu, M. Ciobanu,
PATENT MD3713 (F1)/2008-09-30

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Ecological organic solution for working of artistic wooden objects from insects and fungi. The invention relates to an ecological organic solution for protection of artistic wooden objects from insects and fungi, namely for working of polychromatic wood. The solution for working of artistic wooden objects from insects and fungi comprises propolis, saponified coniferous tree resins or colophonies, lyophilic powder of oak tannin and polyethylene glycol of the type PEG-1000, in the form of homogeneous mixture on base of isopropyl or isoamyl alcohol, in the following concentration, in mass %: Propolis 12-15, saponified coniferous tree 5-10, lyophilic powder of oak tannin 1.5-3, polyethylene glycol of the type PEG-1000 3-5. The result consists in the active and long-term preservation of the old, natural or polychromatic wood both on the surface and inside, without producing structural and dimensional modifications.

I. Sandu, T. Lupascu, C. Luca, V. Vasilache, M. Hayashi, F.-D. Vlad, I.G. Sandu,
PATENT MD3681 (F1)/2008-08-31