

Abstracts PdN-ChiS 5/59

Forefather from the Bronze Age

S. Menze, C. Menze, J. Lipfert, B. Menze, G. Harsch

Archeologic insights by molecular genetic analysis of ancestry and parentage. The proposed problem-oriented sequence deals with molecular genetic content and methods of analysing ancestry and parentage. The context is the identification of blood relationships between bones from the Bronze Age in the Lichtenstein cave and the identification of actual relatives living in the proximity of the find spot.

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Paracelsus and X-ray diffractometry – archeometric tests for the production of paracelsic products in 16th century laboratory

R.W. Soukup

Using investigations on remains of laboratory containers from a excavation spot of the 16th century important archeometric analytic methods such as x-ray diffractometry, electron beam microanalysis and Inductively Coupled Plasma Optical Emission Spectrometry. The results from the measurements allow a detailed reconstruction of the old methods and laboratory techniques.

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Pumice stone – a portentous lightweight building material

M. Bichler, J.H. Sterba, G. Steinhauser

The determination of the origin of pumice stone, a highly porous volcanic material from archeologic excavations was the aim of the project. In this project a chemical data base was developed using neutron activation analysis. This comprises pumice stones from different Mediterranean sources and enables their distinction. After eruptions close to the sea the pumice stones floating on the water can be carried far away by currents. Today they are a great help in dating: A finding of pumice stone allows a determination of the maximum age (that of the eruption) of that layer. Of special importance is this option in connection with the eruption of Santorini in the Bronze Age.

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Archeometric testing of paintings

R. Fuchs

Scientific analysis of paintings and graphics asks for the exact knowledge of the colorants used. Modern non-destructive analyses are a challenge for the scientist, who has to develop apparatuses and who has to have good historical knowledge when interpreting his results. Archeometry not only deals with the chemical analysis but also with the historical painting technique of the artist. Even the smallest hints at mixtures and painting habits can help to differentiate between forgery and original.

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Analysis of inks and tusche – an archeometric challenge

R. Fuchs

Tusche and inks have already existed in the ancient world. The composition of natural plants and minerals have to be systematically investigated. Knowing the liquids used, also faded handwritings can be made visible again, age determinations can be carried out and historical

situations can be looked at. The complicated mixtures of natural ingredients make a differentiated investigation of inks in historically valuable autographs difficult.
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Detector test for noxious gases in a museum

S. Röhrs, S. Simon

Volatile organic compounds from materials in glass cabinets, cupboards, rooms or also packing material can be harmful for objects displayed in a museum. With the Oddy-Test one can test whether materials are suitable for being displayed in a museum. Corrosion of the sacrificial material shows, that a material emits noxious gases. Materials which cause these corruptions are not suitable for a permanent contact with objects of cultural value and pieces of art.

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Competences and Contexts

A volcano on the schoolyard – building a bloomery

M. Schwab

The construction and use of two bloomeries is exactly described. Problems during using the bloomeries are discussed. The first bloomery was used with a blower, the second was constructed with a natural draft. As iron ore magnetite is used, which is prepared for the use in blast furnaces. The furnace was used with charcoal. The quality of the iron obtained was used as a reference for a successful metallurgical process. The iron cannot be forged, but it was magnetic and showed the typical look of cast iron, which still contains an amount of slag. The project can be recommended for the chemistry classroom.

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What has chemistry to do with arts?

M. Kuchnowski, W. Bünder, R. Demuth

The article describes the effects of transferring the iconological method of gaining knowledge of the art historian *Erwin Panowsky* to the chemistry classroom and using it as teaching method.

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The hydrostatic scale – measurements of density of liquids by low pressure- a new method for pupils' experiments

G. Harsch, S. Benmokhtar, A. Wagner

The hydrostatic scale is a simple method of measuring the density of liquids at low pressure caused by a pipette tip or a bulb filler. The method is suitable for pupils' experiments in the beginners' classroom, for example for comparing densities of water sugar solution, salt solution, coke, diet coke, alcohol and other alcoholic beverages. The interpretation only requires little prior knowledge. The hydrostatic scale can serve as a supplement of traditional methods when dealing with properties of matter and it can enhance the way of scientific thinking and experimenting in the beginners' classroom.

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