

ΠΙΝΑΚΑΣ ΠΕΡΙΕΧΟΜΕΝΩΝ – TABLE OF CONTENTS

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First European Conference on Applications of Femtosecond Lasers in Materials Science

FemtoMat 2002

24-26 October 2002, Visegrád, Hungary

Science, technology and application of femtosecond lasers has matured to a level when critical review of the state of the art, results are timely and possible to assist in signposting future trends of development. Although being well represented in the programme of all recent (and announced) conferences on laser applications in materials science (in the broadest possible sense, including *basic aspects* and *manufacturing, electronic, sensor, opto-electronic* and *biomedical applications, nanoscience*, etc.), there was no topical conference devoted exclusively to the *present status and application of femtosecond lasers in materials science*. Therefore, we are happy to announce the **First European Conference on Applications of Femtosecond Lasers in Materials Science**, in short: **FemtoMat 2002**. It will be a three days' Gordon-Conference-like event starting on 24 October 2002 and ending 26 October 2002, at the shore of the river Danube upstream from the capital of Hungary, Budapest. In line with the philosophy of the Gordon Conferences no proceedings or written references to the presentations made at this meeting will be allowed. The participants are encouraged to explore the possibilities and problems of the field and exemplify these by their most important *new results*. The conference features active discussions at the oral and poster sessions, and plenty of time for *in-depth discussions in an informal atmosphere*.

The programme is the following:

23 October 2002 Arrival, registration, buffet dinner

24-26 October 2002 Scientific programme + a half day excursion

27 October 2002 Departure

Due to the coherent topic of the meeting and to allow full attendance no parallel sessions will be organized. To encourage discussions mainly *oral* presentations (15+5 minutes in length) are preferred, though the possibility of *poster* presentations will not be excluded either.

□ **There is no conference fee!**

Full board accommodation: four nights in single or double rooms including transfer to and from Budapest airport to the conference hotel, *Hotel Silvanus, Visegrad, Hungary* (www.hotels.hu/silvanus; in a gorgeous location high up above the Danube valley) and a half day excursion cost **EUR 550 when paid before 1 st September**. Payment on the conference site (EUR 600) is also possible. To promote participation of students a **special student price of EUR 400** (before 1st September) and EUR 450 (on site) is offered for those giving evidence of university registration. Registered participants will be informed on possibilities of paying in due time. Due to the urgent nature of organization, electronic correspondence is the solely feasible way to approach interested researchers. Therefore we kindly ask and encourage you to *circulate the present announcement* within prospective participants. The attendees are kindly requested to submit a *one-page summary* of their contribution together with the *registration form* via email (as attachment) or fax by **July 1, 2002** to t.szorenyi@physx.u-szeged.hu and cc.wolfgang.kautek@bam.de

The organizers:

Tamás SZÖRÉNYI

Research Group on Laser Physics
P O Box. 406, H-6701 Szeged, Hungary
visiting: Dóm tér 9, H-6720 Szeged, Hungary

Wolfgang KAUTEK

Laboratory for Thin Film Technology
Federal Institute for Materials Research and Testing
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Phone: +36 62 544274
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E-mail: t.szorenyi@physx.u-szeged.hu
<http://www.jate.u-szeged.hu/physics/index.html>
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Fax (+49)(0)30 8104-1827
E-mail: wolfgang.kautek@bam.de
<http://www.bam.de/lab-822.htm>



**First European Conference on Applications of
Femtosecond Lasers in Materials Science**

FemtoMat 2002

24-26 October 2002, Visegrád, Hungary

CONFERENCE APPLICATION

NAME:

FIRST, INITIAL, LAST:

ORGANIZATION:

BUSINESS ADDRESS:

CITY:

POSTAL CODE:

COUNTRY:

PHONE:

FAX:

EMAIL:

Do you want to present an Oral Presentation at the Conference? Yes / No

Do you want to present a Poster at the Conference? Yes / No

If you do want to present an Oral Presentation or a Poster at the Conference, please submit a brief abstract (up to 1 page, no special requirements concerning format) by e-mail

to t.szorenyi@physx.u-szeged.hu before July 1.

Full board accommodation: four nights in single or double rooms including transfer to and from Budapest airport to the conference hotel, *Hotel Silvanus, Visegrad, Hungary* (in a gorgeous location high up above the Danube valley; www.hotels.hu/silvanus) and a half day excursion cost EUR 550 when paid before 1st September. Payment on the conference site (EUR 600) is also possible. To promote participation of students a special student price of EUR 400 (before 1st September) and EUR 450 (on site) is offered for those giving evidence of university registration. Registered participants will be informed on possibilities of paying in due time.

Send this application by e-mail to t.szorenyi@physx.u-szeged.hu or fax it to +36 62 544658 by July 1 at latest.

The organizers:

Tamás SZÖRÉNYI

Research Group on Laser Physics

Wolfgang KAUTEK

Laboratory for Thin Film Technology

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H-6701 Szeged, Hungary
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<http://www.jate.u-szeged.hu/physics/index.html>

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E-mail: wolfgang.kautek@bam.de
<http://www.bam.de/lab-822.htm>

EMAS 2003

8th European Workshop on

MODERN DEVELOPMENTS AND APPLICATIONS IN PRACTICAL APSECTS

18th - 22nd May 2003

in

Hotel Monasterio San Miguel, El Puerto de Santa Maria, Cadiz, Spain

Organized in collaboration with

[Sociedad de Microscopia de Espana \(SME\)](#)

First Announcement ([pdf leaflet](#))

SCOPE OF THE WORKSHOP

The primary aim of this series of Workshops is to assess the state of the art and reliability of microbeam analysis techniques. The Workshops are organised in such a way as to maximise transfer of knowledge among the participants. We also aim to provide a comprehensive exhibition of the latest analytical equipment and leave adequate time in the programme for delegates to benefit by interaction with the manufacturers. The main topics to be dealt with during the Eight Workshop (EMAS 2003) will be:

- *Problem-oreinted of microbeam analysis*
- *Microbeam analysis in the earth sciences*
- *New X-ray detectors technologies*
- *Monte Carlo simulation*
- *Electron backscatter diffraction*
- *Low-vacuum and environmental SEM*

SCIENTIFIC PROGRAMME

The programme will consist of invited plenary lectures, poster presentations, and round-table discussions on topics of the invited lectures, led by experts in the field.

POSTER PRESENTATION

All those intending to participate in the Workshop are welcome to submit an abstract for the poster presentation. Deadline for abstract submission is November 15, 2002. Details for the format of the abstracts will be given in the Final Announcement.

PUBLICATION

The text of the invited lectures and the abstracts of the poster presentations will be published in the Book of Abstracts of the Workshop. Moreover, in addition to the invited lectures, the full papers of accepted poster contributions will be published in an international scientific journal, subject to selection and formal review by the International Scientific Committee.

WORKSHOP LANGUAGE

The official language of the Workshop will be English.

EXHIBITION

Ample space, immediately adjacent to the lecture and poster rooms, will be available for the exhibition of equipment, leaflets, and books. Interested companies should contact the Workshop Secretariat.

GENERAL INFORMATION

The Final Announcement will be distributed in September 2002 to those returning the attached form. A substantial reduction of the registration fee will apply to all European students. Moreover, a number of EMAS grants will be awarded to bona-fide students and young scientists (under 30 years of age). Details will be given in the final announcement.

INTERNATIONAL SCIENTIFIC COMMITTEE

Xavier Llovet(*) *Spain*

Juan F. Almagro *Spain*

Guillaume F. Bastin *The Netherlands*

Hans Dijkstra *The Netherlands*

Rafael Garcia *Spain*

Francois Grillon *France*

Erkki Heikinheimo *Finland*

Karel Jurek *Czech Republic*

Peter Karduck *Germany*

Janos Labar *Hungary*

Christian Mathieu *France*

Mike Matthews *UK*

Jose M. Odriozola *Spain*

Miguel A. Respaldiza *Spain*

Romano Rinaldi *Italy*

Francesc Salvat *Spain*

Clive T. Walker *Germany*

(*) Chairman of the Local Organising Committee

[First Announcement Leaflet \(pdf\)](#) [Link to Local Organising Society Home Pages](#)

Workshop secretariat

EMAS Secretariat

University of Antwerp (UIA), Department of Chemistry

attn. Mr. Luc Van't dack

Universiteitsplein 1, BE-2610 Antwerp-Wilrijk, Belgium

tel: +32-3-820.23.43, fax: +32-3-820.23.43, e-mail: vantdack@uia.ua.ac.be

<http://www.emas.ac.uk/>

European Meeting on "Ancient Ceramics"

(October 27-31, 2003 - Lisbon, PORTUGAL)

1st Announcement

Dear colleagues and friends,

It is our pleasure to invite you to attend the **EMAC'03 - 7th European Meeting on Ancient Ceramics**, to be held on **October 27, 2003**, in Lisbon, Portugal. The goal of the **EMAC'03** is to disseminate and exchange the latest knowledge of Ancient Ceramic Studies. Geologists, archaeologists, chemists, anthropologists, physicists, engineers, other earth sciences, students intending to explore the multifaceted relationship between these sciences are invited to participate. Talks and posters will provide the motive for a deep discussion around the themes of the conference. We are fully confident that all participants will benefit a great deal from this opportunity of scientific exchange provided by the Conference.

Lisbon, the capital of Portugal, has very beautiful places to visit. We are sure that you will enjoy your stay.

Hoping you will participate in this event,

The Organizing Committee

Conference Secretariat

One page abstracts can be sent directly by **email** and other enquiries (conference form) regarding the Conference can be addressed to:

Secretariat Conference email: emac03lisbon@itn.pt

EMAC'03

ITN - Instituto Tecnológico e Nuclear

Chemistry Sector

Estrada Nacional 10, P-2686-953 Sacavém, Portugal

Phone: +351-21-994 6215/6223

Fax: +351-21-9941455

Please visit the site: <http://itn1.itn.pt/EMAC03/>

CONFERENCE & EXHIBITION OF THE EUROPEAN CERAMIC SOCIETY

(9 June – 3 July 2003, Istanbul)

The Turkish Ceramic Society is proud to organize the 8th Conference & Exhibition of the **ECerS** which will be held in Istanbul, Turkey between June 29th through July 3rd, 2003 at the Istanbul Convention and Exhibition Centre (**ICEC**).

The 8th Conference & Exhibition of the ECerS is intended to provide a forum for researchers and engineers around the world to discuss recent research and application related activities in the general subject of ceramic materials.

The preliminary conference programme to be announced in the 2nd circular will comprise the topics on Basic Sciences and Specialized Sessions in the areas of Traditional and Engineering Ceramics.

In order to encourage student participation, student lecture, poster and art competitions will be organized during the conference. For the first time, ceramic art exhibition and competition will take place during the conference in addition to the scientific and industrial programme.

Conference Secretariat

VISITUR Inc.

Şehit Muhtar Cad. No: 17
Özerk İşhanı, Kat: 2-3
80090 Taksim-İstanbul, TURKEY
Tel : +90(212) 254 32 30
Fax : +90(212) 257 27 83

Please visit the site: http://www.ecers2003istanbul.org/ana_sayfa.htm

LUX ET LAPIS 2002 **(LIGHT AND STONE)**

International Conference
Valtice (Czech Republic), 12-14 October 2002

First circular and call for papers

INVITATION

Academy of Fine Arts in Prague, Lux et Lapis Foundation and Charles University in Prague are pleased to organize and to host Lux et Lapis (Light and Stone) 2002 conference in the Czech Republic.

The conference (lectures, poster session and excursions) will take place in Valtice (southern Moravia, 250 km SE from Prague, 100 km N from Vienna) providing access to Lednice-Valtice area. This area belongs to the largest man-made European regions fashioned according to English romantic principles of landscaping. It has been included in the UNESCO list of the World's Heritage in 1996. Since then, several monuments underwent restoration in this area. The conference thus will focus on the application of stone in architecture and sculpture, and will pay special attention to the properties, deterioration and conservation of natural stone.

During the conference, organisers will try to find balance among scientific part (oral and poster presentations, scientific discussion), field excursions (Lednice-Valtice area, its monuments and nature), and social program (conference dinner, visit to vine cellar in Valtice area).

CONFERENCE TOPICS

Lux et Lapis (Light and Stone) 2002 will cover the following themes:

- Application of natural and artificial stone in architecture and landscape
- Sculptural stones (special session)
- Properties of natural and artificial stones
- Monument and building stone weathering (case studies, experiments, diagnostics)
- Building stone cleaning and conservation
- Dimension stone studies (open session)
- "Leithakalk" limestone (special session)
- Valtice-Lednice area and restoration of its monuments

ORGANISERS

Petr Siegl
Academy of Fine Arts in Prague

Michal Blažek
Lux et Lapis Foundation

Richard Přikryl (contact person)
Institute of Geochemistry, Mineralogy and Mineral Resources
Faculty of Science

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Albertov 6
128 43 Prague 2
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Phone: +420-2-21952195
Fax: +420-2-21952616
E-mail: prikryl@tao.natur.cuni.cz

CONGRESS AGENCY

ELMES Praha s.r.o.
Hana Kotschová
Vinohradská 6
120 00 Prague 2
Czech Republic
Phone/Fax: +420-2-24239102
E-mail: ELMES@IOL.CZ

CONFERENCE HOMEPAGE

<http://www.natur.cuni.cz/~ugmnz/luxetlapis2002.html>

IMPORTANT DATES

Expression of interest to attend conference together with talk/poster title and short (200 words) abstract)

no later than **June 30, 2002**

Second circular

June 15, 2002

Submission of full papers (see instructions)

July 31, 2002

Final program

September 15, 2002

GENERAL INFORMATION

The second circular will be distributed in June 2002 to those returning the attached form (deadline **June 30, 2002**). The final program will appear in September 2002. Important news will be updated on conference Web page (see above).

CONFERENCE LANGUAGE

The official language of the conference is English (for abstracts, oral presentations, posters, excursions and papers).

ABSTRACTS

Abstracts of papers are now requested in conference topics. Abstracts will serve for the acceptance/rejection decision and for the selection of paper for oral/poster presentation.

The abstracts should address:

- (1) the scope and objective of the work,
- (2) the approaches taken,
- (3) the results of the investigation, and
- (4) the originality and significance of the findings.

The abstract should be submitted to the organisers electronically (via E-mail), by fax or by regular mail (on diskette with printed copy) not later than **June 30, 2002**.

MANUSCRIPTS AND PROCEEDINGS

The proceedings of the conference will be published in a conference volume. The organizers are negotiating a possibility to publish conference papers in one of the renown international journals focused on monumental care and conservation. The text written in English should not exceed 8 pages (A4, 10 pt., Times New Roman, single spaced, width of margins 2 cm) (figures, tables and references can be included) and should be submitted to the organisers electronically (via E-mail), or by regular mail (on diskette with printed copy) not later than August 31, 2002. Please include a title with the authors' names, addresses, affiliations, telephone/fax numbers, and e-mail addresses. Please indicate also the corresponding author. Papers should not duplicate existing publications.

Note: do not send manuscript before you will receive notification of acceptance of your contribution!

Mail abstracts and manuscripts to:

Richard Přikryl
Institute of Geochemistry, Mineralogy and Mineral Resources
Faculty of Science
Charles University
Albertov 6
128 43 Prague 2
Czech Republic
Phone: +420-2-21952195
Fax: +420-2-21952616
E-mail: prikryl@tao.natur.cuni.cz

Put my name, please, on your mailing list and send me second circular and registration forms for the conference

Lux et Lapis (Light and Stone) 2002

to be held October 12-14, 2001 in Valtice (Czech Republic)

Surname
First name
Title
Institution
Street
ZIP code
City
Country
Phone
Fax
E-mail

I intend to:

- submit a poster
give an oral presentation

on the following topic(s):

.....

.....

.....

.....

.....

.....

Mail your interest to:

Richard Přikryl

Institute of Geochemistry, Mineralogy and Mineral Resources

Faculty of Science

Charles University

Albertov 6

128 43 Prague 2

Czech Republic

Phone: +420-2-21952195

Fax: +420-2-21952616

E-mail: prikryl@tao.natur.cuni.cz





**TOWARDS
TECHNOARCHAEOLOGY**
11 - 13 October 2002
Srem (POLAND)

* Resinous Substances * Biomaterials * Amber * Remains of Food and Oils *
Pigments and Dyes * Metals * Clays and the Ceramics * Glass, Obsidian, Stone and
Flint * Dating * Identification and Characterization * Thermal History *
Reconstruction of Technology and Applications

First Announcement

ORGANISER

A. Mickiewicz University at Poznań
Faculty of Chemistry

Laboratory for Materials Physicochemistry and Nanotechnology
Archaeometry research group

Programme Committee

H. Kočka - Krenz – Co-chairman, DH
UAM, Poznan

L. Czerniak – IAE PAS, Poznan

J. Fogel – DH UAM, Poznan

M. Kobusiewicz – IAE PAS, Poznan

J. J. Langer – Co-chairman, DCh UAM,
Poznan

A. Kosko - DH UAM, Poznan

L. Krzyzaniak – MAP, Poznan

R. Schild – IAE PAS, Warsaw

Organising Committee

**J.J. Langer - chairman, S. Pietrzak, T. Gibiński, S. Golczak, K.
Langer**

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FAX: +4861 2833622

Prof. Jerzy J. Langer
A. Mickiewicz University at Poznań
Faculty of Chemistry
Laboratory for Materials Physicochemistry and Nanotechnology
Marciniaka 2
PL-63100 Srem
POLAND

TTA' 02

The conference is first of a series international meetings planned as an interdisciplinary forum for a discussion on all aspects concerning technoarchaeology in a broadest sense: modern analytical techniques applied to archaeological research (characterization and dating identification of materials their provenance), obsidian, stone and flint characterization; the geochemistry of clays and the provenance ceramics; glass; metals; resinous substances (tar and pitch, resins, waxes); analysis of archaeological remains of food and oils; technology and provenance of pigments and dyes, structure and characterization of bones, biomaterials, characterization and provenance of amber.

The conference is designed to provide as much discussion among the participants as possible .The program includes a plenary session and technical sessions comprised of invited and contributed papers for oral presentation.

Authors of accepted papers will be required to submit a full-length manuscript for peer review for publication. Poster sessions are scheduled at least for two evenings of the conference.

Invited Speakers: *(a list is still open)*

Presentation: invited lectures 30+5 min, oral presentation of contributed papers (selected)

20 + 5 min and poster sessions.

The official symposium language will be English

Publication: The abstract (camera ready form) to be published in a Conference booklet must fit within a box 126 mm x 182 mm with top margin 65 mm and left margin 45 mm. Please use Times New Roman font size 11 with single space. The abstract should clearly list the title, author(s) and affiliations (with e-mail!) of the corresponding author.

A full the text should include:

- Archaeological context
- Research objectives (clear statement that motivated the study)
- Results and significance of the study for archaeological science

All accepted full-length manuscripts will be published.

Abstracts should be send by e-mail to: slawek@main.amu.edu.pl

Conference fee: 200.- USD (**students and accompanying persons: 150.- USD**)

includes registration fee, accommodation, meals, reception and Conference Dinner, social program and local transport from and

to Poznań.

please remit to : Uniwersytet A. Mickiewicza w Poznaniu

bank account: WBK VI O/Poznań 10901362-4721-128-06-0

SWIFT Code: WBK PPLPP PL

indicating: TTA '02 24930050

Payments must include all bank charges. **Where this is not done these bank charges must be paid at the registration desk on arrival.**

In case of cancellation, the fees minus handling (25%) will be refunded, provided the cancellation is made in writing before .

Deadlines:

Abstract submission	September 1, 2002,
Registration and Conference fee	September 15, 2002,

SREM

Srem (30000), a typical Wielkopolska town, lies upon Warta river, 42 km South of Poznań (750000), which is a capital of Wielkopolska region and voivodeship.

Srem is one of the oldest Polish settlements. As early as the 10th century, here was a fortified castle, which guarded a ford across the Warta river - a very important trade route from Silesia to Poznań. Srem has been mentioned first in 1136 by the pope Innocent II in his bull.

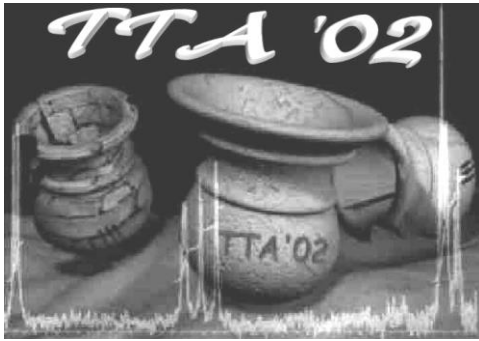
Here in 1854, Heliodor Swiecicki was born, a physician and scientist, the first rector of the University of Poznań (A. Mickiewicz University).

Srem is a centre of the local municipal authority and the regional government authority and administration.

The most important industrial factory in Srem Borough is the Ion Foundry Srem, employing about 3000 workers, one of the biggest in Poland.

Other factories represent clothes, chemical, food and building construction industry.





**TOWARDS
TECHNOARCHAEOLOGY**
11 - 13 October 2002
Srem (POLAND)

REPLY FORM

Last Name: **Title (s):**

First Name (s):

Professional Affiliation:

Address:

City: **Province/State:**

Country: **Postal/ZIP Code:**

Phone: **FAX:** **E-mail:**

I plan to attend the conference I intend to contribute a lecture or a poster

Pre-registration deadline: September 1, 2002

**XVI INTERNATIONAL CONGRESS OF
CLASSICAL ARCHAEOLOGY OF THE
ASSOCIAZIONE INTERNAZIONALE DI
ARCHEOLOGIA CLASSICA (AIAC)**

**August 23-26, 2003, Harvard University Art Museums
Boston/Cambridge, USA**

Call for Papers

Sponsored by Harvard University Art Museums, the 16th International Congress of Classical Archaeology will be held for the first time in the United States. The theme of the congress is: "Common Ground: Archaeology, Art, Science, and Humanities" and has been designed to bring together scholars from these diverse fields and to offer new perspectives and new methods of investigation. Institutions in Cambridge and Boston represent one of the cradles of classical archaeology and art history in the western hemisphere and will offer stimulating experiences, collections, and perspectives to the participants.

Eligibility:

Membership in AIAC is not required to present a paper at the meeting. Scholars, students, museum professionals, and those working in areas such as archaeology, prehistory, classics, history of art and architecture, classical archaeology and literature, conservation, site preservation, computer technology, historiography, and museum studies are invited to submit an abstract relating to the Congress theme.

Languages:

Papers will be accepted in English, French, Italian, German, and Spanish. Correspondence with participants will be in English.

Submission Procedures:

All abstracts must be received on or before November 1, 2002. All submissions will be reviewed and grouped into sessions by the Program Committee. Abstracts should include sufficient information (geographical, chronological, methodological, etc.) to enable the Committee to assign them to the appropriate session. The Committee reserves the right to assign abstracts submitted for sessions to the Poster Session should that method of presentation be deemed more suitable. Submitters will be notified of the Program Committee's decision to accept or decline a submission in February 2003.

Paper and Poster Sessions

To present a paper (not to exceed 15 minutes), or a poster presentation at the Congress, submit an abstract that is typed, double-spaced, and not to exceed 250 words. On a separate sheet, please provide:

- your name
- academic affiliation for any co-authors

- your mailing address (including country and postal codes)
- telephone, cell-phone, and fax numbers (including country and city codes)
- e-mail address

Colloquium Sessions

Colloquia submissions require a one page statement which clearly outlines the theme of the colloquium. List the papers in the order they will be presented including any discussants or respondents. An abstract and complete contact information is required for every presenter (see above). The colloquium materials should arrive as one package.

Individuals interested in organizing a colloquium may contact Amy Brauer or Carol Mattusch at: AIAC2003.fas.harvard.edu for more information.

Suggested Session Topics:

Recording the Past	New Discoveries and Developments
Views of the Ancient World	History of Archaeology
Science in Archaeology	Museums and Collecting
Classical Archaeology and Museums Teaching	Classical Archaeology
Computers in Classical Archaeology	Iconography and Religion
Epigraphy and Numismatics	Classical Architecture and City Planning

Submissions may be made by:

- a) Electronic-submissions will be accepted on our website at www.artmuseums.harvard.edu. Click on "Events and Programs" and follow the AIAC 2003 links.
- b) mail-hard copy submissions should be sent to AIAC 2003, Department of Ancient and Byzantine Art and Numismatics, Arthur M. Sackler Museum, Harvard University Art Museums, 32 Quincy Street, Cambridge, MA 02138, USA.
- c) fax-fax submissions may be sent to 617-495-5506. Faxed submissions must be followed by a hard copy.

Congress Registration:

All presenters will be required to register for the Congress and pay the full conference fee. A reduced fee will be available to students. AIAC provides no remuneration for travel or any other expenses.

For information about membership in the AIAC, please visit their web-site at: www.aiac.org.

All AIAC members will receive a reduced registration fee.

Key Dates:

Deadline for submitting abstracts:	November 1, 2002
Notification of acceptance or rejection:	February, 2003
Deadline for reduced registration fee:	June 1, 2003
Deadline for hotel reservations:	June 22, 2003
Deadline for paper	January 1, 2004

For More Information:

Please check our web-site (www.artmuseums.harvard.edu) for updated information regarding the Congress. Click on the Arthur M. Sackler Museum link for the Department of Ancient and Byzantine Art and Numismatics.

Amy Brauer

Ancient and Byzantine Art and Numismatics E-mail: AIAC2003@fas.harvard.edu

Arthur M. Sackler Museum

Tel: 617-495-3393

Harvard University Art Museums

Fax: 617-495-5506

32 Quincy Street

Web-site: www.artmuseums.harvard.edu

Cambridge, MA 02138 USA

or: www.aiac.org



BIOARCHAEOLOGY DAY FOR THE NORTH OF ENGLAND OF THE WELLCOME TRUST

**(September 5, 2002, D4 Lecture Theatre, Richmond
Building, University of Bradford)**

The Wellcome Trust, in conjunction with the Department of Archaeological Sciences, University of Bradford, will host a day of presentations on the funding opportunities available for research in bioarchaeology under the auspices of the Wellcome Trust. The day will include presentations from Dr. Gavin Malloch and representatives of the Wellcome Trust, a series of research overview presentations, and research presentations from current Wellcome Trust grant and fellowship holders. The meeting will also provide a forum for questions and answers for those interested in obtaining research support from the Trust in the future. The cost for the day is £20.00 and will include lunch and coffee/tea.

The Schedule for the Day is as follows:

9.45-10.15 am Registration with tea/coffee

10.15 am Welcome from Professor Mark Pollard, PVC for Research, University of Bradford, Chair of the meeting

10.30-11.30 am Seminar with the Wellcome Trust representatives to discuss funding opportunities offered by the Trust

11.30-12.30 presentations from the Wellcome Trust University Lecturers

11.30-12.00 Dr. Alan Cooper, Ancient Biomolecule Research Centre, University of Oxford, "Problems and Solution in Ancient DNA Research: Contamination, Damage, and Authentication"

12.00-12.30 Dr. Mike Richards, Department of Archaeological Sciences, University of Bradford, "The Evolution of Human Diets"

12.30 pm Lunch

1.30- 3.30 pm Presentations on current research from individuals presently funded by the Wellcome Trust

1.30- 1.50 Jennifer Hiller, Department of Archaeology and Prehistory, University of Sheffield and Fossil Fuels and Environmental Geochemistry, University of Newcastle, "New Methods for Detecting Preservation in Archaeological Bone"

1.50-2.10 Dr. Christina Nielsen-Marsh, Fossil Fuels and Environmental Geochemistry, University of Newcastle, "Direct Sequencing of Protein from Ancient Bones Using Matrix-Assisted Laser Desorption Ionization Mass Spectroscopy"

2.10-2.30 Tom Gilbert, Ancient Biomolecules Research Centre, University of Oxford, "Characterising Post-Mortem Driven DNA Damage in Ancient Specimens"

2.30-2.50 Elizabeth Stuckey, Department of Biomolecular Sciences, UMIST, "A Biomolecular Approach to the Study of Malaria in Neolithic and Bronze Age Greece"

2.50-3.10 Dr. Susan Haynes, Department of Biomolecular Sciences, UMIST, "The Origin and Evolution of Einkorn Domestication"

3.10-3.30 Andrew Isaac, Department of Biomolecular Sciences, UMIST, "Using Microsatellites to Study the Domestication and Spread of Emmer Wheat"

3.30 - 4.00 pm Coffee/Tea

4.00-5.00 pm Questions and Answers

5.00 pm Close and Departure

Please return the reply slip with a cheque payable to 'The University of Bradford' to: Mr. John McIlwaine, Professional and Continuing Education Officer, "Wellcome Bioarchaeology Day", Department of Archaeological Sciences, University of Bradford, Bradford, West Yorkshire, BD7 1DP. Further information about the day can be addressed to Dr. Christopher Knüsel at the Department of Archaeological Sciences, Tel.: 01274 233545, Fax: 01274 235190, E-mail: c.knusel@bradford.ac.uk

I would like to attend the Wellcome Trust Bioarchaeology Day for the North of England on 5 September 2002.

Name: _____

Address: _____

Telephone: _____ E-mail: _____

Dietary Preference: vegan _____ vegetarian _____ other (please specify)

I enclose a cheque in the amount of £20.00 made out to 'The University of Bradford'. Please return to: Mr. John McIlwaine, "Wellcome Bioarchaeology Day", Department of Archaeological Sciences, University of Bradford, Bradford, West Yorkshire, BD7 1DP.

Dr Jill Thompson
Lecturer in Environmental Archaeology
Department of Archaeological Sciences
University of Bradford
Bradford
West Yorkshire, BD7 1DP, UK
E-mail: <http://www.brad.ac.uk/acad/archsci/>



MARINE AND COASTAL GEOARCHAEOLOGY AT WAC5

(Washington DC, June 2004)

Dear All

We are putting out the first call for abstracts for a symposium on Marine and Coastal Geoarchaeology at WAC5 (Washington DC, June 2004) - this will be part of the Theme in Underwater and Maritime Archaeology (details of which are soon to be posted on the WAC5 website: www.ehlt.flinders.edu.au/wac5/indexhomepage.html)

The details of this particular symposium are outlined below. We look forward to receiving as many abstracts as possible - from as wide a discipline base as possible.

Yours

Justin Dix and Rory Quinn

Symposium: Marine and Coastal Geoarchaeology

Symposium Organisers: Dr Justin Dix and Dr Rory Quinn

As with the progression of terrestrial archaeology during the 19th and 20th Centuries, the desire to have a detailed understanding of the nature and temporal evolution of the environment of any submerged site has sadly lagged behind the desire to record, interpret and extract artefactual material. This is an even greater oversight for the marine environment as here the dynamics of the system (physical, chemical and biological) operate at time and space scales orders of magnitude greater than on terrestrial sites. However, the last decade has seen an increasing awareness for the need of generic models and theories for both site evolution and the archaeological interpretation of artefact sites and submerged landscapes. Ironically management and preservation concerns, rather than the requirements of academic archaeologists have driven this. It is therefore an ideal time to bring together the sparse, but global network of people currently working in all aspects of marine and coastal geoarchaeology. This symposium therefore aims to bring together talks on Marine Archaeological Site Evolution and Coastal and Marine Landscape Archaeology. The symposium proposers believe that such themes could draw experts from both hemispheres to provide a global overview of the current state of the discipline.

Symposium Format

It is proposed that the Symposium consists of a morning and an afternoon Session, probably split between site evolution topics and submerged landscape topics depending on the response from the academic community. Each session would consist of 4 hours of lectures - each lecture lasting 20 minutes + 10 minutes discussion (this could provide an 8-12 AM session and a 1-5 PM session). This would enable 16 speakers to present in total. These two Sessions would be followed by a 1.5 hour group discussion (5 - 6.30 PM) to bring attendees from both sessions together for a workshop to discuss "Key

Issues in Marine Geoarchaeology - the next ten years" to be led by the Symposium Convenors. This extended format is proposed as, for site evolution studies at least, an instantaneous list of possible speakers identifies at least 7 key speakers from at least 5 countries before we have even advertised the session.

Submission of Papers

The closing date for the submission of abstracts is 31 October 2002. Those being asked to participate will then be required to bring a digital copy of their paper to the Conference (format details to follow) for hopeful publication of a Special Issue in a relevant internationally, peer-reviewed paper.

Please send word format documents to jkd@soc.soton.ac.uk and rjq@ulst.ac.uk

Dr Justin Dix,
Lecturer Marine Archaeological Geophysics
School of Ocean and Earth Sciences and the Department of Archaeology,
University of Southampton,
Tel. 02380 593057/596861,
E-mail: jkd@soc.soton.ac.uk,
The High Resolution Marine Seismology Group Web Site:
<http://www.soc.soton.ac.uk/SOES/RES/GROUPS/geophysics/>



GEOARCHAEOLOGY AND ARCHAEOMETRICAL TECHNIQUES SYMPOSIUM

(Cyberspace October 2002)

The purpose of this Symposium is to generate an interdisciplinary space of study and discussion of human societies as an integration between culture and environment. This event will be held within the III Virtual Congress of Anthropology and Archaeology, in the cyberspace during October 2002 www.naya.org.ar/congreso2002/index.html. The geoarchaeological approximation to the study of the material record of human behavior implies the use of methods and techniques of geosciences to solve archaeological questions. This techniques are beyond the geosciences incorporating other disciplines such as chemistry, physics, etc. This is the guideline to propose an integrated symposium among geoarchaeology and archaeometrical techniques.

Our goal is to generate an exposition and discussion space of several techniques in an interdisciplinary and pluralist scope that will enrich the possibilities for the approximation to the archaeological record. Consequently it will improve our interpretative capacity of it.

Registration fees

Inscription is free at www.naya.org.ar/congreso2002/index.html or sampietro@tucbbs.com.ar

Papers must have approximately 10 pages including bibliography and notes. They must be send in word or compatible format. Photographs, tables and figures could be included in GIF or JPG format. Official languages will be Spanish, English and Portuguese. All must be send to sampietro@tucbbs.com.ar before September 20th, 2002. All accepted papers will be publish in NayA web site and In CDROM proceedings.

Key dates

Deadline for submitting papers: September 20th, 2002.

Notification of acceptance or rejection: September 30th, 2002.

Beginning of the Symposium: October 1st, 2002.

In www.naya.org.ar/congreso2002/index.html

Coordinators

Dr. María Marta Sampietro and Dr. Marta Amelia Vattuone: sampietro@tucbbs.com.ar

COST Action G7

FIRST CALL

Dear colleagues,

Our team of research centers and conservation institutions in Tuscany is proposing an EOI in the thematic Nanotechnologies devoted to study and develop the potential of this emerging field in cultural heritage studies and conservation, by integrating it with the microtechnologies presently applied in this field.

This EOI proposes a Network of Excellence for a medium-long term examination of the possibilities outcoming from nanotechs in proposing new investigations, new materials, new instrumentation. The aperture of a scientific credit about the proposal depends on the significance of the experience in the field of technologies for cultural heritage, more than in the specific applications of nanotechs in conservation that we could devise since now.

We know that this emerging technologies have not yet had "demonstrations of interest" for the problems encountered in conservation. Nevertheless the scientific institutions which have so well contributed to the success of laser technologies in conservation tasks down to the micron scale, have now the opportunity to provide a further step in the analysis and interaction dimensional scale. Of course nanotechnologies currently involve various expertises quite far from laser technologies. In this regard a first check with experts has encouraged the initiative and several different background institutions joined the cointributors list. I strongly believe that it is worth to present the Expression of interest on this thematic and to do this a crucial contribution is solicited from those of you who have experience in conservation problems asking for a sub-micron interaction or investigation size, and consequently from those of you who have experience in the development or use of real and potential nanodimensional techniques. A preliminary draft is attached here. Please, if you are interested reply soon.

Sincerely yours,

Dr. Renzo Salimbeni
IFAC-CNR
Via Panciatichi 56/30
50127 Florence, ITALY
Tel.0039055416128
Fax.0039055414612
Mob.00393497801181
E-mail: r.salimbeni@ifac.cnr.it

COST Action G7

SECOND CALL

Dear colleagues,

First of all many thanks for the many of you who replied positively to the call for participation.

The proposal is almost ready. Some suggestions were focussing on the lack of private companies already available for the network. So, here it is the second call, for companies that could be interested in developing, producing or using the outcomes of our research. If you may indicate possible partners of this type, please send me as soon as possible. We have only this week left!

Looking forward to hear from you soon,

sincerely yours,

Dr. Renzo Salimbeni
IFAC-CNR
Via Panciatichi 56/30
50127 Florence, ITALY
Tel.0039055416128
Fax.0039055414612
Mob.00393497801181
E-mail: r.salimbeni@ifac.cnr.it

EOI: Network of Excellence

**Integration of nano and micro technologies
for cultural heritage conservation
NANOCULT**

1. Rationale

1.1 Introduction

Cultural heritage in Europe is a crucial source of common identity for the citizens. The flow of culture along the centuries and throughout Europe has left a patrimony today host in outdoor and indoor environment located in cities, archaeological sites and museums, which are living collection of artworks and need to be preserved against the various deterioration risks. The various countries of Europe provide a variety of climatic conditions surrounding a large part of the world humanity patrimony. In many cases the urban atmosphere conditions are the main source of deterioration of the exposed surfaces, and this is evident in most of our cities. This task has had a peculiar interest in Europe and now the science of conservation has a technological excellence in respect of

any other part of the world. Main reason for this is the demand for solutions rising from the prestigious institutes of conservation of monuments, museums and galleries restoration activities.

On the socio-economic point of view it remains sure that, besides the direct task to preserve the European cultural heritage patrimony, the development of technologies dedicated to these problems have other absolute values outcoming from the educational side (unique and very important skills), the economic side (restoration activities, cultural tourism and thereof related services), occupancy needs. A recent estimation reports for Italy a fraction of the gross income in the order of 10% somehow related to the overmentioned activities, and shows a significant rise in occupancy for the year 2000 Jubileum restoration initiatives. Similar figures are expected for many European countries.

1.2 Scientific needs in conservation

The conservation activities have been always acquiring solutions from the latest advancements in materials science. Since the first reported activity in restoration of artworks, the “state of art” material science has been applied in experienced conservation laboratories, in order to fulfil the various needs. In recent times this more correctly became an interdisciplinary combination between humanistic and scientific backgrounds. Chemistry could develop correct approaches to invert the long-term reactions caused on the materials. Several generations of cleaning chemical treatments and protection products helped ensuring an acceptable safeguard against the atmospheric pollution to monuments and historic buildings. Other products became subjects of typical methodologies for museum artwork conservation.

Information science gave recently an easy way to distribute cultural information to the wide number of Internet browsers, with new digital catalogues, cyber museums, virtual visits.

Since more or less a decade, also various branches of physics could effectively contribute to the conservation activities.

Besides other (nuclear methodologies, various microscopy methods and several spectroscopic diagnostics) ones, opto-electronics and laser methodologies came to a general acceptance in conservation tasks. They had a very important impact for the conservation community strategies, with new instrumentation available for various phases of the procedures. This came from a long period of demonstration and validation lasting for 30 years, with a recent crucial involvement in Europe of the conservation institutions and of the final end-users, the private restoration enterprises.

On its own the emerging field of nanotechnologies is bound to provide new diagnostic and interacting tools for processing of materials on a submicron scale. Atomic scale investigation, molecular design, new materials properties constitute an open field in materials science in general, and much closer look to the problems of cultural heritage conservation. Optoelectronics and laser applications led a way in this direction, allowing surface treatments and diagnostics down to the micron scale, which were demonstrated successful for a large variety of materials.

2 Objectives and relevance

The aim of this project is to integrate suitable nanotechnologies in the conservation tasks for cultural heritage, where they are needed, as a further extension of micro technologies. Nanoscale research represents the most powerful tool taking into account the complexity of deterioration processes which are to be investigated and understood, in order to devise also the monitoring and conservation methods urgently required. This

is a medium-long term cultural and technological process, which would certainly benefit the conservation community in the accomplishing of their duties.

The amount of activity in the general topic of nanotechnology is promising for various tasks:

1. study of the deterioration mechanism at molecular level by nanoscale investigation,
2. surface treatments (coatings, modifications) to reduce or avoid a further deterioration,
3. instrumentation effective on a submicron scale,
4. technologies and methodologies for such applications.

Surface alterations on most materials exposed to air pollution were developing along the last century, overimposing the effect of sulphation with carbon particles deposits of mm thickness. The deposition rate was on the average in the range of tens of microns per year, determining stratigraphy containing historical information, which could be extracted by an investigation on a nanometer scale.

These effects occurred on stones, metals and pigments causing various degrees of problems, from a thin alteration to a significant loss of material. On specific works of art of well recognised importance any technique capable to recover a stable condition for the surface is obviously appreciated. In many cases the remnants of pigments or gilding have submicron thickness and their preservation during restoration procedures is a great challenge for the technique employed. In many cases the control in the removal of the deteriorated layers would have to proceed with submicron precision.

Nanotechnologies could improve the present state of the art of laser cleaning reaching tens to hundreds of nanometer size in resolution and interaction depth.

This is the case of “thin layers” problems. Such problems occur in metal coatings (gold, silver) on bronze or copper, where the coating thickness is a few microns, and it needs a treatment with a high resolution in respect of this size. Other cases are varnishes, scialbo and refining layers on paintings and frescoes. Here again the local composition is varying often on a submicron scale, asking for very high-resolution treatment.

The instrumentation capable to perform such improvement should rely on a specific combination of optical properties of the laser interaction with the materials, which reduces to a submicron scale the absorption depth of the radiation. The wavelength choice and the coherence properties of the radiation could also provide a pattern on target of nanometer scale when the ablation threshold is overcome only on limited overimposed areas of higher energy density. New coherent light sources are envisaged in the far UV for microelectronics technology; ultrashort pulses are now available demonstrating intra-molecular confinement of the energy deposition; these achievements could be the basis for a new generation of “tools” toward sub-micron scale processing of materials.

The technology could eventually require specific methodology of application in order to keep direct control of the effects. An assisted view through digital simulation, and indirect application and monitoring by means of on-line diagnostics is foreseen for this processing (cleaning, repairing) on a nanodimensional scale.

The development of protective coatings for cultural heritage (example: metal objects) has always been a challenging task, since the market is very small, the requirements are difficult to fulfil (stability AND reversibility of polymers) and the long-term performance for new products for art objects has to be approved by extensive testing. Nanotechnologies open new perspectives for this field: nano-scale engineering of new protective coatings with a superior performance can be achieved, tailored for special requirements. By considering the entire life-cycle design, not only the preparation and

application, but also the removal of protective coatings (preferably with laser technology) will lead to an improved combination of properties: an optimised quality including long-term stability and reversibility.

To provide information on the topography (e.g. microscopic cracks, crystallites orientation, local induced features etc.) and the superficial elemental distribution (iron content, trace elements) Scanning Probe Microscopy would be of high value. SEM and micro FT-IR have main disadvantages in comparison (vacuum operation, scale limit) with SPM technology.

These nanodimensional imaging techniques could find important applications also for archaeometric and analytical tasks.

3. Partnership and critical mass

This perspective of interest needs a network of competencies bound together to integrate the development of “tools” and methods into a serious experimentation procedure, and finally in practice in selected laboratories. This has been actually the recent activity of the network presenting this EOI, which have accomplished this integration for micro scale technology.

3.1 The Tuscany network

The Tuscany Region hosts in its well known “cities of art” Florence, Pisa and Siena an extraordinary texture of public institutions and private enterprises involved into an innovative research system, aimed to developing and applying new technologies for cultural heritage preservation and conservation. This regional network consists of research centres, conservation institutions, university departments and SMEs producing technologies and providing services. These organisations are linked together since several years by the participation to a series of regional projects concerning basically optoelectronic techniques employed in diagnostics, prospecting and restoration of artworks and archaeological objects.

The Tuscany Region has recently concluded the pilot project “Technologies for cultural heritage” in the frame of the program Regional Innovation Strategies, cofinanced by the EC-DG Regional Policy, demonstrating the effectiveness of the network in the development of technologies and their innovation transfer to a set of end-users. In this context new instrumentation and methodologies have been produced by the work put into practice by research, private companies and cultural institutions. These technologies have been experimented and validated in “pilot yards” opened in Italy locations, in other European countries and in the US, with the direct involvement of the users, companies providing services and institutions of safeguard of cultural heritage.

This activity, mentioned as best practice in the STOA document of the European Parliament, has put together the Tuscany contribution with other contributions in other European regions in Greece, Spain, France in a model of scientific interaction very close to the network of excellence foreseen in this 6th Research Program.

The results achieved because of this activity have changed the everyday practice of the conservation procedures. The optoelectronic and laser applications have passed from a status of an interesting and promising possibility to the recognition of their unique value in solving with adequate precision the diagnostics, prospecting and restoration problems of architecture structures and masterpieces.

3.2 The European network

The proposed network consists of prestigious research centres and conservation centres in various European regions, to provide mutual interaction between the various

experiences and the different problems, in order to compare results, elucidate the applicability range, compose a statistic for each application case. In the partnership there are participants to the presently active networks COST Action G7 *Artworks conservation by lasers*, and COST Action G8 *Non destructive analysis and testing of museums objects*. They will extend the interaction with the other networks.

The critical mass needed to approach the general problems of cultural heritage conservation is achieved with the contributions by the research centres and conservation and museums institutions in various European countries, representing a pan-European point of view of the problems. The integration of the new emerging nanotechnologies with the set of microtechnologies presently under the phase of diffusing their practice along the end-users association is ensured by the experience accumulated in the various activities of interdisciplinary research. The research centres will propose further advancement in lowering the scale of studying the problems. The network activity will test the technology on real conservation materials, and will enhance further developments. The validation will be pursued in various case studies performed at the conservation laboratories. The private companies will participate as receivers of the technology transfer to evaluate the use in the restoration yard.

4. Integration and co-ordination

The integrating factor of the proposed EoI and the European and pan-regional dimension it has, are reflected in that the Tuscany and other regions are doing (Pomerania (PL) for example), in the direction of locally integrated communities starting common R&D activities. The different experiences will have an European level of exchange and utilization.

The proposed network of excellence will provide opportunities of interaction between technology experts and conservation problems. The coverage of the present list of participants represents different technical expertise, with physical methodologies (laser, neutrons, X-ray, ion beam), nanomaterial science (AFM, SPM, LCVD, sol-gel), chemistry methodologies (colloids, organometallic, hybrid polymers), biology methodologies (biomediated nucleation, molecular probes). On their own conservation institutions represent a collection of important experiences on degradation problems and conservation studies concerning stone, metals, paintings, frescoes, polychromes, ceramics, paper, textiles, wood.

The co-ordination of the network will be based on the administration facility at IFAC-CNR, which has effectiveness demonstrated in a number of EC projects of the past programs.

LIST OF PUBLIC INSTITUTIONS WHO HAVE DECLARED THEIR INTEREST IN THE NETWORK	
Renzo Salimbeni Istituto di fisica applicata "N.Carrara" – IFAC – CNR Via Panciatichi 56/30 50127 Florence – Italy	<ul style="list-style-type: none"> • Sub-micron laser cleaning studies in artistic an archaeological metals; • Laser-induced-fluorescence monitoring of monuments by LIDAR instrumentation; • On-line monitoring of museum environment; • Multi-spectral reflectography of paintings; • Neutron spectroscopy of archaeological objects;
Mauro Matteini Istituto per la conservazione e la valorizzazione dei beni culturali – CNR Via degli Alfani, 74, 50121 Florence – Italy	<ul style="list-style-type: none"> • Characterization studies of alterations of stones • Synthesis of new functional materials for conservation and protection of stones • Interventional methodologies for restoration
Roberto Scopigno CNUCE – Istituto del CNR Area della Ricerca di Pisa, Loc. S.Cataldo Via G.Moruzzi, 1 56100 Pisa – Italy	<ul style="list-style-type: none"> • 3D modelling of artefacts; • 2D prospecting and 3D modelling of architectures; • Finite elements analysis of mural structures;
Luca Pezzati	<ul style="list-style-type: none"> • Multi-spectral reflectography of paintings;

Istituto Nazionale di Ottica Applicata Largo E.Fermi, 6 50125 Florence – Italy	<ul style="list-style-type: none"> • 3D modelling of artefacts;
Stefano Berti Istituto per la ricerca sul legno – CNR Via G. Barazzuoli, 23, 50123 Florence – Italy	<ul style="list-style-type: none"> • Characterization of wood species and analysis of deterioration • Microscopic techniques of investigation on wood
Giuseppe Sabatini Università di Siena – Dipartimento di scienze ambientali, Via Laterina, 8, 53100 Siena – Italy	<ul style="list-style-type: none"> • Reconstruction and interpretation of the microstratigraphy • Most accurate petrographic methods, including observations of ultra-thin sections
Pier Andrea Mandò Laboratorio di tecniche nucleari applicate ai Beni Culturali INFN, Sezione di Firenze Via Sansone 1 – Sesto Fiorentino Firenze – Italy	<ul style="list-style-type: none"> • Material characterisation by Ion Beam Analysis • High-resolution depth profiling of elements from surface by means of resonant reactions or other IBA techniques, e.g. for the diagnostics of degradation processes • High sensitivity time-resolved monitoring of air pollution, both indoor and outdoor
Annamaria Giusti Opificio delle Pietre Dure Laboratorio di restauro di Firenze Via degli Alfani, 78 50121 Florence – Italy	<ul style="list-style-type: none"> • Diagnostics and analysis of the conservation problems on metals, stone, paintings, wood, textile artefacts; • Restoration activity of metals, statues, paintings ;
Clara Baracchini Soprintendenza ai beni ambientali, architettonici, artistici e storici Lungarno Pacinotti, 46 56100 Pisa – Italy	<ul style="list-style-type: none"> • Diagnostics and analysis of the conservation problems on paintings, metals, stone, wood, textile artefacts; • Restoration activity of paintings, statues, monuments and historical buildings;
Mario Iozzo Soprintendenza archeologica della Toscana, Centro di restauro Via della Pergola, 65, 50121 Florence – Italy	<ul style="list-style-type: none"> • Diagnostics and analysis of the conservation problems on archaeological objects; • Restoration activity of archaeological objects;
Vasco Fassina Superintendency of Artistic and Historical Cultural Heritage of Veneto S.Marco 63, 30124 Venice - Italy	<ul style="list-style-type: none"> • Studies on deterioration of stone by SEM-EDX, mFT-IR, XRD, optical analysis of thin sections; • Studies on the behavior of previous restoration treatments, consolidants and protective materials; • Diagnostics and analysis of the conservation problems of stone facades and wall paintings;
Roberta Fantoni ENEA C.R. Frascati V. E. Fermi 45 C.P.65 I-00044 Frascati (ROMA)	<ul style="list-style-type: none"> • LIBS diagnostics on a nanometric scale • Laser ablation on a nanometric scale • Nanomaterials for protective coating by LCVD technologies
Rinaldo Cubeddu Dipartimento di Fisica Politecnico di Milano Piazza Leonardo da Vinci, 32 - IT 20133, Milano, Italy	<ul style="list-style-type: none"> • Laser cleaning using NIR or MID-IR wavelengths • Time-resolved laser spectroscopy - time-resolved fluorescence imaging • Development of devices for <i>in-situ</i> diagnosis of paintings based on LIF techniques
Enrico P. Tomasini Dipartimento di Meccanica - Univ. di Ancona, via Breccie Bianche, 60131 Ancona, Italy	<ul style="list-style-type: none"> • Laser diagnostics of wall paintings and artworks
Goran Aberg Department of Environmental Technology Institute for Energy Technology P.O. Box 40, NO-2027 Kjeller, Norway	<ul style="list-style-type: none"> • Laser ablation and stable isotope analyses on carbonate rocks • Diagnosis of decay status, weathering rate, effects of conservation measures • Determination of provenance
Wolfgang Kautek Laboratory for Thin Film Technology Federal Institute for Materials Research and Testing Unter den Eichen 87, D-12205 Berlin, Germany	<ul style="list-style-type: none"> • Ultraprecision machining with ultrashort-pulse lasers • Ultrashort-pulse laser electrochemistry • In-situ imaging and nano-manipulation by SPM • Laser cleaning of artworks
Klaus Dickmann Laserzentrum FH Münster (LFM) FB Physikalische Technik Stegerwaldstr. 39 48565 Steinfurt/Germany	<ul style="list-style-type: none"> • Micro and nano processing of metals, ceramic, glasses • Laser cleaning of artworks • Single molecule spectroscopy • Scanning probe microscopy
Hannelore Romich Fraunhofer_institut fuer Silicatforschung (ISC), Bronnbach Branch, Bronnbach 28, D-97877 Wertheim-Bronnbach, Germany	<ul style="list-style-type: none"> • Development of new materials by nanotechnology • Natural and artificial aging of materials • Testing of protective coatings and consolidants for glass, metals and ceramics • Environmental impact on materials • Multifunctional materials based on hybrid polymers
Costantinos Cefalas Theoretical and Physical Chemistry Institute	<ul style="list-style-type: none"> • 157 nm laser cleaning and processing of materials • synthesis of organometallic materials

(TPCI) - National Hellenic Research Foundation 48 Vas. Constantinou Ave., 11635 Athens - Greece	<ul style="list-style-type: none"> vacuum UV and X-UV spectroscopy of thin films and condensed matter
Marta Castillejo Institute of Physical Chemistry "Rocasolano", CSIC, Serrano 119, 28006, Madrid, Spain	<ul style="list-style-type: none"> UV laser micromachining and Laser cleaning of artworks Analysis of environmental or laser cleaning effects on artistic objects by optical laser spectroscopies, mass spectrometries (ToF-MS, MALDI-ToF-MS) and Surface analysis techniques (XPS, Mössbauer, SEM, etc)
Juan Gonzalez Grau Instituto de Recursos Naturales y Agrobiología (IRNAS)-Consejo Superior de Investigaciones Científicas, Apartado 1052, 41080 Sevilla, Spain	<ul style="list-style-type: none"> Molecular Biology (PCR, sequencing, molecular probes) microorganisms identification by DNA amplification
Maria-Angeles Villegas CENIM, Spanish Council for Scientific Research (CSIC), Avda. Gregorio del Amo, 8, 28040 Madrid, SPAIN	<ul style="list-style-type: none"> Design and preparation of environmental acidity sensors (thin films, 100-300 nanometers thickness, obtained by the sol-gel technology)
Rene Van Grieken Department of Chemistry University of Antwerp B-2610 Antwerpen, Belgium	<ul style="list-style-type: none"> Environmental chemistry Micro and trace analysis techniques
Alberto de Tagle Instituut Collectie Nederland Gabriel Metsustraat, 8 Postbus 76709 1070 KA Amsterdam, The Netherlands	<ul style="list-style-type: none"> Microanalytical technologies for paintings, paper, metals, textiles, archaeological objects Diagnostics of deterioration Laser cleaning of paper and paintings
Ian Sutherland Department of Chemistry Loughborough University Loughborough Leicestershire, LE11 3TU	<ul style="list-style-type: none"> Surface and colloid chemistry Spectroscopic techniques for studying surface treatments and coatings Biomediated nucleation and growth of calcite particles
Lubomir Spanhel Institut de Chimie Rennes Université de Rennes 1 Lubomir.Spanhel@univ-rennes1.fr Campus de Beaulieu 35042 Rennes Cedex, France	<ul style="list-style-type: none"> Taylored sol-gel-coatings carrying functional ZnO or other cheap metal oxide or metal nanoparticles
Veronique Verges-Belmin Laboratoire de Recherche des Monuments Historiques 29 rue de Paris 77420 Champs sur Marne France	<ul style="list-style-type: none"> Diagnostics and analysis of the conservation problems on paintings, metals, stone, wood, textile artefacts located in or on historical monuments SEM-EDS, FTIR microscopy.
Roxana Radvan National Institute of Research and Development for Optoelectronics 1 Atomistilor Str., Magurele-Bucharest, P.O.Box MG 5	<ul style="list-style-type: none"> Apochromatic optical system design - Optical system for Photolithography IR laser cleaning with high precision (in microscopic filed) Image processing
Gerard Sliwinski Photophysics & Laser Technique Lab. Polish Academy of Sciences, IF-FM Fiszera 14 80-231 Gdansk Poland	<ul style="list-style-type: none"> Nanosecond laser techniques for precise artwork conservation Real-time sub-nanoscale surface and elemental analysis and optical UV-NIR spectroscopy for diagnostic and monitoring of historical objects
National and University Library Turjaska 1 SI-1000 Ljubljana	<ul style="list-style-type: none"> Evaluation and development of conservation methods including laser technologies Diagnostics of degradation processes, in particular paper Immediate and long term stability studies
Jana Kolar University of Ljubljana Faculty of Chemistry and Chemical Technology Aškerčeva 5 SI-1000 Ljubljana	<ul style="list-style-type: none"> Extensive analytical support for analysis of organic materials Evaluation and development of conservation methods including laser technologies Diagnostics of degradation processes Immediate and long term stability studies
Constantinos Christofides Department of Physics, University of Cyprus B.O.Box 20537, 1678 Nicosia, CYPRUS	<ul style="list-style-type: none"> Photothermal and Photoacoustics Phenomena Use for Cultural Heritage

Private companies involved in the mentioned technologies are numerous in Europe. The following list is limited to the few ones presently involved in developing technologies for the field.

PRIVATE COMPANIES WHO HAVE DECLARED THEIR INTEREST IN THE NETWORK NANOCULT	
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THETIS Authentics Ltd. 41 Markou Mousourou, Athens 11636 Greece	<ul style="list-style-type: none">• Products and services based on the application of scientific methods and techniques to cultural heritage
Restauro Italia Via del commercio 10 55040 Capezzano Pianore, Camaiore (LU)	<ul style="list-style-type: none">• Diagnostic investigation for restoration of stone monuments• Laser cleaning and other restoration procedures for stone conservation

ENVIRONART

EXPRESSION OF INTEREST

6TH FRAMEWORK PROGRAMME FOR RESEARCH

DEVELOPMENT OF ADVANCED METHODS FOR APPRAISING ENVIRONMENT IMPACT ON ARTWORKS (ENVIRONART)

1. RATIONALE

European Cultural Heritage (CH) is an invaluable legacy of the past but also a potential source of economic prosperity and social cohesion. The fragile and finite nature of artworks is more than ever threatened by economic activities that induce the deterioration of its materials. Atmospheric pollution, urbanization, tourism, ground water fluctuations, etc, are factors affecting cultural goods regardless of frontiers. Therefore, European CH can only be properly protected by combining national efforts and resources in a truly collaborative international research. The causes, mechanisms and consequences of environmental damage have to be investigated in order to implement the adequate conservation strategies.

2. OBJECTIVES

We propose an Integrated Project (IP) to develop advanced methods and systems for monitoring environmental factors relevant to the degradation and damage of CH objects and for assessing the impact of those factors on artwork materials. The subject of this proposal is under priority thematic area 1.1.6 “Sustainable development, global change and ecosystems”. The objectives of this IP are:

1) Research in order characterise the relevant environmental factors with regard to artworks, to understand how the different artwork materials interact with each other and their environment, indoors or outdoors, and to know the mechanisms of ageing and decay. These interactions and the underlying mechanisms are complex and poorly known and a systematic characterisation effort is needed.

2) Development of new sensors, remote monitoring and data transmission systems and other information technology (IT) tools to monitor pollutants and physical variables and their impact on artwork state of conservation. To adapt, for to their use in CH, techniques well established in other fields such as satellite systems, non-intrusive and remote monitoring instrumentation, etc.

3) Elaboration of models to describe the behaviour of individual materials, composites and structures in different environments and contexts.

3. GENERAL APPROACH FORESEEN TO ACHIEVE THE OBJECTIVES

Research will be planned to tackle specific subjects in which relevant gaps have been identified. These involve: 1) air pollution effects, 2) long term behaviour of materials and 3) development of advanced techniques to the protection of CH. A brief description of these topics, together with significant examples of research and development activities, is given below.

3.1. Air pollution effects

3.1.1. Monument and sites

Available data indicate that air pollution in urban environments is mainly due to traffic. Research is needed to assess SO₂ and NO₂ impact on monuments. Measurements of pollutant concentration, spatial distributions and sources are necessary. Air pollution

damage to CH differs considerably from human health damage through differences on the impact of a given pollutant dose and time of exposure. Threshold and standards for the air pollution exposure of CH have to be formulated.

Proposed activity: Effects of Wet and Dry Atmospheric Deposition on Ancient Monuments and Monument Materials: The monitoring of environmental effects will be based on the identification of specific decay indicators, which are related to each prevalent decay mechanism (e. g. different types of stone) will be studied in order to assess the decay susceptibility of each material. The samples of different construction materials will be characterized by spectroscopic analysis (infrared, Raman, fluorescence and reflection). To monitor decay effects, techniques such as EDXRF and LIBS (laser induced breakdown spectroscopy) will be applied both to filters, which collect the atmospheric deposition and to the façade of monuments. Other accessory destructive techniques for the above-mentioned applications would be the AAS/AES (atomic absorption/emission spectroscopy), IC (ion chromatography) and fibre optic reflectance spectroscopy, which in the NIR zone provides non-destructively the identification of gypsum, the major alteration product.

3.1.2. Indoor air in museums and archives

Research will be carried out to improve the basic knowledge of the fundamental mechanisms regulating the response of materials to microclimatic changes, considering the effects on individual components and their synergy and to study the dynamic response of complex materials. For managing air quality in museums it is insufficient to consider each pollutant individually as risks arise from complex interactions of multipollutants in the air. Indoor pollution does not only come from outdoors but also from indoor materials, even those that form part of the artwork, and humans. Sometimes secondary reactions among gases and secondary products of indoor chemistry occur in CH environments. Methods to measure those will have to be developed.

Indoor pollutants are assumed to be deposited onto indoor surfaces and removed by filtrating air. However secondary reactions among gases occur causing damage. Dry deposition of particles and ways they react with surfaces have to be understood.

New and multifunctional sensors will be developed for air pollutants in museums and archives. Those have to perform with sensitivity, selectivity and stability. Options include optical absorption techniques for gas monitoring: DIAL, DOAS, tunable diode laser spectroscopy, etc, that have already been used to monitor atmospheric pollution, geological, volcanic emissions, etc.

Proposed activity: Raman scattering technique for in situ monitoring of atmospheric pollutants: Development of a cost-effective, portable and a versatile instrument (capable of monitoring several pollutant species simultaneously) for wide applications in environmental monitoring, particularly within museums and art galleries. The activity will yield technological innovations in optical, mechanical and electronic filtering for signal processing and retrieval; the use of tunable solid-state lasers for resonance enhancement of Raman scattering; Raman scattering data, including excitation profiles for resonance excitation.

Proposed activity: In-situ dosimeter for indoor microclimate monitoring: The implementation of a miniaturized device for the continuous dosimetry of comfort, i.e. temperature, humidity and lighting conditions, and pollution parameters, such as particles suspended in the air and gaseous pollutants (sulphur and nitrogen oxides, ozone, and carbonyl compounds). Many dosimeters can be permanently installed and Internet connected in the most important European galleries, so as to achieve a centralized monitoring and the European whole figure of indoor pollution and exposure

risks. Colorimetric passive samplers will be implemented for the dosimetry of comfort and pollution parameters. A comparative colorimetry between exposed and unexposed samplers will be performed by means of miniaturized optical fibre spectrophotometers. The instrumentation will be a sort of in-gallery miniaturized laboratory, i.e. an instrument which is able to perform dosimetry on a continuous basis and totally autonomous. Markers integrating effects that ageing, decay and reactions between components and the environment produce on artworks will be developed. Analysis and design will be specific for each type of artwork and component materials (stone, paintings, glass, metals, paper, etc) and the climatic environment (indoor, outdoor, buried). Specific dosimeters can be designed for paintings, glass sensors for stained glass, etc. Their use can be extended to outdoor environments.

Proposed activity: Protection of cultural heritage from the deposition of airborne particles: Development of a laser-based method that can be applied in situ and can measure particle deposition velocities onto surfaces in any orientation. This method, combined with in-field measurements, can investigate some of the physical and chemical pathways by which airborne particulate matter acts to damage artworks and will allow a better modelling of the deposition of pollutants onto surfaces. The final goal of the activity will be to design approaches to protect artworks or electronic equipment from damage by airborne particulate matter. Stainless steel test chambers, in which the microclimatic conditions, air-flow, particle number, concentration and particle size are under control, will be used to test the instrument performance. Comparison with measurements taken in-field and with other traditional methods will assess the performance of the new method.

3.2. Long- term behaviour of materials

Research will be performed to describe on a microscopic scale the processes of degradation: salt and frost damage, thermal and wetting/drying cycles. Study long-term behaviour of materials. Accelerated or artificial ageing can be used to assess long-term effects of treatments. Development of new instrumentation for monitoring parameters such as concentration of moisture, salts and methods to monitor the conditions of individual monuments. Laser induced fluorescence (LIF) could be used as a non-destructive technique for remote analysis of the surface of historic buildings or other large monuments

3.3. Advanced techniques applied to CH protection

Advanced studies on complex and interactive nature of chemical and physical processes suffered by materials will be performed. These processes have to be interpreted on a microscopic scale.

Existing analytical techniques will be developed and modified for CH with special requirements of high accuracy, micro- or non-destructive analytical procedures combined with small and irregular sample populations. Develop new advanced techniques to tackle unresolved conservation problems. Re-engineering of techniques and instrumentation to simplify their use. Effort will be put into the development of techniques for miniaturisation, and the portability of laser based optical and vibrational spectroscopies as fluorescence, LIBS, Raman, etc. Use of cavity ring-down spectroscopy as a sensitive analytical technique.

Advanced techniques using non-destructive or low-intrusive from other fields will be adapted to further improve understanding of materials and their state of preservation. An important example is holographic interferometry to study effects on materials and individuals objects. This technique monitors microscale movements directly from the

artwork in respect to any externally induced influence in an absolute non-destructive way, allowing exploitation of damage mechanisms and foreseeing the deterioration prior to occurrence.

Proposed activity: Development of multifunctional sensors for air pollutants: To design and develop multifunctional devices consisting in sensors able to trace different gas components in the environment. These could be based in mass spectrometric analysis or in optical absorption techniques. For the former, the Jet Propulsion Laboratory Sensor Web Project could be a source of inspiration. For the latter, long-path absorption measurements with tunable diode laser sources or range-resolved measurements (light detection and ranging, LIDAR) could be used. Both indoor and outdoor monitoring will be contemplated.

4. NEED AND RELEVANCE

Priority thematic area 1.1.6 “Sustainable development, global change and ecosystems” aims to develop activities for integration and harmonisation of the social and economic development with the preservation of European resources. Environmental quality influences CH, a unique European resource, in a dimension that is significantly different from its effects on human health and ecosystems. As indicated in the Working Paper for the STOA Unit on “Technological Requirements for Solutions in the Conservation and Protection of Historic Monuments and Archaeological Remains” (http://www.europarl.eu.int/stoa/publi/default_en.htm), systematic specific research to appraise the impact of the environment on artworks is needed and it can only be carried out with European dimensions.

5. SCALE OF AMBITION AND CRITICAL MASS

Europe has a leading role in the application of advanced techniques to CH protection. This is due to collaborative research and development actions being funded in the past two decades at European level that have resulted in the creation of an interdisciplinary field. Efforts to address different aspects of environmental impact on CH artifacts have taken place and have allowed the creation of research and development connections between research institutions, end-users, suppliers and development companies. A significant example of a collaborative effort of this kind is the G7 COST Action “Artwork Conservation by Laser” funded by the European Union. A Working Group in this Action is devoted to the study of “Real-time Optical Equipment for Environmental Aspects and the Response of Artworks” and is the nucleus of this Expression of Interest. A community is now emerging with enough critical mass to tackle scientific and technological advances in the field. An Integrated Project to appraise the environment impact on artworks and to develop methods and techniques for monitoring the quality of environment and the response of artworks will maintain Europe in the van of progress in the field and will produce an immediate social benefit by sustaining an adequate level of conservation of CH.

6. INTEGRATION

Integration of the resources of the participant members in the proposed Integrated Project will guarantee the research activities and technological developments. Activities related with demonstration, training, dissemination and transfer of technology will be an important aspect of the Project. Coordination and management of the Project will be carefully designed to achieve the goals. Subdivision in three areas, according with the subjects of the Project (air pollution effects, long-term behaviour of materials and development of advanced techniques to the protection of CH) will facilitate the

organisation of activities. Periodic meetings and electronic communication schemes will serve for transfer of information and coordination. The participants in this Expression of Interest are listed in the table below. Other participants, especially end-users and development companies, will be incorporated to the list when the formal application for this Project will be launched.

Name & Address	Relevant activities/expertise
<p>Dr Marta Castillejo Institute of Physical Chemistry “Rocasolano”, CSIC, Serrano 119, E-28006, Madrid, Spain, Tel: +34 915619400, Fax: +34 915613421, marta.castillejo@iqfr.csic.es</p>	<p>Analysis of environmental effects on artistic objects by optical laser Spectroscopies (LIF, LIBS, spatial and temporal analysis of ablation plume), mass spectrometries (ToF-MS, MALDI-ToF-MS) and Surface analysis techniques (XPS, Mössbauer, SEM, etc). With colleagues at Institute of Structure of the Matter, CSIC: Vibrational Spectroscopic Techniques (FT Raman, Raman confocal, FTIR, SERS, etc).</p>
<p>Dr Sheikh Rafi Ahmad Centre for Applied Laser Spectroscopy, DEOS, RMCS, Shrivenham Swindon, UK- SN6 8LA Tel: +44 01793 785233, Fax: +44 01793 785774 ahmad@rmcs.cranfield.ac.uk</p>	<p>Applications of laser spectroscopy for environmental diagnosis; R & D in Raman LIDAR for air borne species monitoring; R & D of optical sensor for on-line water quality monitoring; Raman spectroscopy of green-house gases.</p>
<p>Dr Martin Cooper National Museums & Galleries, Merseyside Laser Technology, Conservation Centre, Whitechapel, Liverpool, UK - L1 6HZ Tel: +44 0151478 4904, Fax: +44 01514784990 sculpture@nmgmcc1.demon.co.uk</p>	<p>Use of commercial equipment for the measurement of indoor air quality: Hydrogen sulphides, organic acids, aldehydes and VOCs. Sampling of dust particles for retrospective analysis by particle counter. Measurement of light level, temperature, humidity. Vibration analysis and integrated pest management policy</p>
<p>Dr Roxana Radvan National Institute of Research and Development for Optoelectronics, Platforma Magurele, 1 Atomistilor, Bucharest, Romania. Tel: +401 420 10 01, Fax: +401 420 10 01 Radvan@inoe.inoe.ro</p>	<p>Laser remote sensing LIDAR; indoor microclimate long term monitoring, mathematical modelling of aerosols transport, virtual equipment construction (by Lab VIEW).</p>
<p>Prof. Alessandra Andreoni Dipartimento di Scienze Chimiche, Fische e Matematiche dell' Università Agli Studi dell' Insubria, Via Valleggio 11, IT-22100 Como, Italy. Tel: +39 031 23 86 210, Fax: +39 031 23 86 119 Andreoni@fis.unico.it</p>	<p>Development of novel laser sources. Parametric generation of ultra-fast tunable lasers. Time-resolved laser spectroscopy with ultra-fast laser pulses. Development of electro-optic instrumentation for signal detection and data analysis.</p>
<p>Dr Vivi Tornari, Dr Vassilis Zafiropoulos Inst. of Electronic Structure & Laser (I.E.S.L.), Foundation for Research and Technology - Hellas (F.O.R.T.H.), Vasilika Vouton P.O. Box 1527, GR- 71110 Heraklion, Greece. Tel: +30 81391-394, -485, Fax: +30 81391305 vivitor@iesl.forth.gr, zafir@iesl.forth.gr</p>	<p>Real time holographic techniques: Influence of environmental changes. On-line process monitoring by holographic interferometry. Laser-based analytical techniques for analysis of environmental attack (encrustation). These techniques are LIBS and Laser Induced Fluorescence (LIF) combined with Laser Ablation. Scalar aging properties in varnishes and connection with environmental history.</p>
<p>Dr Ing. Wolfgang Kautek Laboratory of Thin Film Technology, Federal Institute for Materials Research & Testing, Unter den Eichen 87, D-12205 Berlin, Germany. Tel: +49 30 8104 1822, Fax: +49 30 8104 1827 Wolfgang.Kautek@bam.de</p>	<p>Extensive facilities and wide range of expertise in laser spectroscopic systems for environmental monitoring and basic research. State-of-the-art non-optical technologies include: X-ray diffraction, Scanning electron microscope, Auger Electron spectroscopy, profilometry etc.</p>
<p>Dr Noni Maravelaki-Kalaitzaki, Ministry of Culture, 25 th Dept. of Prehistoric & Classical Antiquities, 21 Chalidon Str., Chania, GR 73100, Greece. Tel: +30-82144418, Fax: +30-82194487 Noni.maravelaki@keepka.culture.gr</p>	<p>Real time laser spectroscopic techniques: Influence of environmental changes. On-line process monitoring by laser spectroscopic techniques and optical techniques. Field exposure studies of treated limestones and mortars by conservation products and evaluation of the surface characteristics through laser spectroscopic and optical</p>

	techniques.
Dr Roberta Fantoni ENA, FIS-LAS, C.R. V. E. Fermi 45, 00044 Frascati, Italy Tel: +390694005568, Fax: +390694005312 fantoni@frascati.enea.it	Development of local and remote sensor systems for quality monitoring (LIDAR, IR diode laser) LIBS to investigate deterioration of CH surfaces due to pollution.
Dr Rea Drakou, Demokritos Univ. of Thrace, Lab. Of Atmos. Poll. Sc. & Techn. GR 6700, Xanthi, Greece. Tel: +30-541 62954, Fax: +30- 541 73488 Kdrakos@otenet.gr	Measurement of parameters of airborne particulate (concentration, size distribution and chemical composition) and concentration of O ₃ , NO _x , VOC _s etc. Modelling and predicting of indoor air quality –based on data on outdoor concentrations and the building design and other environmental parameters.
Dr Anna Grazia Mignani IROE-CNR, Optics and Photonics Dept. Via Panciatichi 64, I-50127 Firenze, Italy. Tel: +39-055-4235 262, Fax: +39-055-4379 569 mignani@iroe.fi.cnr.it	Optical fibre sensors for: environmental monitoring (lighting, pollutants), structural monitoring (cracks, strains). Absorption and reflectance spectroscopy in the VIS.
Isabel Rodriguez-Maribona Centro Tecnológico Labein Cuesta de Olabeaga, 16, 48013 Bilbao, Spain Tel: +34-94 489 2400, Fax: +34- 94 441 1749 Isabel@labein.es	Studies on deterioration of stone and mortars. Research on new materials for CH.
<i>Dr M. Angeles Villegas</i> National Center for Metallurgical Research, CENIM-CSIC, Avda Gregorio del Amo, 8 28040 Madrid, Spain Tel: +34-91 5538900, Fax: +34- 915347425 mavillegas@cenim.csic.es	Environmental acidity sensors for both outdoor and indoor evaluation
Dr Cesareo Saiz-Jimenez Instituto de Recursos Naturales y Agrobiología Apartado 1052, 41080 Sevilla, Spain Tel: +34-954524002, Fax: +34- 954524909 saiz@irnase.csic.es	The cathedral of Seville as a laboratory for monitoring effects of air pollution on different materials. Installation, distribution and reading of sensors. Effects of air pollution on monuments. Factors affecting the deposition of organic compounds on different surfaces and materials. Monitoring of particles in indoor and outdoor air. Source identification of organic compounds.
Dr Mónica Alvarez de Buergo Instituto de Geología Económica (CSIC-UCM), Facultad de Ciencias Geológicas Universidad Complutense de Madrid 28040 Madrid, Spain Tel: +34 91 3944903, Fax: +34 91 5442535 alvarezm@geo.ucm.es	Characterization of building materials (stone, mortars, bricks, earth, etc) Decay of building materials: identification of factors, causes and mechanisms, as well as decay indicators Influence of environmental factors on the decay processes (both climatic and pollutants). Long-term behaviour of materials (artificial accelerated ageing tests).
Dr Mario Vendrell University of Barcelona Dept. Crystallography and Mineralogy Tel +34 934 021 357, Fax +34 934 021 340 c/ Martí i Franquès, s/n Barcelona 08028, Spain marius@geo.ub.es	Decay processes on CH materials. Effects of the restoration processes. Interaction rock-microorganisms.
Dr Jesus M. Valero Fundacion INASMET, Mikeletegi Pasealekua 2, 20009, San Sebastián. Spain Tel: +34943003700, Fax: +34943003800 jvalero@inasmet.es	Studies on biological phenomena related to the environmental impact on artworks. Interaction of inorganic and organic pollutants and biological deterioration; protection of CH of biological deterioration enhanced by deposition of airborne particles. Long-term effects of microorganisms growth. Development of new techniques for detection of biological entities and their effect on CH.

ARCHAEOLOGIA BULGARICA

Dear colleagues,

1. Issue 6, 2002/1 of Archaeologia Bulgarica will be printed in a week.

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Articles

Kovacheva, M./ Jordanova, N./ Kostadinova, M./ Karloukovski, V./ Gigov, V./ Gergova, D./ Genov, D.: Summary Results of the Archaeomagnetic Studies of the Bronze Age Tell Djadovo, District of Sliven, South Bulgaria

Nikov, K.: Stamped Decoration Pithoi in Southern Thrace from the Early Iron Age

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Stancheva, M./ Borissova, I.: Late Roman Belt Decorations with Enamel from Serdica

Kirova, N.: Specialized Medical Instruments from Bulgaria in the Context of Finds from Other Roman Provinces (I-IV C AD)

Reviews

Vida, T./ Volling, T.: Das slawische Brandgraberfeld von Olympia. Rahden/Westf. 2000. (Curta, F.)

Daim, F. (Hrsg.): Die Awaren am Rand der byzantinischen Welt. Studien zu Diplomatie, Handel und Technologietransfer im Frühmittelalter. Innsbruck 2000. (Inkova, M.)

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All articles in *Archaeologia Bulgarica* are submitted to peer review. <http://www.techno-link.com/clients/lvagalin/index.html> (ArchBulg)

2. THE ROMAN AND LATE ROMAN CITY. (The International Conference, Veliko Turnovo 26-30 July 2000) has just been published. ISBN 954-430-845-8 Price: USD 33, incl. postage (surface)

Annotation: 69 papers in English (mostly), German, French and Bulgarian of scholars from Bulgaria, Germany, Great Britain, Greece, Macedonia, Poland, Ukraine, Yugoslavia; 22 X 29 cm, hardback, 438 pp.

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3. A. Poulter: From City to Fortress and from Town to Country: 15 Years of Anglo-Bulgarian Collaboration
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6. V. Dintchev: About The History of Nicopolis ad Istrum and Its Territory in The Second Half of The 5th Century (Bulgarian, summary in English)
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22. G. Mavrov: Additional Conservation of A Roman Statue in Nicopolis ad Istrum (in Bulgarian)
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59. K. Grala: Einige Probleme des Seeverkehrs von kleinasiatischen Marmoren im I-VI Jh.
60. B. Bojkova: Architectural Monuments Represented on The Coins of Serdica (in Bulgarian with English summary)
61. D. Vladimirova-Aladzova: The Shoumen Castle Coin Circulation in The Late Antiquity (in Bulgarian with English summary)
62. R. Nenova-Merdjanova: Bronze Production of Pautalia
63. I. Popovic: The Production of Gold and Silver Workshops in Late Roman Sirmium
64. D. Mitova-Dzonova: Largitiones of Constantinus I and Theodosius II
65. A. Haralambieva: Production of Dress Ornaments in The Fortresses and Small Settlements in North Bulgaria During The Period from The 5th till 7th C AD
66. A. Belivanova/ B. Spasov: New Data on Metal-Working During Late Antiquity (in Bulgarian)
67. E. Klenina: Earthenware of The II-III Centuries AD from Excavations of Legionary Bath Canal in Novae (Moesia inferior)
68. B. Stawoska-Jundzill: Relief Decoration on The Lamps from Novae
69. S. Cherneva-Tilkiyan: Imitations of Athic Lamps of III-IV C Found in Philippopolis (in Bulgarian)

Lyudmil Vagalinski
 archaeologist & publisher
 Sofia

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ART AND ARCHAEOLOGY TECHNICAL ABSTRACTS (AATA) ONLINE NOW AVAILABLE

Art and Archaeology Technical Abstracts (AATA) is now available as AATA Online: Abstracts of International Conservation Literature, a free resource at <http://aata.getty.edu>.

Please visit this site to search the 36 volumes of Art and Archaeology Technical Abstracts and its predecessor, IIC Abstracts, published between 1955 and the present.

The AATA Online staff will be normalizing the data and making enhancements to this site over the next several months. By year-end, abstracts from the 20 AATA special supplements and almost 2,000 abstracts published between 1932 and 1955 by the Fogg Art Museum and the Freer Gallery of Art will be included as well. New abstracts will be added quarterly, as AATA Online staff work with subject editors and volunteer abstractors to expand the breadth, depth, and currency of coverage.

Together with the BCIN database www.bcin.ca, AATA Online provides professionals with free access to thousands of abstracts and bibliographic records related to the conservation and management of the world's material cultural heritage.

Please note that AATA Online is currently optimized to run with Internet Explorer for both the Mac and the PC. While the database does run with Netscape, functionality is limited. AATA Online technical staff are working to resolve the limitations posed by the Netscape browser.

AATA Online is a service of the Getty Conservation Institute (GCI) in association with The International Institute for Conservation of Historic and Artistic Works (IIC).

If you have questions or need assistance in using the site, please contact the AATA Online office at aata@getty.edu.

CAMS position opening

CAMS has an immediate opening for a BS/MS level scientist to manage our natural radiocarbon AMS sample preparation laboratory. The full details are posted below and can be found on the web at: <http://www.llnl.gov/jobs/postings.jsp?jobID=10387>

Please contact me if you are interested or if you have any questions. In order to be considered for this position you ***MUST*** submit your resume at the LLNL web site listed above.

Michaele Kashgarian
Center for Accelerator Mass Spectrometry L-397
Lawrence Livermore National Laboratory
PO Box 808
7000 East Avenue
Livermore, CA 94550
Mail to: kashgarian@llnl.gov
Tel. (925)422-3703
Fax. (925)423-7884

Nature and Scope of Position

The Center for Accelerator Mass Spectrometry (CAMS) has an immediate opening for a Scientific Associate (302.1) or Sr. Scientific Associate (302.2) to manage our natural radiocarbon sample preparation laboratory. Will manage the day-to-day operations of the CAMS sample preparation laboratory, oversee technical staff, and train visiting scientists and students in our sample preparation techniques. At the 302.2 level, will also independently operate the accelerator as needed, conduct data analysis, and create data reports for scientific collaborators. There will be an opportunity for collaborative research at both levels. Will report to senior scientific staff in CAMS natural radiocarbon group.

Essential Duties

- * Manage the CAMS sample preparation laboratory, overseeing and managing the work of 500-series technicians and work/study program students.
- * Provide technical oversight of the conversion of natural carbonaceous sample material to graphite for AMS isotopic analysis using standard chemical procedures developed at CAMS.
- * Train visiting scientists and students in AMS sample preparation techniques.
- * Participate in individual and collaborative research projects with CAMS research staff and/or outside collaborators.
- * Maintain sample preparation equipment making repairs and upgrades as necessary including maintenance of LabView control software.
- * Ensure appropriate materials are accessible in the sample processing laboratory at all times.
- * Maintain laboratory sample logs, notebooks and computer databases.

- * At the 302.2 level
- * Operate the accelerator during AMS 14C runs.
- * Conduct data analysis of 14C AMS samples and create data reports for internal and external collaborators.

Marginal Duties

- * None

Essential Skills, Knowledge, and Abilities

- * BA/BS in chemistry, biology, or earth sciences or related field, or equivalent level of knowledge.
- * Experience providing advanced technical support for scientific research involving naturally occurring radioactive isotopes.
- * Experience with the quantitative gas transfer of small-volume samples.
- * Experience with extraction of carbon from a wide variety of natural materials and graphitization of carbon samples for AMS analysis.
- * Experience in determining data analysis methods and performing data analyses.
- * Experience following laboratory procedures, keeping good written records with strong attention to detail, and working effectively under conflicting and rigorous deadlines.
- * Experience leading, managing and working as part of an interdisciplinary team.
- * Experience with desktop computers, databases and data analysis software applications.
- * Communication skills necessary to work effectively in a diverse research team environment, give technical presentations, and document and report research results.
- * At the 302.2 level:
- * Experience operating an accelerator mass spectrometer.
- * Experience conducting data analysis and preparing data reports for AMS or conventional 14C measurements.

Desired Skills, Knowledge, and Abilities

- * MS/MA in chemistry, geology, biology or related field or an equivalent level of demonstrated knowledge and experience.
- * Experience in the preparation of natural abundance materials for radiocarbon dating and or a strong background in analytical or isotope chemistry.
- * Demonstrated working knowledge of LabView software on the MacOS platform.

Pre-Placement Medical Exam: A job related pre-placement medical examination may be required.

Security: Anticipated clearance level: P

NERC POST-DOCTORAL POSITION ON ANCIENT DNA/POPULATION GENETICS/EVOLUTION

**Department of Zoology, University of Oxford
RS1A salary scale: £17,626 - £26,491 p.a.
(Ref: AT02019)**

A 3 year NERC funded post-doctoral position is now available at the Henry Wellcome Ancient Biomolecules Centre in Oxford. The position forms part of an on-going program examining the population dynamics of large mammals during the Late Pleistocene (Barnes et al. Science 295: 2267-2270, 2002). This program utilises ancient DNA obtained from permafrost and cave-preserved bone samples from Alaska, Siberia, and Europe to study extinctions, migrations, and other population responses to large-scale environmental change during the last Ice Age. Candidate species include a wide range of extinct and extant megafauna.

The research requires a combination of fieldwork in remote areas, ancient DNA laboratory techniques, and advanced computer-based analysis. Consequently, we need an experienced and highly motivated researcher able to work independently, and synthesise data from a variety of fields. Relevant subject areas include; population genetics, paleoecology, molecular systematics, evolution, archaeology/isotopic dating, climate change and extinctions. Evidence of a strong publication record, and innovative approaches to research would be a major asset.

The ABC is a state-of-the-art ancient DNA facility featuring a dedicated isolated building, positive air-pressure systems, containment rooms, and a variety of specialist equipment. Current research areas include mammal population genetics over geological time periods, avian evolution/extinctions, human migrations/evolution and molecular rate analyses. Further details are available at; <http://evolve.zoo.ox.ac.uk/>

The position is available immediately, initially for a period of 2.5 years, with the potential of a 6 month extension. Applications in writing enclosing CV should be addressed to the Administrator, Department of Zoology, University of Oxford, South Parks Road, Oxford OX1 3PS giving names and addresses of three referees, quoting reference number AT 02019, email Sally.Burton@zoo.ox.ac.uk Closing date: Friday 14 June 2002.

GRADUATE STUDY IN GEOARCHAEOLOGY

Researchers at McMaster University, Hamilton, Ontario, Canada, in collaboration with archeologists from Granada, Spain, are studying the > 1 Ma archaeological and faunal site of Orce. An opening exists for a graduate student (M.Sc. or Ph.D) to work on electron spin resonance (ESR) dating of teeth and sediments from this site which may represent the oldest hominid occurrence in Western Europe. We seek a student with an undergraduate degree in geology, physics, or anthropology (archaeology, with science background) for admission in September, 2002. To gain some idea of ESR dating, potential candidates might read one of the articles on this subject listed below.

Please contact either H. P. Schwarcz (schwarcz@mcmaster.ca) or W. J. Rink (rinkwj@mcmaster.ca) as soon as possible. Applications for graduate study can be obtained from the office of the School of Geography and Geology, McMaster University, 1280 Main St. West, Hamilton, ON, L8S 4M1, Canada. Or at the School of Geography and Geology website at www.mcmaster.ca.

References:

Rink, W.J. (1998) Electron spin resonance (ESR) dating and ESR applications in Quaternary science and archaeology. *Radiation Meas.*27: 975-1025.

Schwarcz, H.P. and Rink, W.J. (2000) ESR dating of the Die Kelders archaeological site. *Jour. Human Evol.*, 38:121-128.

Rink, W.J., Schwarcz, H.P., Lee, H.K., Rees-Jones, J., Rabinovich, R., and Hovers, E. (2001) Electron spin resonance (ESR) and thermal ionization mass spectrometric (TIMS) ²³⁰Th/²³⁴U dating of teeth in Middle Paleolithic layers at Amud Cave, Israel. *Geoarchaeology*.16: 701-717.

ON LINE GUIDE TO GRADUATE SCHOOLS IN ARCHAEOLOGY

For an online, searchable, keyworded guide to graduate schools that teach archaeology, please visit the site: <http://archaeology.about.com/library/univ/blggsa.htm>
The index includes location, keyword, and alphabetic pages.

K. Kris Hirst

About.com Archaeology Guide

<http://archaeology.about.com>

email: archaeology.guide@about.com



THE MEDITERRANEAN **ARCHAEOLOGICAL TRUST GRANTS TO** **ASSIST PUBLICATION**

The Mediterranean Archaeological Trust, set up in 1959 for the promotion of the study of archaeology, invites applications in 2002 - 2003 for a programme of grants, made on a competitive basis, to assist with the publication of archaeological fieldwork in the Mediterranean world. Within the terms of the Trust, priority may be given to Bronze Age subjects. Grants for any amount, however small, will be considered, provided they expedite publication, but the maximum grant awarded to any one project will not exceed GBP 10,000.

Applications comprising a 2000 word maximum description of the proposed work and an outline budget, together with at least two, not no more than four referees' names, should be sent no later than 15 January 2003 to:

Professor Sir John Boardman
(Mediterranean Archaeological Trust)
Ashmolean Museum
Oxford OX1 2PH
UK

or by fax to +44-1865-278082 (NOT by e-mail)

The references should be sent directly by the referees or accompany the application in a sealed envelope. Successful applicants will be informed by around the end of March 2003.

ATHENS YIELDS FURTHER ANCIENT SECRETS

Ephorate reports on a tough but productive year with some exciting new finds and progress on upgrading archaeological sites

KATHIMERINI English Edition



EPA

A rock-cut chamber containing a relief of Pan seated and a nymph dancing has been found at the corner of Aiginitou and Apostolou Pavlou streets.

By Iota Sykka - Kathimerini

It was a tough but productive year for the First Ephorate of Prehistoric and Classical Antiquities, which is responsible for the Acropolis area.

In the ephorate's annual report on May 27, director Alkistis Horemi said that some excavations had resulted in unexpected finds, such as a sanctuary of Pan carved into the rock along Apostolou Pavlou Street.

Other finds at the Roman Agora have added to our knowledge of its extent, structure and settlement phases.

What archaeologists believe to be a sanctuary of Pan was found during the work on creating a new approach to the Pnyx archaeological site and shaping the area surrounding the junction of Aiginitou and Apostolou Pavlou streets.

On the northern wall of a newly discovered rock-cut chamber is a relief of Pan, seated on a rock, and a dancing nymph.

“Between the two figures,” said Horemi, “is the shape of a tree, and to the left is a dog sitting on its hind legs, facing the two figures. The image is unique. It probably depicts the myth of Pan and the nymph Pitys, who was turned into a tree. This is probably a sanctuary of Pan.

“On the external wall of the chamber is a large relief, with a band of imitation marble facing on its base, surmounted by floral decoration.”

Work is currently under way on the project of landscaping the 70 hectares of Philopappou Hill.

This is part of the overall unification of archaeological sites, and the objective is to create “a visitable site with the double identity of an archaeological park and a green area for recreation, with the accent on the monuments, temples, fortifications, road grid and water system.”

The monument known as Socrates' Prison has been cleaned up.

A protective cement wall erected during World War II to make a hiding place for the antiquities of the Acropolis and the National Museum was pulled down, revealing what proved to be “the back of a monumental two-story house, the rear rooms of which had been cut out of the rock, although the front rooms were more conventional masonry.”

Temple of Zeus

The demolition of the Bastia Theater — started in the 1930s and never completed — brought a surprise. The theater had not destroyed the antiquities beneath it, and a large portion of the ancient Koile road was uncovered, together with the rock-cut dwellings on either side of it.

On the archaeological site of Aghia Marina, ancient rock carvings from a temple of Zeus which had been discovered in 1830 but later covered over by earthworks, were rediscovered.

At the Ancient Agora museum, housed in the restored Stoa of Attalos, conservation work was done on the roof tiles, the marble guttering decorated with a lion’s head, and the decorative frontal tiles.

Statues were cleaned and repairs were made to 200 of the 500 vases that had suffered damage in the 1999 earthquake.

Work on the site of the Roman Agora and Hadrian’s Library has concentrated on freeing the two large Roman monuments. To the east and west of the Fetihye Mosque was found part of the stylobate of the eastern peristyle, with six columns. The corresponding portion of the eastern peristyle and shops were freed from cumbersome architectural additions.

“Another important find,” said Horemi, “was the remains of three apses and the north aisle of the early Christian church which preceded the Fetihye Mosque. These had been excavated in 1964. The central apse of the basilica is based on part of the stylobate of the eastern peristyle of the Roman Agora.

Basilica and mosque

“When a large tree was removed from the central apse, the lower part of a pentagonal niche was found, which must be the mihrab of a mosque. This means the basilica was once used as a mosque. So when Mohammed the Conqueror came to Athens in 1456, he would have seen this mosque in the basilica, and not the Fetihye Mosque, which must have been built later.”

After the destruction of the central aisle of the basilica, the northern apse was used as a chapel in the middle Byzantine period, and the masonry altar, part of the floor and remnants of a casket-shaped tomb are among its remains.

Most of the antiquities found on the Makryianni site where the new Acropolis museum is to be built (including a densely populated part of the ancient town with buildings from the seventh century BC, an early Christian house and a third-century AD Roman bath) will be displayed in situ.

The 2001 excavation uncovered the continuation of the ancient Road I, remains of middle Byzantine era installations, and part of a building complex erected in the mid-seventh century AD on the ruins of older early Christian and Roman housing. One notable find was the marble head of a philosopher.

The western portion of a late Hellenistic marble sculpture workshop was found next to a group of storage tanks. These contain fragments of unfinished sculptures and vases, which show what types of goods were produced. West of Road II in two bell-shaped tanks that belonged to a late Hellenistic house were a large number of vases, together with a table and cooking utensils from two successive evacuations of the site which took place in the second century AD and early Roman times

Please visit the site: <http://www.ekathimerini.com/4dcgi/news/content.asp?aid=17107>

ΣΤΗΝ ΟΔΟ ΑΠΟΣΤΟΛΟΥ ΠΑΥΛΟΥ ΒΡΕΘΗΚΕ ΣΠΗΛΑΙΟ ΜΕ ΑΝΑΓΛΥΦΗ ΠΑΡΑΣΤΑΣΗ

ΙΕΡΟ ΤΟΥ ΠΑΝΑ ΣΤΗΝ ΠΝΥΚΑ

Της Ν. ΚΟΝΤΡΑΡΟΥ-ΡΑΣΣΙΑ

Κάτω από την Πνύκα, στην οδό Απ. Παύλου, βρέθηκε άγνωστο σπήλαιο του Πάνα με ανάγλυφη παράσταση πάνω στο βράχο στην οποία απεικονίζεται ο θεός των βοσκών κρατώντας λαγοβόλο (ράβδος ή αγγείο για το κυνήγι λαγού) με μία Νύμφη που χορεύει, ενώ ανάμεσά τους διακρίνεται ένα δέντρο και πλάι τους ένας σκύλος ο οποίος κάθεται και απολαμβάνει τη σκηνή.

«Η παράσταση είναι μοναδική», σύμφωνα με την προϊσταμένη της Α' Εφορείας Προϊστορικών και Κλασικών Αρχαιοτήτων Αλκ. Χωρέμη, που παρουσίασε προχθές στο αμφιθέατρο του υπουργείου Πολιτισμού, στην ετήσια εκδήλωση της Ένωσης Φίλων Ακροπόλεως, το εντυπωσιακό αυτό εύρημα μαζί με το συνολικό έργο της Εφορείας για το 2001. Μια τεράστια δραστηριότητα που αφορά 10 αρχαιολογικούς χώρους και επανεκθέσεις σε πέντε μουσεία.



Κάτω από την Πνύκα επί της οδού Απ. Παύλου βρέθηκε λαξευμένο στον βράχο το Ιερό του Πάνα (4ος αι. π.Χ.)

Το Ιερό του Πάνα αποκαλύφθηκε όταν σκάβοντας οι αρχαιολόγοι, με επικεφαλής τους κ.κ. Κ. Λαζαρίδη και Ο. Βογιατζόγλου, για τη διαμόρφωση της νέας εισόδου του αρχαιολογικού χώρου της Πνύκας (Απ. Παύλου και Δημ. Αιγινήτου) στο πλαίσιο των έργων Ενοποίησης των Αρχαιολογικών Χώρων, βρήκαν ένα θάλαμο λαξευμένο στο βράχο. Στο βόρειο τοίχωμα του θαλάμου είδαν την ανάγλυφη παράσταση, ενώ στο εξωτερικό τοίχωμά του σώζεται μεγάλων διαστάσεων τοιχογραφία με φυτική διακόσμηση και ζώνη που μιμείται ορθομαρμάρωση. Το μνημείο χρονολογείται στον 4ο αι. π.Χ.



Η «φυλακή του Σωκράτη»

Η λεγόμενη «Φυλακή του Σωκράτη» στον λόφο Φιλοπάππου είναι απλώς ένα διώροφο σπίτι του 4ου αι. π.Χ. Τη φυλακή πρέπει να την ψάξουν οι αρχαιολόγοι αλλού

Στην ίδια εποχή, στον 4ο αι. π.Χ., ανάγεται και το μνημείο που ως τώρα ξέραμε ως «Φυλακή του Σωκράτη» στο γειτονικό λόφο Φιλοπάππου. Αρα αποκλείεται να έχει σχέση με τον σοφό της αρχαιότητας που έζησε τον 5ο π.Χ. αι. Με τα έργα ανάδειξης που γίνονται γκρεμίστηκε ο τσιμεντένιος τοίχος, που είχε χτιστεί κατά τον Β' Παγκόσμιο Πόλεμο μπροστά από το μνημείο, ώστε να γίνει μια κρύπτη για τη φύλαξη των αρχαιοτήτων της Ακρόπολης και του Εθνικού Μουσείου και αποκαλύφθηκε η εντυπωσιακή όψη ενός κτιρίου. Διαπιστώθηκε στη συνέχεια πως δεν είναι η πρόσοψη

αλλά το πίσω μέρος μιας διώροφης οικίας που η πλάτη της ακουμπούσε στο βράχο. Δεν πρόκειται λοιπόν για φυλακή.

Οι εργασίες που γίνονται αθόρυβα τα τελευταία χρόνια στους λόφους Φιλοπάππου, Πνύκας, Νυμφών, σε μια έκταση 700 στρεμμ. είχαν και άλλα σημαντικά αποτελέσματα.

* Γκρεμίστηκε το τσιμεντένιο θέατρο Μπαστιά και οι αρχαιολόγοι διαπίστωσαν με έκπληξη ότι τα θεμέλιά του δεν είχαν καταστρέψει τις αρχαιότητες, που είναι μεγάλο τμήμα της αρχαίας οδού Κοίλης και εκατέρωθεν αυτής λαξεύματα οικιών και αγωγών.

* Στο λόφο Νυμφών μπροστά στο Αστεροσκοπείο, με αφορμή την υπογειοποίηση κάποιων καλωδίων της ΔΕΗ κάτω από μπάζα και πυκνή βλάστηση, φάνηκε το υπαίθριο ιερό των Νυμφών και η επιγραφή πάνω στο βράχο που γράφει ΗΟΡΟΣ ΝΥΜΦΩΝ ΔΕΜΟ, δηλ. ορόσημο των Νυμφών και του Δήμου. Εκεί βρέθηκαν και πολλά ειδώλια των αρχαϊκών κυρίως χρόνων.

* Επίσης στον αρχαιολογικό χώρο Αγ. Μαρίνας εντοπίστηκε το λαξευμένο στο βράχο ιερό του Διός, γνωστό από το 1830, που είχε εξαφανιστεί κάτω από επιχώσεις.

Ο περίπατος της Ακρόπολης

Γύρω από το Βράχο της Ακρόπολης αποκαταστάθηκε πλήρως ο αρχαίος περίπατος (μήκους 1.500 μ.) περιμετρικά του βράχου που δεν ήταν βατός για τους νεοέλληνες. Για τον καθαρισμό των απόκρημνων περιοχών του βράχου από τις επιχώσεις και τα πάσης φύσεως απορρίμματα χρειάστηκε να σκαρφαλώσει ειδικό συνεργείο αναρριχητών, οι οποίοι έκοψαν και τις φραγκοσυκιές. Κάτω από την Ακρόπολη, στην οδό Τριπόδων 32-34, σε όμορα ακίνητα αποκαλύφθηκε η αρχαία οδός Τριπόδων. Βρέθηκε μια πέτρινη σκάλα πλάτους 2,20 μ. πλαισιωμένη από δύο ορθογώνιες βάσεις. Η αρχαία οδός ανηφορίζει προς την Ακρόπολη και εκατέρωθεν αυτής σε ψηλότερο επίπεδο βρέθηκαν και τμήματα δύο χορηγικών μνημείων.

Σημαντική δουλειά γίνεται επίσης στο εργαστήριο του Μουσείου της Ακρόπολης, όπου άρχισε η συντήρηση μεγάλων εναέτιων γλυπτών του Παρθενώνα και άλλων γλυπτών από τις αποθήκες που θα εκτεθούν στο νέο Μουσείο της Ακρόπολης. Επίσης στο Μουσείο Κανελλοπούλου συντηρήθηκαν 23 αγγεία και πήλινα ειδώλια που είχαν γίνει κομμάτια από τον τελευταίο σεισμό.

Όπως δείχνουν τα αποτελέσματα των ερευνών γύρω από την Ακρόπολη, η αττική γη φυλάει ζεστά μέσα στα σπλάχνα της πολλές ακόμη εκπλήξεις για τις επόμενες γενιές. Κάτι που είδαμε και με τα τέσσερα αρχαϊκά γλυπτά του Κεραμεικού, που ειρήσθω εν παρόδω παρουσιάστηκαν χθες στο Γερμανικό Αρχαιολογικό Ινστιτούτο σε επιστημονική συνάντηση, κλειστή για τους δημοσιογράφους και λοιπούς κοινούς θνητούς.

ΕΛΕΥΘΕΡΟΤΥΠΙΑ - 29/05/2002

Please visit the site:

http://www.enet.gr/online/online_hprint.jsp?q=%C9%E5%F1%FC&a=&id=54589064

