

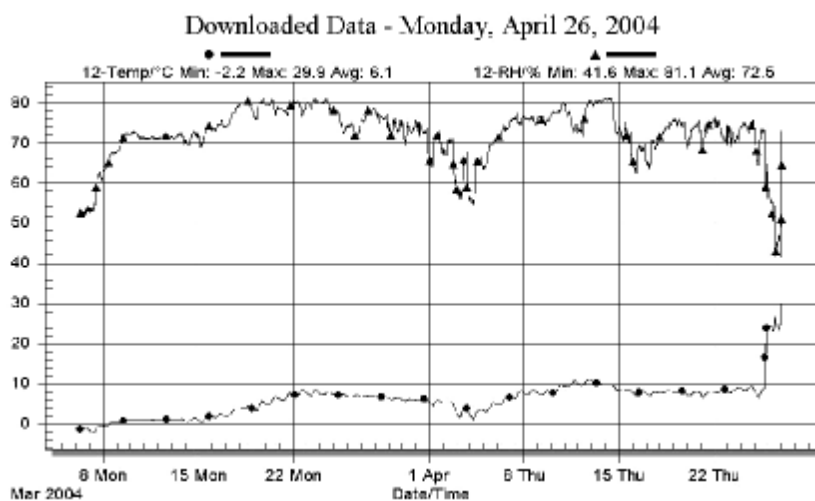
## REPORT ON ADVANCED ON SITE LABORATORY FOR THE EUROPEAN HERITAGE RESTORATION - CLT 2003/A1/RO-515

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**Introduction.** First “European Heritage Laboratory” in Romania demonstrated at superlative level its usefulness and was a relevant instrument for multinational and multidisciplinary work for the Cultural Heritage benefit. This time, the European Laboratory was concentrated on multiuse application that generated direct and indirect results, and also very strong feedback. That’s why, based on its structure, this project multiplied the final results at the same input effort. More clear, there are benefits for the very important archaeological sites, for the co-organizers and participants consisting in the informational feedback related to their advanced activity, and for the more than 150 fellows participants – from all over the Europe – restorers, conservators, archaeologists, physicists, historians etc. Hosted by The National Museum of History and Archaeology from Constanta, having as co-organizers important European institutions: National Institute of Research and Development for Optoelectronics from Romania (INOE), Institute of Applied Physics “N.Carrara” from Italy (IFAC), Foundation for Research and Technology – Institute of Electronic Structures and Laser from Greece (FORTH), gathered also participants such as National Institute of Historical Monuments from Romania (INMI), Malta Centre for Restoration (MCR), Art Innovation from The Netherlands, ENEA –Frascati from Italy, this laboratory involved all participants in organized teams to the on site experiments.

**Event structure.** The laboratory program and timetable was carefully elaborated. Because this project involved special techniques and less known methods, the first days were dedicated to theoretical training and working methods elaboration, a number of days was allocated for on site investigations, diagnosis, and demonstrations. Daily, parallel 5 working groups were organized in Histria, Adamclisi, Basarabi, Hypogem, and the 5<sup>th</sup> one was organized for documentation – and headquarter of the action in museum. In fact, 5 small engines simultaneously worked during those days. The co-organizers teams, and invited experts, and named responsible of each site coordinated the activity. The participants were organized in groups that have been involved in the large activity developed there. They took images, note the measurements, followed different alterations of materials, make noticed. These groups were rotated to the different working places for the participants’ better training.

The end table contains synthetic results of the “European Heritage Laboratory” - CLT 2003/A1/RO-515 that have been obtained during the on site laboratory. The superscripts are regarding the very advanced projects and preliminary activities for the near future.



**Fig.1. Example of RH and temperature recording inside Basarabi Complex.**

**Follow up.** In the frame of National Competition of Research Program – CERES, based on the accumulated experience and experts' recommendations, a national consortium applied with a proposal for certain activities regarding conservation of Funeral painted chambers (particularly at Hypogeum). This project received a very high appreciation. The created consortium for this project is composed by National Museum of History and Archaeology from Constanta, National Institute of Research and Development for Optoelectronics (INOE), Grafix Group and art restorers from National University of Art – Dep. of Conservation/Restoration. This project is already working and it will assure the microclimate control combined with chemical analysis indoor; it will also sustain the rehabilitation of the protective building and will organize a dedicated exhibition in the main building of the museum.

In the same competition another good proposal was focused on Basarabi – Ensemble. The project consortium is created by National Museum of History and Archaeology from Constanta, National Institute of Research and Development for Optoelectronics, University of Architecture and Urbanism "I. Mincu" from Bucharest, and Institute of Art History of Romanian Academy of Science. This dedicated project had already organized a working point on site for long term monitoring, and will deliver a project for protective construction. The enormous photographic documentation collected now will be stored and –very important – for the first time, it will be analyzed and interpreted by specialists from different areas of art and science.

The extreme useful 3D model of the caved churches from Basarabi using super-high resolution methods presented (Laser range finder scanning) will be continued. It is a unique way to record and store the incisions with an accuracy of 200  $\mu\text{m}$ . During the on site laboratory, the altar of the main church (B4) was scanned in this conditions. The partner group from ENEA Frascati will be invited to continue this application in collaboration with Constanta museum and INOE, under the auspices of PRO RESTAURO running project during the future research campaigns.

	<b>Funeral Painted Chambers</b>	<b>Basarabi Ensemble</b>	<b>Adamclisi</b>	<b>Histria</b>
<b>Photographic documentation</b>	Based on this large documentation, the first replica of the main composition of the Hypogeum was created by the INOE and University of Art from Bucharest.1	INOE and Univ. of Architecture from Bucharest 2		A strategy regarding a complete documentation is elaborated by Malta Centre of Restoration and INOE 4
<b>Investigations and Diagnostic</b>	LIF done by ENEA for the fresco conservation condition control, Multispectral analysis done by INOE for pigment quality evaluation and,			
<b>Super high resolution scanning (200 µm)</b>		LRF scanning done by ENEA for the digital preservation of the very small and deteriorated incisions. During the project, the 3D model was created for one of the caved churches. 3		
<b>Sites mapping</b>	First mappings of these sites, done by Arh. Dragos Craciun	Improvement of the preliminary maps of this site, done by Arh. M. Opreanu and the team of Univ. of Architecture from Bucharest		
<b>Biological control</b>	-done Dr. Ioana Gomoiu from Inst. of Biology – from INOE- PRO RESTAURO network	-done Dr. Ioana Gomoiu from Inst. of Biology – from INOE- PRO RESTAURO network		
<b>Laser cleaning and laser diagnosis for encrustations</b>				Experiments done by: INOE, IFAC, ENEA, FORTH on various materials
<b>FLIDAR</b>			Measurements and tests for the non-contact evaluation of the materials non-homogeneities used at the previous restorations and of the biological contaminations done by: IFAC and INOE	