The interdisciplinary study of the results confirms that stones in the monument show deterioration in terms of mineralogy, fabric and physical properties in comparison with quarried stones. Moreover stone-testing proves compatibility between quarried and historic stones. Good correlation is observed between the non-destructive-techniques and laboratory tests results which allow us to minimize sampling and assessing the condition of the materials. Concluding, this research can contribute to the diagnostic knowledge for further studies that are needed in order to evaluate the effect of recent and future protective measures.

Mammalian remains from a new site near the classical locality of Pikermi (Attica, Greece)

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We present the first results on the fossil mammalian fauna recovered during the first excavation season at the new site Pikermi Valley-1 (PV1). The fauna comprises two hipparionine species *(C. cf. mediterraneum, H. cf. brachypus),* a giraffid *(Bohlinia cf. attica),* five bovids *(Palaeoreas lindermayeri, Protragelaphus skouzesi, Tragoportax cf. amalthea, Gazella* sp., Bovidae indet.) and two carnivores *(? Adcrocuta eximia,* Felidae indet.). The composition of the fauna suggests a Turolian age.

Thermal behavior of freshwater cultured pearls

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The 95% of the pearls present in the gem market are freshwater cultured pearls in Hyriopsis ssp. Heating is frequently applied to off-colored pearls for their color enhancement. The understanding of the thermal behavior of pearls, would be useful to separate the natural colored from the treat-colored (after heating) pearls. This study presents analysis of the mineral structure and the organic matrix as well as the thermal behavior of Hyriopsis ssp. cultured pearls.

The studied samples were white freshwater cultured pearls in Hyriopsis ssp. which were analyzed with the X-ray powder diffraction (XRPD) and the Fourier transform infrared spectroscopy (FTIR) methods. In the XRPD patterns of all samples only calcium carbonate was identified with the structure of aragonite. The FTIR transmittance spectra of the powdered samples, using the KBr technique, show the characteristic absorption peaks of aragonite. However, some additional shoulders, at about 1662, 1270 and 1172 cm^{-1}, were observed probably due to the organic matter of the pearls. Furthermore, the broad bands in the region between 3600 and 3200 cm^{-1} are probably attributed to the water content of the pearls. After heating at "low" temperatures (up to 250 ^{o}C), changes were observed only in the FTIR peaks related to the organic matter and the water. No changes on XRPD patterns were observed.

This preliminary study indicates that heat-treatment of the pearls up to 250 ^{o}C, changes only the bands of organic matter and water in the FTIR spectra. With a followed heat treatment, especially of the whole pearls, the critical temperature of their color changes can be

found and linked with the decomposition of the organic matter and/or pearls dehydration. Additional studies with non-destructive methods, by which the above changes could be observed (e.g. Raman spectroscopy), will be performed in order a method applicable in gemological laboratories to be found.

The latest paleogeographical realities of the Pannonian Basin in the late Quaternary: the relict Pannonian Lake, its successor and the finalization of the Danube way in the Upper Holocene

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The new studies on the southeastern part of the Pannonian Depression confirm our idea concerning the existence in this basin of a lake with its shores around +100 m in the Uppermost Pleistocene (the Relict Pannonian Lake, Belgrade – 2006). A morphologic peculiarity placed in the Cazanele Mici area seems to have been permitted the maintaining of the shores for some time at this elevation. The Relict Pannonian Lake could be the direct successor of the Middle Pleistocene Lake made evident as a paleogeographical reality by the Serbian scientists in the southeastern part of the Pannonian Basin. The severe restriction of the surface of this lake has taken place at the beginning of the Holocene, as a result of the mega-floods, which mark the boundary between the Pleistocene and the Holocene. Therefore, a successor of the Relict Pannonian Lake seems to have maintained for some time in the Lower Holocene with its shore around the +85 m elevation. This perspective confirms the idea of some geomorphology researchers, which accepted a gradual retirement of the Pannonian Lake in Quaternary, associated with a succession of shorelines. In this case, the finalization of the stream system of the Danube, as a unitary river, has very recently happened (in Upper Holocene). In addition a possible connection between a stream system tributary to the Black Sea and another one tributary to the Pannonian area along the actual Danube Gorge could be realized only in the Greben zone (most probably during the Pasadenian phase). The existence of the Relict Pannonian Lake at the end of the Upper Pleistocene seems to be confirmed by the altitude of the all pre-historical sites in the Pannonian area. In addition, important data of mythical paleogeography are consistent with all these possible paleogeographical realities of the Pannonian area.

Zircon typology and preliminary mineral chemical and isotopic investigations on basaltic gem stone zircons from eastern Saxony, Germany

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Basaltic zircons are known in eastern Saxony (Germany) from the Elbsandsteingebirge for a long time. Furthermore, there are some new localities described from the Upper Lusatia (Hofeberg quarry) and the Zittauer Gebirge (Lausche hill). The zircons derived from alkaline basalts. The Hofeberg locality in the south of the Görlitz town could provide evidence for *in situ* discoveries. Both of the other occurrences exist as placers.

The zircon crystals have a mean size from 0.5 up to 4 mm (min. 0.2 to max. 9 mm) and show a gem stone quality. Many crystals are broken and/or intensive rounded. The rounding is the result of a magmatic corrosion in the basaltic transporter rock. This is an argument against the genesis of these zircon megacrystals in the basaltic melt. The broken crystals (splinters) are probably the result of the fast cooling during the basaltic eruption.