ΠΑΝΕΠΙΣΤΗΜΙΟ ΚΡΗΤΗΣ
ΤΜΗΜΑ ΕΠΙΣΤΗΜΗΣ ΚΑΙ ΤΕΧΝΟΛΟΓΙΑΣ ΥΛΙΚΩΝ

ΠΡΟΣ

1) **Ολα τα μέλη ΔΕΠ του Τμήματος Επιστήμης και Τεχνολογίας Υλικών**
2) **Τους εκπροσώπους των Μεταπτυχιακών φοιτητών του Τ.Ε.ΤΥ**

3) **Την Επταμελή Εξεταστική Επιτροπή**
4) **Ολα τα μέλη της Πανεπιστημιακής Κοινότητας**

Πρόσκληση σε Δημόσια Παρουσίαση της Διδακτορικής Διατριβής της

Γιακουμάκη Αναστασίας

(Σύμφωνα με το άρθρο 12 του Ν. 2083/92)

Την Τρίτη 16 Δεκεμβρίου στις 11 το μεσημέρι στην αίθουσα Σεμιναρίων 3 ορόφου-Φυσικό

θα γίνει η δημόσια παρουσίαση και υποστήριξη της Διδακτορικής Διατριβής της υποψήφιας διδάκτορος του Τμήματος Επιστήμης και Τεχνολογίας Υλικών κας Γιακουμάκη Αναστασία με θέμα:

« Development of Laser Spectroscopic Instrumentation for the Characterization and Analysis of Materials in Archaeological Objects and Works of Art»

ABSTRACT

Aim of the present study is the development of laser-based spectroscopy methodology and instrumentation for the analysis of materials in archaeological objects and works of art. In particular, two techniques are investigated: Laser induced breakdown spectroscopy (LIBS), which provides elemental composition information, based on the optical emission from a laser ablation plasma and Raman spectroscopy, that enables identification of materials on the basis of characteristic vibrational transitions recorded in the Raman spectra.

The first part of this study concentrates on the development of a compact, portable LIBS system. The unit was evaluated in the laboratory as well as in the museum environment, where it was used for a) the characterization of materials in archaeological objects, mainly

metals and pottery, and b) the identification of inorganic pigments in painted artworks. Extending the concept of mobile instrumentation the potential of a hybrid approach was investigated with the aim to combine two complementary techniques, LIBS and Raman spectroscopy, which would enable elemental and molecular analysis respectively, to be carried out on the same instrument. The optical design, components and analytical performance of the hybrid system is presented.

The second part of this work focuses on developing an efficient analytical LIBS methodology for the quantitative analysis of binary, ternary and quaternary copper alloys of archaeological significance. Detailed studies were carried on several experimental factors, which determine the plasma formation and subsequent emission processes in order to define a proper experimental methodology that would enable reliable quantitative analysis of archaeological copper alloys.

Ο Πρόεδρος του Τμήματος

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Ν. Πελεκάνος