ΠΑΝΕΠΙΣΤΗΜΙΟ ΚΡΗΤΗΣ
ΤΜΗΜΑ ΕΠΙΣΤΗΜΗΣ ΚΑΙ ΤΕΧΝΟΛΟΓΙΑΣ ΥΛΙΚΩΝ

ΠΑΡΟΥΣΙΑΣΗ ΜΕΤΑΠΤΥΧΙΑΚΗΣ ΔΙΠΛΩΜΑΤΙΚΗΣ ΕΡΓΑΣΙΑΣ

Τίτλος

«Ανάπτυξη και Εφαρμογή Φασματοσκοπίας Laser Εγγύς Υπερύθρου για την Ανίχνευση Ρύπων στην Ατμόσφαιρα και Πτητικών Ενώσεων σε Προϊόντα Αγροδιατροφής»

του **Γεώργιου Σταυρακάκη,** μεταπτυχιακού φοιτητή του

Τμήματος Επιστήμης και Τεχνολογίας Υλικών του Πανεπιστημίου Κρήτης

Επιβλέπων: Δημήτριος Παπάζογλου

Συνεπιβλέπων: Μιχαήλ Βελεγράκης

Παρασκευή 25/02/2022

11:00

Η παρουσίαση θα πραγματοποιηθεί στην **αίθουσα Β2 του Τμήματος Χημείας,** του Πανεπιστημίου Κρήτης.

ABSTRACT

Detection of toxic, explosive, hazardous gases and greenhouse gases (GHG) is of great importance. Several gas-sensing devices and sensors are currently available based on various methods however, there is a strong demand for improved sensitivity, reliability and simplicity. Laser-based infrared spectroscopy is a novel method increasingly applied for gas detection, thanks to its high selectivity, responsivity and sensitivity.
In the current work, two types of laser-based near-infrared spectroscopy techniques were employed for gas detection; Tunable Diode Laser Absorption Spectroscopy (TDLAS) and Tunable Diode Laser Photoacoustic Spectroscopy (TDLPAS). An experimental apparatus was developed for

measurements of both spectroscopic techniques. The absorption spectra of five gases, carbon dioxide (CO2), methane (CH4), ammonia (NH3), nitrous oxide (N2O) and acetylene (C2H2) were recorded. A processing method of the acquired spectra was implemented and the limits of detection, in the present case, for each gas were estimated. Finally, a comparison of the two techniques was performed and a further discussion about their efficiency, usability and improvement of them is presented.