

ΠΑΝΕΠΙΣΤΗΜΙΟ ΚΡΗΤΗΣ
ΤΜΗΜΑ ΕΠΙΣΤΗΜΗΣ ΚΑΙ ΤΕΧΝΟΛΟΓΙΑΣ ΥΛΙΚΩΝ
ΠΑΡΟΥΣΙΑΣΗ ΜΕΤΑΠΤΥΧΙΑΚΗΣ ΕΡΓΑΣΙΑΣ

Τίτλος

«Development of graphene-based electrodes for bioelectronic devices»

«Ανάπτυξη ηλεκτροδίων με βάση το γραφένιο για βιοηλεκτρονικές διατάξεις»

της Αθανασίας Πυλοστόμου, μεταπτυχιακής φοιτήτριας του
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Επιβλέπων: Γεώργιος Κιοσέογλου

Συνεπιβλέπων: Εμμανουήλ Στρατάκης

Δευτέρα 19/10/2020

12:00

Η παρουσίαση θα πραγματοποιηθεί στην αίθουσα Α210 στο κτήριο του τμήματος Μαθηματικών και Εφαρμοσμένων Μαθηματικών.

ABSTRACT

During the last decades, the field of bioelectronics is becoming increasingly important due to the demand for clinical detection of various diseases. Epilepsy is a common neurological disorder, affecting millions of people around the world. It is known that metabolic disturbances are often associated with the seizures of epilepsy. According to preliminary studies, amongst other biomarkers, glucose levels can be used for the prediction of incoming seizures, therefore, the creation of specific bioelectronic devices, such as biomolecular sensors, is of great importance. For neurological disorder detection, there is a huge need for hydrophilic, biocompatible and highly conductive electrodes in biosensors. Two-dimensional (2D) graphene-based nanomaterials (NMs) exhibit promising physical, optical and electrochemical properties for ultrasensitive bioelectronic devices.

In this work, two dimensional (2D) reduced graphene oxide (rGO) based microelectrodes are developed for use in a biomolecular sensor. The graphene oxide (GO) films were mainly fabricated by spray gun technique. The topography and the composition of the GO films were studied by various microscopic and spectroscopic techniques, respectively. For the enhancement of the electronic properties, an ultrafast pulsed laser was used for the reduction of the GO material and the patterning of the microelectrodes.