

ΠΑΝΕΠΙΣΤΗΜΙΟ ΚΡΗΤΗΣ
ΤΜΗΜΑ ΕΠΙΣΤΗΜΗΣ ΚΑΙ ΤΕΧΝΟΛΟΓΙΑΣ ΥΛΙΚΩΝ

ΠΑΡΟΥΣΙΑΣΗ ΜΕΤΑΠΤΥΧΙΑΚΗΣ ΔΙΠΛΩΜΑΤΙΚΗΣ
ΕΡΓΑΣΙΑΣ

Τίτλος

«Φασματοσκοπική Μελέτη στα Δισδιάστατα Μονο- και Πολυ-
Στρωματικά SnS₂ και MoSe₂»

«Spectroscopic Studies of Two-Dimensional Single and Few-Layers of
SnS₂ and MoSe₂»

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Τμήματος Επιστήμης και Τεχνολογίας Υλικών του Πανεπιστημίου
Κρήτης

Επιβλέπων Καθηγητής: Γεώργιος Κιοσέογλου

Δευτέρα 17/10/2022

12:00

Η παρουσίαση θα πραγματοποιηθεί στην αίθουσα A210 του Τμήματος Μαθηματικών και Εφαρμοσμένων Μαθηματικών του Πανεπιστημίου Κρήτης.

ABSTRACT

Monolayers of Transition Metal Dichalcogenides (TMDs) of the form MX₂ (M=Mo or W and X=S or Se) are promising semiconducting materials for future 2D nanoelectronics due to their unique properties. Carrier modulation and doping reversibility are very important issues in the study of the electronic properties of TMDs and at the heart of many applications. Here, monolayers of molybdenum diselenide (MoSe₂) are investigated after photochemical doping with spectroscopic methods such as micro-photoluminescence (μPL), differential reflectivity (DR) and Raman spectroscopy. This doping process is called photochlorination and includes UV pulsed laser irradiation at chlorine (Cl₂) environment. The increase of the photochlorination time gives rise to a substantial increase in the intensity of the neutral exciton (X⁰) accompanied by a simultaneous decrease in the intensity of the

trion (X^-). In addition, a small red-shift in the PL energy of the neutral exciton is systematically observed. These findings indicate a reduction in the electron density in MoSe_2 after the photochlorination process (p-type doping).