

ΠΑΝΕΠΙΣΤΗΜΙΟ ΚΡΗΤΗΣ
ΤΜΗΜΑ ΕΠΙΣΤΗΜΗΣ ΚΑΙ ΤΕΧΝΟΛΟΓΙΑΣ ΥΛΙΚΩΝ

ΠΑΡΟΥΣΙΑΣΗ ΜΕΤΑΠΤΥΧΙΑΚΟΥ ΔΙΠΛΩΜΑΤΟΣ ΕΙΔΙΚΕΥΣΗΣ

Τίτλος

«Υβριδικές δομές νανονημάτων/περοβσκιτών για φωτοβολταϊκές εφαρμογές»

«Hybrid nanowire/perovskite solar cells»

Δαριβιανάκη Ελευθερία

Μεταπτυχιακή Φοιτήτρια

Τμήματος Επιστήμης και Τεχνολογίας Υλικών, Πανεπιστημίου Κρήτης

Επιβλέπων καθηγητής κ. Νικόλαος Πελεκάνος

Πέμπτη 19/12/2019

16:00

**Αίθουσα τηλεεκπαίδευσης E130 Κτίριο Μαθηματικών και Εφαρμοσμένων
Μαθηματικών,
Πανεπιστήμιο Κρήτης**

Abstract:

Perovskite solar cells attract much interest in photovoltaic applications nowadays, due to the high solar cell performance that they exhibit, combined with the relative ease of fabrication. Moreover, III-V nanowires, such as for instance GaAs nanowires also constitute a matter of research due to their excellent optoelectronic properties, such as high mobility of carriers and optimum bandgap. Moreover, the reduced cost of fabrication is another advantage of nanowires. Due to their properties, GaAs nanowires could be used as an Electron Transporting Material (ETM) in perovskite solar cells, replacing conventional ETMs, like titanium dioxide (TiO₂). Compared to TiO₂, GaAs has orders of magnitude higher electron mobility value. Moreover, the energy levels of intrinsic GaAs favor band alignment of GaAs conduction band with the LUMO orbital of CH₃NH-3PbI₃ perovskite. So, effective electron extraction can be achieved. Thus, GaAs nanowires could be a better choice as an ETM in perovskite solar cells. In the present thesis,

hybrid GaAs nanowire/perovskite solar cell devices were fabricated. Moreover, electro-optical characterization of the samples was accomplished.