ΠΑΝΕΠΙΣΤΗΜΙΟ ΚΡΗΤΗΣ
ΤΜΗΜΑ ΕΠΙΣΤΗΜΗΣ ΚΑΙ ΤΕΧΝΟΛΟΓΙΑΣ ΥΛΙΚΩΝ

ΠΑΡΟΥΣΙΑΣΗ ΜΕΤΑΠΤΥΧΙΑΚΟΥ ΔΙΠΛΩΜΑΤΟΣ ΕΙΔΙΚΕΥΣΗΣ

Τίτλος

«Development and Study of Solution Processed Hybrid Perovskite Solar Cells»

«Ανάπτυξη και μελέτη φωτοβολταικών διατάξεων με βάση τους υβριδικούς περοβσκίτες επεξεργασμένων σε διάλυμα»

Μαξούντοβ Τεμούρ

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Επιβλέπων καθηγητής κ. Γ. Κιοσέογλου

Δευτέρα, 8/10/2018,

10:00 μ.μ.,

Αίθουσα Α210,
Κτίριο Τμήματος Μαθηματικών και Εφαρμοσμένων Μαθηματικών,
Πανεπιστήμιο Κρήτης

Developing countries and emerging markets are presenting a steadily increasing demand for energy sources. Renewable energy technology and especially photovoltaics is an alternative solution that gains ground year over year to replace the established carbon consuming energy production methods. One of the latest and most promising type of photovoltaics is the so-called perovskite solar cells (PeSCs). A PeSC is consisted of a laminated structure, which is being developed layer by layer with simple deposition methods onto a glass substrate. Organic-inorganic hybrid perovskite is a material with the crystal structure AMX3, where A is the organic part, M is the metal and X stands for a halide ion. With respect to its hybrid nature, the material is endowed with high carrier mobility and absorption coefficient, relatively high diffusion length and low temperature processing, that renders it ideal for optoelectronic applications. During the implementation of the current thesis, the mixed halide (MAPbI3-xClx) and the methylammonium lead triiodide (MAPbI3) perovskite was synthesized and used as a light absorbing material. This was then deposited on top of a glass/ITO/PEDOT:PSS or PTAA

substrate and after that the deposition of an electron transport material took place. To complete the device, thermal evaporation was used to form the silver counter electrode. A variety of factors (annealing temperature and thickness of the perovskite, morphology and additives to the hole and electron transport layers) that have a key role in the final efficiency of the solar cell were studied and developed to enhance the power conversion efficiency (PCE) from its initial value of 1% to about 16%.