

ΓΕΝΙΚΟ ΣΕΜΙΝΑΡΙΟ ΤΜΗΜΑΤΟΣ ΦΥΣΙΚΗΣ

PHYSICS COLLOQUIUM

Thursday, 9 March 2017

17:00 - 18:00

3rd Floor Seminar Room

"Towards III-Nitride photovoltaics: Challenges in epitaxy and engineering"

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Abstract

III-Nitride semiconductors and in particular InGaN alloys, have unique properties that make them very promising for the development of a new generation of high efficiency and low cost/efficiency ratio photovoltaic cells. However, up to now, these promises have not been realized due to a number of bottlenecks that need to be overcome. Such problems range from major material issues (immiscibility of GaN and InN leads to phase separated films) to specific device processing obstacles.

In this presentation, after a brief overview of photovoltaic devices physical principles, I will present our efforts to address these obstacles in order to realize InGaN photovoltaics true potential. Specifically I will discuss (i) how the study of epitaxial growth kinetics leads to achievement of device-quality films, (ii) the role of polarization fields in device operation and (iii) workarounds processing problems.