

ΓΕΝΙΚΟ ΣΕΜΙΝΑΡΙΟ ΤΜΗΜΑΤΟΣ ΦΥΣΙΚΗΣ

PHYSICS COLLOQUIUM

Thursday, 7 December 2017

17:00 -18:00

3rd Floor Seminar Room

" Highly uniform GaAs nanowires for photovoltaic applications "

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Abstract

Semiconductor nanowires are a class of materials recently attracting wide interest for solar cell applications. The main reasons for this are the enhanced light absorption of nanowire arrays compared to bulk counterparts and the much easier accommodation of strain in the nanowire geometry, allowing for significant flexibility in substrate selection and band-gap engineering. In this presentation, we review the development of the field with a special focus on III–V materials due to their potential to reach high power conversion efficiencies, and present our own results consisting in developing a new epitaxial scheme, where high quality and extremely uniform GaAs nanowire arrays can be reproducibly grown on chemically oxidized silicon substrates. Moreover, we assess the material quality, Indium incorporation and optical properties of GaAs/InGaAs core-shell nanowire arrays grown using the chemical oxide method for photovoltaic applications, and present results from preliminary nanowire p-i-n diode devices.