Centre DE Nanosciences & DE Nanotechnologies

C2N General Seminar

Friday June 28th 2019 - 10h 00

Amphitheater of C2N

MetalOrganic Vapor Phase Epitaxy (MOVPE) for Photonics

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Organo-metallic chemical vapor epitaxy is a well-established technique used for the growth of highly complex heterostructures combining a variety of semiconductor alloys with a multitude of applications in photonics. Research in MOVPE at the C2N focuses at pushing the limits of what is feasible with this technique, tackling the growth of novel alloys such as (Si)GeSn, challenging due to their inherent immiscibility, and advanced heterostructures, such as quantum cascade devices, challenging to the complexity of their structure that consists of hundreds of layers that are only a few monolayers thick.

After a general introduction to the technique and an overview of the activity at the C2N, the seminar will delve more deeply in the subject of GeSn alloys and InAlAs/InGaAs quantum cascade structures, and showcase how one can achieve the required level of control over matter to produce novel photonic devices.

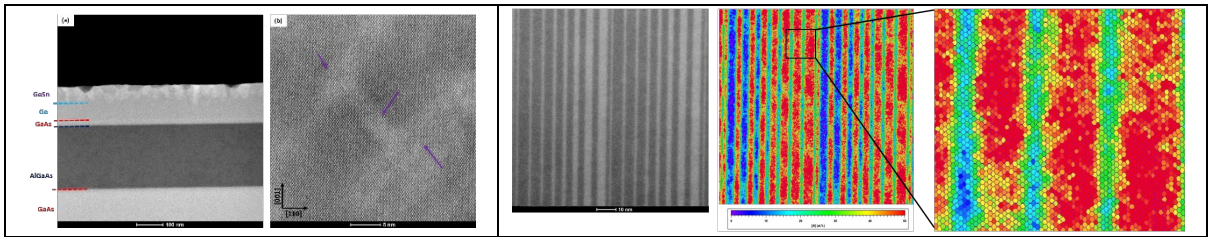

Figure: (left) HAADF-STEM image of GeSn quantum dots. (Right) HAADF-STEM image and corresponding, atomically resolved chemical mappings of two periods of an InAlAs/InGaAs QCL structure. Both structures where grown using MOVPE

Konstantinos Pantzas is a researcher at the *Centre de Nanosciences et de Nanotechnologies* (C2N). His research evolves around the MOCVD growth of new materials and complex heterostructures for mid-infrared photonics. He received his predoctoral education at Supelec and holds a PhD in Material Science from the University of Lorraine in 2013 and a PhD in Electrical and Computer Engineering from the Georgia Institute of Technology in 2015. Prior to his appointment to the CNRS in 2016, he worked as was a post-doctoral research fellow at the *Laboratoire de Photonique et de Nanostructures* (ex-LPN, now C2N).

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