



HAL
open science

GAP(111)B-SE Surface for TMD epitaxial growth

Niels Chapuis, Christophe Coinon, D. Deresmes, Xavier Wallart

► **To cite this version:**

Niels Chapuis, Christophe Coinon, D. Deresmes, Xavier Wallart. GAP(111)B-SE Surface for TMD epitaxial growth. GDR-IRN HOWDI 2022 Meeting, May 2022, Dourdan, France. . hal-03828069

HAL Id: hal-03828069

<https://hal.science/hal-03828069v1>

Submitted on 7 Nov 2022

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution 4.0 International License

GaP(111)B-Se SURFACE FOR TMD EPITAXIAL GROWTH

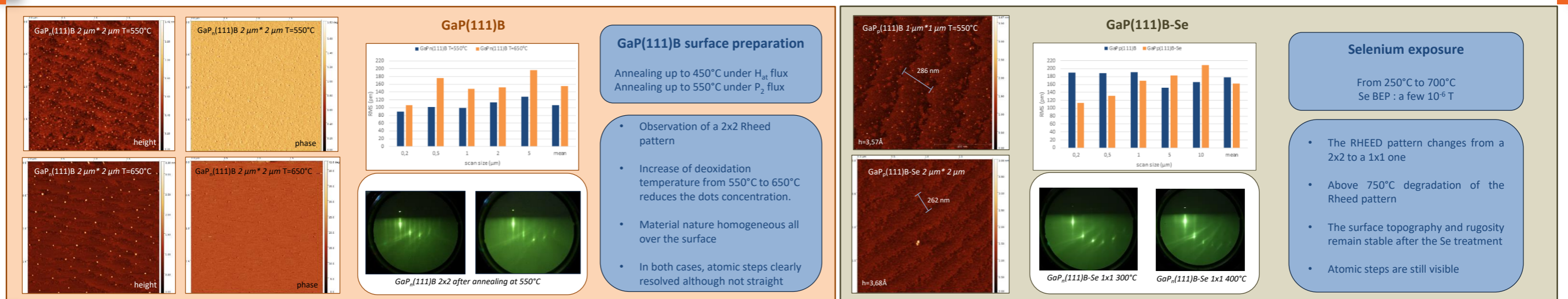
Niels Chapuis, Christophe Coinon, Dominique Deresmes and Xavier Wallart

Univ. Lille, CNRS, Centrale Lille, Junia, Univ. Polytechnique Hauts-de-France, UMR 8520 - IEMN - Institut d'Electronique de Microelectronique et de Nanotechnologie, F-59000 Lille, France

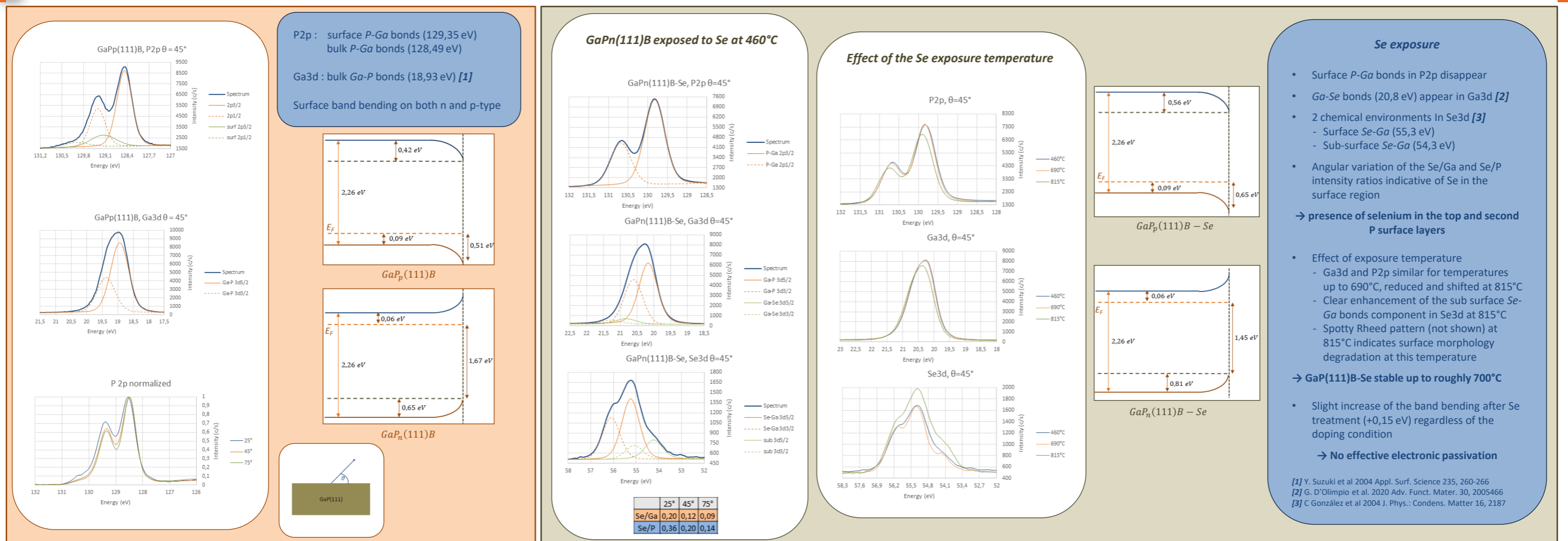
Context

Over the past few years, 2D-Transition Metal Dichalcogenides (TMDs) have revealed great potential for optoelectronics and nanoelectronics devices, thanks to their optical and electronic properties, not encountered in other materials. They can be grown by van der Waals epitaxy allowing the use of materials with significant mismatch. Van der Waals epitaxy is usually performed on 2D substrates such as graphene, hBN or mica but 3D substrates can also be used after a proper surface passivation treatment, which for III-V semiconductor substrates has been applied successfully on GaAs(111) surfaces. Since rather high growth temperatures are needed in order to get high quality-TMD layers, GaP might represent an interesting alternative to GaAs considering its higher thermal stability. In this study, we present results relative to the preparation of n and p-type GaP(111)B surfaces and to their selenium passivation.

Atomic Force Microscopy and RHEED



X-ray and UV Photoelectron Spectroscopy



X-ray Photoelectron Diffraction

