AXE SEMICONDUCTEURS - PUBLICATIONS ET THÈSES

Thèses en cours

Sahar Gaddour,
"Epitaxy and remote epitaxy of ZnS and Zn1-xCdxS thin films with wurtzite crystal phase"

Mohammad Abuayyash,
"Cathodoluminescence des centres colorés du diamant pour les technologies quantiques"

Georges Guy Ndamkou Yonkeu
"Développement de procédés de synthèse de diamant de type n pour l'accélération de l' électrification"

» Thèses soutenues

Publications 2022 -

2026

E. Lefebvre, F. Donatini, S. Hassani, S. Ortega Murillo, I. Gélard, V. Sallet, E. Appert, and V. Consonni,
“Surface excitons in ZnO nanowires grown by chemical bath deposition following hydrogen passivation,”
Phys. Rev. Materials 10, 096002 (2026).

P. Neugebauer, X. Huang, C. Newsom, C. Arnold, H. Martelock, S. Diziain, E. Monnetti, J. Achard, T. Lühmann, Paolo Olivero, J. Meijer, J. Barjon, A. Tallaire, S. Pezzagna,
"Oxygen in diamond: thermal stability of ST1 spin centres and creation of oxygen-pair complexes"
Diamond and Related Materials 163 (2026) 113395 - [arXiv]

A. Nuñez Marcos, C. Arnold, J. Barjon, S. Buil, J.-P. Hermier, A. Delteil,
"Deterministic generation of single B centers in hBN by one-to-one conversion from UV centers",
ACS Nano **20**, 10404 (2026) – [HAL] – [arXiv] – [data]

2025

J. Inglés-Cerrillo, P. Ibañez-Romero, R. Fandan, J. Pedrós, N. Le Biavan, D. Lefebvre, M. Hugues, J.-M. Chauveau, M. Montes Bajo, A. Hierro,
"A Type I Hyperbolic Metamaterial Driven by Phonons on ZnO",
Advanced Optical Materials, e01095 (2025) (Open access)

H. Melhem, G. Hallais, G. Amiri, G. Patriarche, N. Findling, T. V. den Berg, H. Ameziane, C. Renard, V. Sallet, L. Vincent,
"Phase controlled epitaxy of wurtzite ZnS thin films by metal organic chemical vapor deposition,"
Thin Solid Films 812, 140609 (2025) - [HAL]

E. Carré, F. Fossard, J.-S. Mérot, D. Boivin, N. Horezan, V. Zatko, F. Godel, B. Dlubak, M.-B. Martin, P. Seneor, E. Gaufrès, J. Barjon, A. Loiseau, I. Stenger

"Straightforward Method to Orient Black Phosphorus from Bulk to Thin Layers using a Standard Green Laser"
ChemNanoMat (2025) 2500182 (open access)

J. Scola, J. Garcia, F. Jomard, E. Loire, J. Wolfman, B. Negulescu, G. Z. Liu, M.-A. Pinault-Thaury,
"Compositionally graded Ba1xSrxTiO3 thin film for SIMS applications Editor's PickAvailable to Purchase Special Collection: Secondary Ion Mass Spectrometry (SIMS)",
J. Vac. Sci. Technol. B **43**, 044004 (2025) - [HAL]

R. Magee, M.-A. Pinault-Thaury, J. Achard, J.-M. Layet, D. Guyomar'ch, M. Minissale, T. Gans, J.P. Dedrick and G. Cartry,
"Boron and phosphorus doped diamond: change in the electronic structure post exposure to low pressure deuterium plasma and its effect on the production of negative ions",
J. Phys. D: Appl. Phys. **58**, 185208 (2025) - [HAL]

M.-A. Pinault-Thaury, F. Jomard, A. Gusev, M. R. Degnon, A. Silvestre de Ferron, L. Pecastaing,
"Secondary ion mass spectrometry as a tool to analyze semiconductor opening switch diodes",
J. Vac. Sci. Technol. B **43**, 042205 (2025) - [HAL]

S. K. Gautam, S. Ndiaye, J. Houard, D. Lefebvre, J.-M. Chauveau, M. Hugues, A. Vella, and L. Rigutti,
"A Photonic Atom Probe Study of Thermal Effects at the Nanosecond and Nanometer Scale",
Nano Lett. 25, 8589 (2025)

S. Roux, C. Arnold, E. Carré, A. Plaud, L. Ren, E. Janzen, J. H. Edgar, C. Maestre, B. Toury, C. Journet, V. Garnier, P. Steyer, T. Taniguchi, K. Watanabe, C. Robert, X. Marie, F. Ducastelle, A. Loiseau, J. Barjon
"Exciton self-trapping in twisted hexagonal boron nitride homostructures"
Physical Review X 15 (2025) 021067 (open access)

R. Gillet, I. Stenger, S. K. Gautam, C. Arnold, E. Loire, F. Jomard, J. Barjon, M.-A. Pinault-Thaury

"Free-standing n-type phosphorus-doped diamond"
Diamond and Related Materials 151 (2025) 111805 - [HAL]

T. Ouaj, C. Arnold, J. A. Urkia, S. Baltic, J. Barjon, J. Cascales, H. Cun, D. Esteban, M. Garcia-Hernandez, V. Garnier, S. Kumar Gautam, T. Greber, S. Said Hassani, A. Hemmi, I. Jimenez, C. Journet, P. Kogerler, A. Loiseau, C. Maestre, M. Metzelaars, P. Schmidt, C. Stampfer, I.Stenger, P. Steyer, T. Taniguchi, B. Toury, K. Watanabe, B. Beschoten
"Benchmarking the integration of hexagonal boron nitride crystals and thin films into graphene-based van derWaals heterostructures"
2D Materials 12 (2025) 015017 - [arXiv]

W. Alimi, I. Hinkov, C. Arnold, J. Barjon, S. M. Chérif, S. Farhat
"2D boron nitride synthesis via electromagnetic induction heating: Experiments and thermochemical modeling"
Diamond and Related Materials 153 (2025) 112082 - [HAL]

2024

L. Chernyak, A. Schulte, J.-S. Li, C.-C. Chiang, F. Ren, S. Pearton, C. Sartel, V. Sallet, Z. Chi, Y. Dumont, E. Chikoidze, A. Ruzin
"Cathodoluminescence studies of electron injection effects in p-type Gallium Oxide"
AIP Advances, 14 (8) (2024) 085103

C. Thenot, D. Monceau, D. Connétable, P. Sallot, M.-A. Pinault-Thaury, J.-P. Monchoux
"Oxygen diffusion coefficient in the phase of a TiAl GE alloy determined by SIMS"
Intermetallics 172 (2024) 108367

D. Chaussende, V. Tabouret, A. Crisci, M. Morais, S. Coindeau, G. Berthomé, M. Kollmuss, P. Wellmann, F. Jomard, M.-A. Pinault-Thaury, Y. Lu, X. Shi, H. Ou
"Investigation of amorphous-SiC thin film deposition by RF magnetron sputtering for optical applications"
Materials Science in Semiconductor Processing 182 (2024) 108673

C. Arnold, S. Temgoua, J. Barjon
"Impurity characterization in diamond for quantum and electronic applications: advances with time-resolved cathodoluminescence"
Nanotechnology 35 (2024) 355705

S. Takahashi, Y. Kubo, K. Konishi, R. Issaoui, J. Barjon, N. Naka
"Spin-Orbit Effects on Exciton Complexes in Diamond"
Physical Review Letters 132 (2024) 096902

K. Henni, C. Njel, M. Frégnaux, D. Aureau, J.S. Mérot, F. Fossard, I. Stenger, J.-C. Arnault, H. Girard
"Core-shells particles grown in a tubular reactor: Influence of the seeds nature and MPCVD conditions on boron-doped diamond crystalline quality"
Diamond and Related Materials, 142 (2024) 110770 - [HAL]

R. Mary Joy, P. Pobedinskas, N. Baule, S. Bai, D. Jannis, N. Gauquelin, M.-A. Pinault-Thaury, F. Jomard, K. J. Sankaran, R. Rouzbahani, F. Lloret, D. Desta, H.-G. Boyen, J. D' Haen, J. Verbeeck, M. F. Becker, K. Haenen
"The effect of microstructure and film composition on the mechanical properties of linear antenna CVD diamond thin films"
Acta Materialia 264 (2024) 119548 (open access) - HAL

S. Roux, C. Arnold, E. Carré, E. Janzen, J. H. Edgar, C. Maestre, B. Toury, C. Journet, V. Garnier, P. Steyer, T. Taniguchi, K. Watanabe, A. Loiseau, J. Barjon,
"Surface recombination and out of plane diffusivity of free excitons in hexagonal boron nitride",
Physical Review B 109 (2024) 155305 - arXiv:2308.05539

E. Carré, L. Sponza, A. Lusson, I. Stenger, S. Roux, F. Fossard, D. Boivin, N. Horezan, V. Zatko, B. Dlubak, P. Seneor, E. Gaufrès, A. Loiseau, and J. Barjon,
"Luminescence of black phosphorus films: Exfoliation-induced defects and confined excitations",
Phys. Rev. B **109**, 035424 (2024) – [HAL]

2023

M. Zanfrognini, A. Plaud, I. Stenger, F. Fossard, L. Sponza, L. Schué, F. Paleari, E. Molinari, D.
Varsano, L. Wirtz, F. Ducastelle, A. Loiseau, J. Barjon
"Distinguishing different stackings in layered materials via luminescence spectroscopy"
Physical Review Letters 131 (2023) 206902 - arXiv2305.17554

C. Fournier, S. Roux, K. Watanabe, T. Taniguchi, S. Buil, J. Barjon, J.-P. Hermier, A. Delteil
"Two-photon interference from a quantum emitter in hexagonal boron nitride"
Physical Review Applied 19 (2023) L041003 - arXiv2210.05590

M.-A. Pinault-Thaury, F. Jomard
"Detection limit of phosphorus in diamond by high mass resolution secondary ion mass spectrometry"
Physica Status Solidi A 220 (2023) 2200324 (open access) - HAL

D. Gérard, M. Rosticher, K. Watanabe, T. Taniguchi, J. Barjon, S. Buil, J.-P. Hermier, A. Delteil
"Top-down integration of a hBN quantum emitter in a monolithic photonic waveguide"
Applied Physics Letters 122 (2023) 264001 - arXiv2304.00130

C. Fournier, K. Watanabe, T. Taniguchi, J. Barjon, S. Buil, J.-P. Hermier, A. Delteil
"Investigating the fast spectral diffusion of a solid-state quantum emitter using resonant excitation and photon correlations"
Physical Review B 107 (2023) 195304 - arXiv2303.05315

A. Grishin, B. Bérini, M. Vallet, S. Hurand, F. Maudet, C. Sartel, M. Frégnaux, S. Nowak, G

"Tailoring crystallisation of anatase TiO2 ultra-thin films grown by atomic layer deposition using 2D oxides as growth template",
Appl. Surf. Sci. **641**, 158446 (2023)

T. Kociniewski , Y. Metayrek , Z. Khatir
"Subpixel Cross Correlation Registration for High Spatial Resolution Thermal Image on IGBT Emitter Metallization by Thermoreflectance Measurements"
Conference Paper Publisher IEEE (2023)

G. Saint-Girons, C. Furgeaud, L. Largeau, A. Danescu, R. Bachelet, M. Bouras,
"Strain generated by the stacking faults in epitaxial SrO(SrTiO3)N Ruddlesden–Popper structures",
J. App. Cryst. **56** (2023)

V. Guilloux, T. Barisien, F. Bernardot, M. Bernard, F. Margaillan, S. Majrab, I. Stenger, E. Lhuillier, C. Testelin, M. Chamarro, L. Legrand
"Phonon Modes and Exciton-Phonon Interactions in CsPbCl3 Single Nanocrystals", Physica E 151, 115713 (2023) – [HAL]

M. Rochedy, V. Klosek, C. Riglet-Martial, C. Onofri-Marroncle, D. Drouan, D. Reyes, P. Bienvenu, I. Roure, M. Cabié, L. Amidani, J. Léchelle, M-A. Pinault-Thaury,
"Behaviour of fission products in UO2: Experimental characterization of the Cs-I-UO2 model system at high temperature",
Journal of Nuclear Materials **581,** 154450 (2023)

E. M. Weikum, P. Dalapati, G. Beainy, J. M. Chauveau, M. Hugues, D. Lefebvre, J. Houard, A. Vella, L. Rigutti,
"Influence of dynamic morphological modifications of atom probe specimens on the intensity of their photoluminescence spectra",
J. Opt. Soc. Amer. B **40**, 1633 (2023)

2022

C. Maestre, Y. Li, V. Garnier, P. Steyer, S. Roux, A. Plaud, A. Loiseau, J. Barjon, L. Ren, C. Robert, B. Han, X. Marie, C. Journet, B. Toury
"From the synthesis of hBN crystals to their use as nanosheets in van der Waals heterostructures"
2D Materials **9**, 035008 (2022) (open access)

M.-A. Pinault-Thaury, F. Jomard
"Nitrogen investigation by SIMS in two wide band-gap semiconductors: Diamond and Silicon Carbide"
Materials Science Forum **1062**, 376 (2022) (open access) – [HAL]

N. A. Althumairi, I. Baig, T. S. Kayed, A. Mekki, A. Lusson, V. Sallet, A. Majid, S. Akhtar, A. Fouzri,
"Structural, morphological, optical, and electrical studies of Tb-doped ZnO micropods elaborated by chemical bath deposition on a p-Si substrate",
Applied Physics A **128**, 559 (2022)

S. Modak, Al. Schulte, C. Sartel, V. Sallet, Y. Dumont, E. Chikoidze, X. Xia, F. Ren, S. J. Pearton, A. Ruzin, L. Chernyak,
"Impact of radiation and electron trapping on minority carrier transport in p-Ga2O3"
,
Appl. Phys. Lett. **120**, 233503 (2022)

V. Cantelli, S. Guillemin, E. Sarigiannidou, F. Carla, B. Berini, J.-M. Chauveau, D. D Fong, H. Renevier, and V. Consonni
"In situ analysis of the nucleation of O-and Zn-polar ZnO nanowires using synchrotron-based X-ray diffraction"
Nanoscale **14**(3), 680–690 (2022) – [HAL]

S. Kumar, F. Fossard, G. Amiri, J.-M. Chauveau, and V. Sallet.
"Induced structural modifications in ZnS nanowires via physical state of catalyst: Highlights of 15R crystal phase."
Nano Research **15**, 377–385 (2022) – [HAL]

S. Roux, C. Fournier, K. Watanabe, T. Taniguchi, J.-P. Hermier, J. Barjon, A. Delteil
"Cathodoluminescence monitoring of quantum emitter activation in hexagonal boron nitride"
Applied Physics Letters 121 (2022) 184002 - [arXiv] - [HAL]

J. Hadid , I. Colambo , J. Avila, A. Plaud, C. Boyaval , D. Deresmes, N. Nuns, P. Dudin, A. Loiseau, J. Barjon, X. Wallart, D. Vignaud
"Molecular beam epitaxial growth of multilayer 2D-boron nitride on Ni substrates from borazine and plasma-activated nitrogen"
Nanotechnology 34 (2022) 035601 - [HAL]

- » Publications DIAM 2015-2021
- » Publications NSP 2015-2021
- » Publications DIAM 2010-2014
- » Publications NSP 2010-2014
- » Publications DIAM 2006-2009