



GEMaC

Groupe d'Étude
de la Matière Condensée

DIAM - PUBLICATIONS ET THÈSES

» Thèses soutenues

Publications 2015-2021

2021

S. Roux, C. Arnold, F. Paleari, L. Sponza, E. Janzen, J. H. Edgar, B. Toury, C. Journet, V. Garnier, P. Steyer, T. Taniguchi, K. Watanabe, F. Ducastelle, A. Loiseau, J. Barjon

"Radiative lifetime of free excitons in hexagonal boron nitride"

Physical Review B 104, L161203 (2021) - [HAL] - [arXiv]

C. Fournier, A. Plaud, S. Roux, A. Pierret, M. Rosticher, K. Watanabe, T. Taniguchi, S.

Buil, X. Quélin, J. Barjon, J.-P. Hermier, A. Delteil

"Position-controlled quantum emitters with reproducible emission wavelength in hexagonal boron nitride"

Nature Communications **12**, 3779 (2021) (open access) – [HAL] – [arXiv] – [data]

E. Carré, L. Sponza, A. Lusson, I. Stenger, E. Gaufrès, A. Loiseau, J. Barjon

"Excitons in bulk black phosphorus evidenced by photoluminescence at low temperature"

2D Materials **8** (2021) 021001 - [arXiv] [HAL]

C. Schreyvogel, S. Temgoua, C. Giese, V. Cimalla, J. Barjon, C. E. Nebel

"Fabrication of nType Doped VShaped Structures on (100) Diamond"

physica status solidi (a) (2021) 2000502 [HAL]

I. Stenger, M.-A. Pinault-Thaury, N. Temahuki, R. Gillet, S. Temgoua, H. Bensalah, E. Chikoidze, Y. Dumont, J. Barjon

"Electron mobility in (100) homoepitaxial layers of phosphorus-doped diamond"

Journal of Applied Physics **129** (2021) 105701 - [HAL]

N. Temahuki, F. Jomard, A. Lusson, I. Stenger, S. Hassani, J. Chevallier, J.M. Chauveau, C. Morhain, J. Barjon

"Identification by deuterium diffusion of a nitrogen-related deep donor preventing the p-type doping of ZnO"

Applied Physics Letters **118** (2021) 102106 - [arXiv] [HAL]

M.-A. Pinault-Thaury, I. Stenger, R. Gillet, S. Temgoua, E. Chikoidze, Y. Dumont, F. Jomard, T. Kociniewski, J. Barjon

"Attractive electron mobility in (113) n-type phosphorus-doped homoepitaxial diamond"

Carbon **175** (2021) 254 [HAL]

S. Choudhury, R. Golnak, C. Schulz, K. Lieutenant, N. Tranchant, J.-C. Arnault, M.-A. Pinault-Thaury, F. Jomard, P. Knittel, T. Petit

"Impact of Nitrogen, Boron and Phosphorus Impurities on the Electronic Structure of Diamond Probed by X-ray Spectroscopies"

Journal of Carbon Research **7**, 28 (2021) (open access)

B. Aspe, X. Castel, V. Demange, D. Passerieux, M.A. Pinault-Thaury, F. Jomard, S.

Députier, D. Cros, V. Madrangeas, V. Bouquet, R. Sauleau, M. Guilloux-Viry
"Enhanced tunability and temperature-dependent dielectric characteristics at microwaves of K₅Na_{0.5}NbO₃ thin films epitaxially grown on (100) MgO substrates"
Journal of Alloy and Compounds 856, 158138 (2021)

2020

H. Prevost, A. Andrieux-Ledier, N. Dorval, F. Fossard, J. S. Mérot, L. Schué, A. Plaud, E. Héripré, J. Barjon and A. Loiseau
"Heteroepitaxial growth of sp²-hybridized boron nitride multilayer on nickel substrates by CVD: the key role of the substrate orientation"
2D Materials 7 (2020) 045018 [HAL]

Y. Metayrek, T. Kociniewski, Z. Khatir
"Cross Correlation Method for Images Alignment: Application to 4 Buckets Calculation in Thermoreflectance"
IEEE Conference paper publisher (2020)

Y. Metayrek, T. Kociniewski, Z. Khatir
"Thermal behaviour evolution of an IGBT module after aging measured by thermoreflectance"
Microelectronics Reliability 114 (2020) 113843

Y. Metayrek, T. Kociniewski, Z. Khatir,
"Thermal mapping at the cell level of chips in power modules through the silicone gel using thermoreflectance"
Microelectronics Reliability 105 (2020) 113563

Y. Kubo, M. Takahata, S. Temgoua, R. Issaoui, J. Barjon, N. Naka
"Phonon-assisted transitions of bound excitons in diamond: analysis by mirror symmetry"
Physical Review B 101 (2020) 205204 - [HAL]

V. Sallet, C. Sartel, C. Arnold, S. Hassani, C. Vilar, G. Amiri, A. Lusson, P. Galtier, J. Barjon, K. Masenelli-Varlot, B. Masenelli
"Evidence of O-polar (000-1) ZnO surfaces induced by in situ Ga doping"
Physica Status Solidi – Rapid Research Letter 14 (2020) 2000037 - [HAL]

J. Sonntag, J. Li, A. Plaud, A. Loiseau, J. Barjon, J. H. Edgar, C. Stampfer

"Excellent electronic transport in heterostructures of graphene and monoisotopic boron-nitride grown at atmospheric pressure"

2D Materials 7 (2020) 031009 – [arXiv] - [HAL]

C. Backes, A.M Abdelkader, C. Alonso, A. Andrieux-Ledier, R. Arenal, J. Azpeitia, N. Balakrishnan, L. Banszerus, J. Barjon, ..., L. Schué, ... I. Stenger,L. Colombo, A. C Ferrari, M.Garcia-Hernandez

"Production and processing of graphene and related materials"

2D Materials 7 (2020) 022001 [HAL]

J.C. Arnault, K.H. Lee, J. Delchevalrie, J. Penueles, L. Mehmél, O. Brinza, S. Temgoua, I. Stenger, J. Letellier, G. Saint-Girons, R. Bachelet, R. Issaoui, A. Tallaie, J. Achard, J. Barjon, D. Eon, C. Ricolleau, S. Saada

"Diamond on Ir/ SrTiO₃/Si (001): From sequential material characterizations to fabrication of lateral Schottky diodes"

Diamond and Related Materials 105 (2020) 107768 - [HAL]

E. Gkaniatsou, R. Ricoux, K. Kariyawasam, I. Stenger, B. Fan, N. Ayoub, S. Salas, G. Patriarche, C. Serre, J. P. Mahy, N. Steunou, C. Sicard

"Encapsulation of Microperoxidase-8 in MIL-101(Cr)-X Nanoparticles: Influence of Metal- Organic Framework Functionalization on Enzymatic Immobilization and Catalytic Activity"

ACS Applied Nano Materials 3 (2020) 3233 - [HAL]

2019

L. Schué, L. Sponza, A. Plaud, H. Bensalah, K.Watanabe, T. Taniguchi, F. Ducastelle, A. Loiseau, J. Barjon

"Bright luminescence from indirect and strongly bound excitons in hBN"

Physical Review Letters 122 (2019) 067401 – [HAL] – [arXiv]

R. Issaoui, J. Achard, L. William, L. Mehmél, M.-A. Pinault-Thaury, F. Bénédict

"Thick and widened high quality heavily boron doped diamond single crystals synthetized with high oxygen flow under high microwave power regime"

Diamond and Related Materials 94 (2019) 88

L. William, L. Mehmél , M.-A. Pinault Thaury , D. Dekkar , F. Bénédict, C. Falentin-

Daudré, O. Brinza , R. Issaoui , J. Achard

"Investigation of a distributed antenna array microwave system for the three-dimensional low-temperature growth of nanocrystalline diamond films"

Diamond and Related Materials 94 (2019) 28

C. Becher, P. Pobedinskas, R. Issaoui, A. Tallaire, A. Mrad, L. William, F. Benedic, M.-A. Pinault-Thaury, J. Achard

"Defect and Threading Dislocations in Single Crystal Diamond: A Focus on Boron and Nitrogen Codoping"

Physica Status Solidi (a) - Applications and Materials Science 216 (2019) 1900581

A. Plaud, L. Schué, K. Watanabe, T. Taniguchi, F. Fossard, F. Ducastelle, A. Loiseau, J. Barjon

"Exciton-exciton annihilation in hBN",

Applied Physics Letters 114 (2019) 232103 [HAL]

Y. Kubo, S. Temgoua, R. Issaoui, J. Barjon, N. Naka

"Radiative lifetime of boron-bound excitons in diamond",

Applied Physics Letters 114 (2019) 132104 [HAL]

M.-A. Pinault-Thaury, S. Temgoua, R. Gillet, H. Bensalah, I. Stenger, F. Jomard, R. Issaoui, J. Barjon

"Phosphorus-doped (113) CVD diamond: A breakthrough towards bipolar diamond devices",

Applied Physics Letters 114 (2019) 112106 [HAL]

C.Barbay, S.Saada, C.Mer-Calfati, S.Temgoua, J.Barjon, J.C.Arnault

"Dislocations imaging in low boron doped diamond epilayers using Field Emission Scanning Electron Microscopy (FE-SEM)"

Applied Surface Science 495 (2019) 143564 [HAL]

Y. Li, V. Garnier, C. Journet, J. Barjon, I. Stenger, A. Plaud, A. Loiseau, B. Bérangère, P. Steyer

"Advanced synthesis of highly-crystallized hexagonal boron nitride by coupling PDCs and SPS processes – influence of the crystallization promoter and sintering temperature",

Nanotechnology 30 (2019) 035604 [HAL]

A. Tissot, X. Kesse, S. Giannopoulou, I. Stenger, E. Riviere, C. Serre

"A spin crossover porous hybrid architecture for potential sensing applications",
Chemical Communications 55, 194 (2019) - [HAL]

L. Fontaine, K. Isoird, J. Tasselli, P. Austin, A. Cazarrã, A. Boussadi, J. Achard, M.-A. Pinault-Thaury

"Ohmic contacts study of P+N diodes on (111) and (100) diamond"

IEEE International Conference on Power Electronics and Drive Systems (2019) - [HAL]

2018

T. Shimomura, Y. Kubo, J. Barjon, N. Tokuda, I. Akimoto, N. Naka

"Quantitative relevance of substitutional impurities to carrier dynamics in diamond",

Physical Review Materials 2 (2018) 094601 [ArXiv] [HAL]

A. Boussadi, A. Tallaire, M. Kasu, J. Barjon, J. Achard

"Reduction of dislocation densities in single crystal CVD diamond by confinement in the lateral sector",

Diamond and Related Materials 83 (2018) 162 [HAL]

A. Venerosy, H.A. Girard, S. Saada, M. Sennour, I. Stenger, M. Mermoux, J.C. Arnault,

"Colloidal suspensions of monodisperse diamond core-shells",

Diamond and Related Materials 89 (2018) 122 - [HAL]

D. Lincot, N. Barreau, A. Ben Slimane, T. Bidaud, S. Collin, M. Feifel, F. Dimroth, M.

Balestrieri, D. Coutancier, S. Bechu, M. Bouttemy, A. Etcheberry, O. Durand, M.-A.

Pinault-Thaury, F. Jomard

"Exploring new convergences between PV technologies for high efficiency tandem solar cells: Wide band gap epitaxial CIGS top cells on silicon bottom cells with III-V intermediate layers",

Proceedings on New Materials and Concepts for Cells and Modules (2018) 23 [HAL]

2017

I. Stenger, L. Schué, M. Boukhicha, B. Berini, B. Plaçais, A. Loiseau, J. Barjon

"Low frequency Raman spectroscopy of few-atomic-layer thick hBN crystals",

2D Materials 4 (2017) 031003 - [HAL]

I. Stenger, M.-A. Pinault-Thaury, A. Lusson, T. Kociniowski, F. Jomard, J. Chevallier, J. Barjon

"Quantitative analysis of electronic absorption of phosphorus donors in diamond",
Diamond and Related Materials 74 (2017) 24 [HAL]

N. Temahuki, R. Gillet, F. Jomard, E. Chikoidze, Y. Dumont, M.-A. Pinault-Thaury, J. Barjon

"New Process for Electrical Contacts on (100) N-type Diamond",
Physica Status Solidi A 214 (2017) 1700466 [HAL]

F. Fossard, L. Schué, L. Sponza, C. Attacalite, F. Ducastelle, J. Barjon, A. Loiseau
"Angular resolved electron energy loss spectroscopy in hexagonal boron nitride",
Phys. Rev. B 96 (2017) 115304 - [arXiv] [HAL]

G. Sakr, C. Sartel, V. Sallet, A. Lusson, G. Patriarche, P. Galtier, J. Barjon
"Surface effects on exciton diffusion in non polar ZnO/ZnMgO heterostructures",
J. Phys.: Cond. Matter 29 (2017) 485706 [HAL]

J. Barjon
"Luminescence spectroscopy of bound excitons in diamond",
Phys. Stat. Solidi A 214 (2017) 1700402 [HAL]

M.-A. Pinault-Thaury, F. Jomard, C. Mer-Calfati, N. Tranchant, M. Pomorski, P. Bergonzo, J.-C. Arnault

"Front and back side SIMS analysis of boron-doped delta-layer in diamond",
Applied Surface Science 410 (2017) 464 [HAL]

A. Boussadi, A. Tallaire, O. Brinza, M.A. Pinault-Thaury, J. Achard
"Thick heavily boron doped CVD diamond films homoepitaxially grown on (111)-oriented substrates",
Diamond and Related Materials 79 (2017) 108 [HAL]

A. Tallaire, L. Mayer, O. Brinza, M. A. Pinault-Thaury, T. Debuisschert, J. Achard
"Highly photostable NV centre ensembles in CVD diamond produced by using N₂O as the doping gas",
Applied Physics Letters 111 (2017) 143101 [HAL]

H. Diab, C. Arnold, F. Lédée, G. Trippé-Allard, G. Delport, C. Vilar, F. Bretenaker, J. Barjon, J.-S. Lauret, E. Deleporte, D. Garrot

"Impact of Reabsorption on the Emission Spectra and Recombination Dynamics of Hybrid Perovskite Single Crystals",

J. Phys. Chem. Lett. 8 (2017) 2977 [HAL]

V. Mortet, Z. Vlckova Zivcova, A. Taylor, O. Frank, P. Hubík, D. Trémouilles, F. Jomard, J. Barjon, L. Kavan

"Insight into boron-doped diamond Raman spectra characteristic features",

Carbon 115 (2017) 279 - [HAL]

L. Schue, I. Stenger, F. Fossard, A. Loiseau, J. Barjon

"Characterization methods dedicated to nanometer-thick hBN layers",

2D Materials 4 (2017) 015028 - [HAL] - [arXiv]

2016

Y. Balasubramaniam, P. Pobedinskas, S. D. Janssens, G. Sakr, F. Jomard, S. Turner, Y.-G. Lu, W. Dexters, A. Soltani, J. Verbeeck, J. Barjon, M. Nesládek and K. Haenen

"Thick homoepitaxial (110)-oriented phosphorus-doped n-type diamond",

Applied Physics Letters 109 (2016) 062105

A. Tallaire, T. Ouisse, A. Lantreibecq, R. Cours, M. Legros, H. Bensallah, J. Barjon, V. Mille, O. Brinza, J. Achard

"Identification of dislocations in synthetic CVD diamond single crystals",

Crystal Growth and Design 16 (2016) 2741

H. Bensalah, I. Stenger, G. Sakr, J. Barjon, R. Bachelet, A. Tallaire, J. Achard, N. Vaissière, K. H. Lee, S. Saada, J.C. Arnault

"Mosaicity, dislocations and strain in heteroepitaxial diamond grown on iridium",

Diamond and Related Materials 66 (2016) 188

K.H. Lee, S. Saada, J.-C. Arnault, R. Moalla, G. Saint-Girons, R. Bachelet, H. Bensalah, I. Stenger, J. Barjon, A. Tallaire, J. Achard

"Epitaxy of iridium on SrTiO₃/Si (001): A promising scalable substrate for diamond heteroepitaxy",

Diamond and Related Materials 66 (2016) 67

L. Schué, B. Berini, A. Betz, B. Plaçais, F. Ducastelle, J. Barjon and A. Loiseau

"Dimensionality effects on the luminescence properties of hBN",

Nanoscale 8 (2016) 6986

J. Barjon, P. Valvin, C. Brimont, P. Lefebvre, O. Brinza, A. Tallaire, J. Achard, F. Jomard, M. A. Pinault-Thaury

"Picosecond dynamics of free and bound excitons in doped diamond",

Physical Review B 93 (2016) 115202

A. Tallaire, A. Valentin, V. Mille, L. William, M.A. Pinault-Thaury, F. Jomard, J. Barjon, J. Achard

"Growth of thick and heavily boron-doped (113)-oriented CVD diamond films",

Diamond and Related Materials 66 (2016) 61

Al-Nafiey, B. Sieber, B. Gelloz, A. Addad, M. Moreau, J. Barjon, M. Girleanu, O. Ersen, R. Boukherroub

"Enhanced Ultraviolet Luminescence of ZnO Nanorods Treated by High-Pressure Water Vapor Annealing (HWA)",

Journal of Physical Chemistry C 120 (2016) 4571

2015

A. Pierret, H. Nong, F. Fossard, B. Trétout, D. Golberg, F. Ducastelle, J. Barjon, A. Loiseau

"Role of structural defects in the UV luminescence of multiwall boron nitride nanotubes",

Journal of Applied Physics 118 (2015) 234307

M. Naamoun, A. Tallaire, P. Doppelt, A. Gicquel, M. Legros, J. Barjon, J. Achard

"Reduction of dislocation densities in single crystal CVD diamond by using self-assembled metallic masks",

Diamond and Related Materials 58 (2015) 62

M. Pomorski, C. Delfaure, N. Vaissiere, H. Bensalah, J. Barjon, M.-A. Pinault-Thaury, D. Tromson, P. Bergonzo

"Characterization of the charge-carrier transport properties of Ila-Tech SC diamond for radiation detection applications",

Phys. Stat. Sol. A 212 (2015) 2553

M.-A. Pinault-Thaury, I. Stenger, F. Jomard, J. Chevallier, J. Barjon, A. Traore, D. Eon, J. Pernot

"Progress in the electrical activity of phosphorus donors in (100) homoepitaxial diamond",

Phys. Stat. Sol. A 212 (2015) 2454

V. Mortet, J. Pernot, F. Jomard, A. Soltani, Z. Remes, J. Barjon, J. D'Haen, K. Haenen

"Properties of boron-doped epitaxial diamond layers grown on (110) oriented single crystal substrates",

Diamond and Related Materials 53 (2015) 29

K. Pantzas, G. Patriarche, D. Troadec, M. Kociak, N. Cherkashin, M. Hÿtch, J. Barjon, C. Tanguy, T. Rivera, S. Suresh, A. Ougazzaden

"Role of compositional fluctuations and their suppression on the strain and luminescence of InGaN alloys",

Journal of Applied Physics 117 (2015) 055705

» Publications 2010-2014

» Publications 2006-2009