



# GEMaC

Groupe d'Étude  
de la Matière Condensée

## AXE 3 – PUBLICATIONS & THÈSES

### Thèses en cours / ongoing theses

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Trang Thi Huyen Nguyen,

**"Propriétés excitoniques des pérovskites hybrides 2D"**

Domitille Gérard,

**"Sources de photons uniques dans les matériaux 2D pour la photonique quantique intégrée"**

Helmi Fartas,

**"Controlling the emission hBN color centers by plasmonic structures"**

Hien Phan,

# "Super plasmonic structures based on fluorescent nano-aggregates for the generation of quantum states of light"

» Thèses soutenues / defended theses

## Publications 2015 - 2024

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### 2024

V. Blondot, D. Gérard, G. Quibeuf, C. Arnold, A. Delteil, A. Bogicevic, T. Pons, N. Lequeux, S. Buil, J-P. Hermier,

**"Photon correlations in the collective emission of hybrid gold-(CdSe/CdS/CdZnS) nanocrystal supraparticles",**

Nanotechnology (2023) – [arXiv]

A. Delteil, S. Buil, J.-P. Hermier,

**"Photon statistics of resonantly driven spectrally diffusive quantum emitters",**

Phys. Rev. B **109**, 155308 (2024) – [HAL] – [arXiv]

G. L. Ngo., X. P. Le, Q. T. Pham, J.-P. Hermier, N. D. Lai,

**"High-directivity far-field radiation of quantum dot-based single-photon emitter coupled to polymeric circular waveguide resonant grating",**

Nanotechnology **35**, 16 (2024)

### 2023

M. Montes Bajo, J.-M. Chauveau, A. Vasanelli, A. Delteil, Y. Todorov, C. Sirtori, A. Hierro,

**"Perspectives and opportunities with multisubband plasmonics",**

J. Appl. Phys. **134**, 010901 (2023) – [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",**

Appl. Phys. Lett. **122**, 264001 (2023) – [HAL] – [arXiv] – [data]

C. Fournier, K. Watanabe, T. Taniguchi, S. Buil, J. Barjon, J.-P. Hermier, A. Delteil,  
**"Investigating the fast spectral diffusion of a quantum emitter in hBN using resonant excitation and photon correlations"**,  
Phys. Rev. B **107**, 195304 (2023) – [HAL] – [arXiv] – [data].

G. L. Ngo, L. Nguyen, J.-P. Hermier, N. D. Lai,  
**"On-Chip 3D Printing of Polymer Waveguide-Coupled Single-Photon Emitter Based on Colloidal Quantum Dots"**,  
Polymers **15**, 2201 (2023) – [HAL]

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"**,  
Phys. Rev. Applied **19**, L041003 (2023) – [HAL] – [arXiv]

J. M. Urban, T. T. Huyen Nguyen, G. Chehade, A. Delteil, G. Trippé-Allard, G. Delport, E. Deleporte, J.-P. Hermier, D. Garrot,  
**"Discrete Donor-Acceptor Pair Transitions in CH<sub>3</sub>NH<sub>3</sub>PbI<sub>3</sub> Perovskite Single Crystals"**,  
PSS Rapid Research Letters (2023) – [HAL]

G. L. Ngo, J.-P. Hermier, N. D. Lai,  
**"Single-photon splitting by polymeric submicropillars structures"**,  
AVS Quantum Sci. **5**, 011403 (2023)

V. Blondot, C. Arnold, A. Delteil, D. Gérard, A. Bogicevic, T. Pons, N. Lequeux, J.-P. Hugonin, J.-J. Greffet, S. Buil, J.-P. Hermier,  
**"Fluorescence decay enhancement and FRET inhibition in self-assembled hybrid gold CdSe/CdS/CdZnS colloidal nanocrystal supraparticles"**,  
Opt. Exp. **31**, 4454 (2023) – [HAL] – [arXiv]

## **2022**

J. Urban, A. Jouaiti, N. Gruber, G. Delport, G. Trippé-Allard, J.-F. Guillemoles, E. Deleporte, S. Ferlay, D. Garrot,  
**"Using chiral ammonium cations to modulate the structure of 1D hybrid lead bromide perovskites for linearly polarized broadband light emission at room**

**temperature",**

J. Mater. Chem. C. **10**, 12436 (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",**

Appl. Phys. Lett. **121**, 184002 (2022) – [HAL] – [arXiv] – [data]

A. Bogicevic, X. Xu, S. Buil, C. Arnold, J.-P. Hermier, T. Pons, N. Lequeux,  
**"Synthesis and characterization of colloidal quantum dot superparticles - plasmonic gold nanoshell hybrid nanostructures",**

ChemRxiv-2022-1m9q5 (2022)

A. Delteil, V. Blondot, S. Buil, J.-P. Hermier,

**"First-order coherence of light emission from inhomogeneously broadened mesoscopic ensembles",**

Phys. Rev. B. **106**, 115302 (2022) – [HAL] – [arXiv] – [data]

T. Campos, P. Dally, S. Gbegnon, A. Blaizot, G. Trippé-Allard, M. Provost, M. Bouttemy,  
A. Duchatelet, D. Garrot, J. Rousset, E. Deleporte,

**"Unraveling the Formation Mechanism of the 2D/3D Perovskite Heterostructure for Perovskite Solar Cells Using Multi-Method Characterization",**

J. Phys. Chem. C **126**, 13527 (2022)

G. Garcia-Arellano, G. Trippé-Allard, T. Campos, F. Bernardot, L. Legrand, D. Garrot, E. Deleporte, C. Testelin, M. Chamarro,

**"Unexpected Anisotropy of the Electron and Hole Landé g-Factors in Perovskite CH<sub>3</sub>NH<sub>3</sub>PbI<sub>3</sub> Polycrystalline Films",**

Nanomaterials **12**, 1399 (2022) – [HAL]

M. Cherasse, J. Dong, G. Trippé-Allard, E. Deleporte, D. Garrot, S. Maehrlein, M. Wolf,  
Z. Chen, E. Papalazarou, M. Marsi, J.-P. Rueff, A. Taleb-Ibrahimi, L. Perfetti,

**"Electron Dynamics in Hybrid Perovskites Reveal the Role of Organic Cations on the Screening of Local Charges",**

Nano Lett. **22**, 2065 (2022) – [HAL]

C. Mayer, H. Levy-Falk, M. Rémond, G. Trippé-Allard, F. Fossard, M. Vallet, M. Lepeltier, N. Guiblin, J.-S. Lauret, D. Garrot, E. Deleporte,

**"Synthesis of highly calibrated CsPbBr<sub>3</sub> nanocrystal perovskites by soft chemistry",**

Chem. Comm. **58**, 5960 (2022) – [HAL]

## **2021**

G. Garcia-Arellano, G. Trippé-Allard, L. Legrand, T. Barisien, D. Garrot, E. Deleporte, F. Bernardot, C. Testelin, M. Chamarro,

**"Energy Tuning of Electronic Spin Coherent Evolution in Methylammonium Lead Iodide Perovskites",**

Journal of Physical Chemistry Letters **12**, 8272 (2021) – [HAL]

F. Lédée, P. Audebert, G. Trippé-Allard, L. Galmiche, D. Garrot, J. Marrot, J.-S. Lauret, E. Deleporte, C. Katan, J. Even, C. Quarti,

**"Tetrazine molecules as efficient electronic diversion channel in 2D organic-inorganic perovskites",**

Materials Horizons **8**, 1547 (2021) – [HAL]

M. E. Bathen, A. Galeckas, R. Karsthof, A. Delteil, V. Sallet, A. Y. Kuznetsov, L. Vines,

**"Resolving Jahn-Teller induced vibronic fine structure of silicon vacancy quantum emission in silicon carbide",**

Phys. Rev. B **104**, 045120 (2021) – [HAL] – [RC]

E. Garcia, C. Arnold, J.-P. Hermier, M. D'Amico,

**"Gold plasmonic enhanced luminescence of silica encapsulated semiconductor hetero-nanoplatelets",**

Nanoscale Adv. (2021) (open access)

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]

T. P. L. Ung, X. Quélin, J. Laverdant, R. Fulcrand, J.-P. Hermier, S. Buil,

**"Localization of plasmon modes in a 2D photonic nanostructure with a controlled disorder",**

## 2020

V. Blondot, A. Bogicevic, A. Coste, C. Arnold, S. Buil, X. Quélin, T. Pons, N. Lequeux, J.-P. Hermier,

**"Fluorescence properties of self assembled colloidal supraparticles from CdSe/CdS /ZnS nanocrystals"**,

New J. Phys. **22**, 113026 (2020) (open access) – [data].

T. P. L. Ung, R. Jazi, J. Laverdant, R. Flucrand, G. Colas des Francs, J.-P. Hermier, X. Quélin, S. Buil,

**"Scanning the plasmonic properties of a nanohole array with a single nanocrystal near field probe"**,

Nanophotonics **9**, 793 (2020) - [HAL]

A. Coste, L. Moreaud, G. Colas des Francs, S. Buil, X. Quélin, E. Dujardin, J.-P. Hermier,

**"Dramatic decrease of the Joule losses in the coupling between a crystalline gold and single colloidal CdSe/CdS nanocrystals at 4K"**,

Phys. Rev. B **101**, 075406 (2020) – [HAL]

T. H. Au, J. Audibert, D. T. Trinh, D. B. Do, S. Buil, X. Quélin, J.-P. Hermier, N. D. Lai,

**"Controllable movement of single-photon source in multifunctional magneto-photonic structures"**,

Sci. Rep. **10**, 4843 (2020) – [HAL]

## 2019

M. Manceau, S. Vezzoli, Q. Glorieux, E. Giacobino, L. Carbone, M. DeVittorio, J.P. Hermier, A. Bramati,

**"CdSe/CdS DotinRods Nanocrystals Fast Blinking Dynamics"**,

ChemPhysChem. **19**, 3288 (2019) – [HAL] – [arXiv]

T. H. Au, S. Buil, X. Quélin, J.-P. Hermier, N. D. Lai,

**"High directional radiation of single photon emission in dielectric antenna"**,

ACS Photonics **6**, 11 (2019) – [HAL]

A. Delteil, C. T. Ngai, T. Fink, A. Imamoglu,

**"Second-order photon correlation measurement with picosecond resolution using frequency upconversion",**

Optics Lett. **44**, 3877 (2019) – [HAL] – [arXiv] – [RC]

T. H. Au, S. Buil, X. Quélin, J.-P. Hermier, N. D. Lai,

**"Photostability and long-term preservation of colloidal semiconductor-based single photon emitter in polymeric photonic structures",**

Nanoscale Adv. **1**, 3225 (2019) – [HAL]

## **2018**

T. H. Au, S. Buil, X. Quélin, J.-P. Hermier, N. D. Lai,

**"Suppression of grey state and optimization of the single photon emission of a colloidal semiconductor at room temperature",**

Appl. Phys. Lett. **113**, 111105 (2018) – [HAL]

R. Jazi, T. P. L. Ung, P. Maso, G. Colas des Francs, M. Nasilowski, B. Dubertret, J.-P. Hermier, X. Quélin, S. Buil,

**"Measuring the orientation of a single CdSe/CdS nanocrystal at the end of a near-field tip for the realization of a versatile active SNOM probe",**

Phys. Chem. Chem. Phys. **20**, 16444 (2018) – [HAL]

D. Canneson, B. Berini, S. Buil, J.-P. Hermier, X. Quélin,

**"3D vector distribution of the electro-magnetic fields on a random gold film",**

Optics Comm. **414**, 113 (2018) – [HAL]

## **2017**

A. Coste, F. Eloi, G. Colas des Francs, X. Quélin, S. Buil, A. Bouhelier, J.-C. Weeber, M. Nasilowski, B. Dubertret, J.-P. Hermier,

**"Significant decrease of the optical losses in the coupling between colloidal CdSe /CdS nanocrystals and a flat gold film at cryogenic temperature",**

Phys. Rev. B **96**, 195416 (2017) – [HAL]

T. P. L. Ung, X. Quélin, B. Berini, G. Colas des Francs, M. Nasilowski, B. Dubertret, J.-P. Hermier, S. Buil,

**"Probing the hot spot properties of semicontinuous gold films through the**

**fluorescence polarization of CdSe/CdS colloidal nanocrystals",**

J. Nanophot. **11**, 046005 (2017) – [HAL]

## **2016**

C. Sinito, X. Quélin, N. Simon, P. Gautier, A-M. Gonçalves, S. Buil, J-P. Hermier, D. Aureau,

**"Förster resonance energy transfer between individual semiconductor nanocrystal and an InP film",**

J. Nanophot. **10**, 046014 (2016) – [HAL]

D. Canneson, E. Le Moal, S. Cao, X. Quélin, H. Dallaporta, G. Dujardin, and E. Boer-Duchemin,

**"Surface plasmon polariton beams from an electrically excited plasmonic crystal",**

Opt. Express **24**, 26186 (2016)

F. Eloi, H. Frederich, F. Mazéas, A. Kumar, S. Buil, X. Quélin, A. Bouhelier, J.C. Weeber, M. Nasilowski, B. Dubertret, G. Colas des Francs, and J.-P. Hermier,

**"Enhanced and polarized emission from single colloidal CdSe/CdS nanocrystals coupled to a 1D gold grating",**

Phys. Rev. B **94**, 085301 (2016) – [HAL]

J.-C. Weeber, K. Hammani, G. Colas Des Francs, A. Bouhelier, J. Arocas, A. Kumar, F. Eloi, S. Buil, X. Quélin, J.-P. Hermier, M. Nasilowski, B. Dubertret,

**"Colloidal quantum dot integrated light sources for plasmon mediated photonic waveguide excitation",**

ACS Photonics **3**, 844 (2016)

## **2015**

F. Eloi, H. Frederich, A. Leray, S. Buil, X. Quélin, B. Ji, E. Giovanelli, N. Lequeux, B. Dubertret, and J.-P. Hermier,

**"Unraveling the time cross correlations of an emitter switching between two states with the same fluorescence intensity",**

Optics Express **23**, 29921 (2015) – [HAL]

A. Kumar, J.-C. Weeber, A. Bouhelier, F. Eloi, S. Buil, X. Quélin, M. Nasilowski, B. Dubertret, J.-P. Hermier, G. Colas des Francs,

**"Spatially uniform enhancement of single quantum dot emission using plasmonic grating decoupler",**

Scientific Reports **5**, 16976 (2015) – [HAL]

L. Biadala, H. Frederich, L. Coolen, S. Buil, X. Quélin, C. Javaux, M. Nasilowski, B. Dubertret, and J.-P. Hermier,

**"Photon-correlation Fourier spectroscopy of the trion fluorescence in thick-shell CdSe/CdS nanocrystals",**

Phys. Rev. B **91**, 085416 (2015) – [HAL]

» Publications 2010-2014

» Publications 2006-2009