



# GEMaC

Groupe d'Étude  
de la Matière Condensée

## AXE2\_FOX - PUBLICATIONS ET THÈSES

### Thèses en cours / Current PhDs

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» MADACI Ismail (02/2020 - 02/2023)

**Injection et détection de spin dans des nanostructures à base d'oxydes de fer /**

**Spin injection and detection in iron oxide nanostructures**

*Directeur de thèse DUMONT Yves, co-directrice POPOVA Elena, co-directeur  
VENNEGUES Philippe (CRHEA)*

» ZEYU Chi (10/2020 - 10/2023)

**Etude de l'oxyde de gallium pour des électroniques de puissance et haute**

**fréquence : du matériau au dispositif / Gallium Oxide for Next Generation**

**Energy Electronics**

*Directeur de thèse DUMONT Yves*

## Publications 2018 - 2022

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### 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-Ga<sub>2</sub>O<sub>3</sub>"**

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Appl. Phys. Lett. **120**, 233503 (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-Ga<sub>2</sub>O<sub>3</sub>"**

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Appl. Phys. Lett. **120**, 233503 (2022)

M. Dallochio, A. Boileau, B. Mercey, A. David, U. Lüders, S. Froissart, X. Larose, B. Bérini, Y. Dumont, A. Pautrat, W. Prellier, A. Fouchet,

**"Tunable magnetic and magnetotransport properties in locally epitaxial La<sub>0.67</sub>Sr<sub>0.33</sub>MnO<sub>3</sub> thin films on polycrystalline SrTiO<sub>3</sub>, by control of grain size"**,

J. Phys. D: Appl. Phys. **55**, 235303 (2022) – [HAL]

Z. Chi, J.J. Asher, M.R. Jennings, E. Chikoidze, A. Pérez-Tomás,

**"Ga<sub>2</sub>O<sub>3</sub> and Related Ultra-Wide Bandgap Power Semiconductor Oxides: New Energy Electronics Solutions for CO<sub>2</sub> Emission Mitigation"**,

Materials **15**, 1164 (2022) – [HAL].

V. Cantelli, S. Guillemin, E. Sarigiannidou, F. Carlá, B. Bérini, J.-M. Chauveau, D. Fong, H. Renevier, V. Consonni

**"In situ analysis of the nucleation of O-and Zn-polar ZnO nanowires using synchrotron-based X-ray diffraction"**

Nanoscale, Royal Society of Chemistry **14**, D1NR06099F (2022) - [HAL]

### 2021

A. Boileau, S. Hurand, F. Baudouin, U. Lüders, M. Dallochio, B. Bérini, A. Cheikh, A. David, F. Paumier, T. Girardeau, P. Marie, C. Labbé, J. Cardin, D. Aureau, M. Frégnaux, M. Guilloux-Viry, W. Prellier, Y. Dumont, V. Demange, A. Fouchet,

**"Highly Transparent and Conductive Indium-Free Vanadates Crystallized at Reduced Temperature on Glass Using a 2D Transparent Nanosheet Seed Layer"**,  
Adv. Funct. Mater. 2108047 (2021) – [HAL]

L.L. Nedelchev, G. Mateev, V.Y. Strijkova, V. Salgueiriño, D. S.Schmool, N. Berberova-Buhova, E. Vadimovna Stoykova, D. I. Nazarova

**"Tunable polarization and surface relief holographic gratings in azopolymer nanocomposites with incorporated goethite (-feooH) nanorods"**  
Photonics **8**, 8080306 (2021) - [HAL]

Z.Chi, F.-G. Tarntair, M. Frégnaux, W.-Y. Wu, C. Sartel, I. Madaci, P. Chapon, V. Sallet, Y.Dumont, A.Pérez-Tomás, R.H. Horng, E. Chikoidze,

**"Bipolar self-doping in ultra-wide bandgap spinel ZnGa<sub>2</sub>O<sub>4</sub>"**,  
Material Today Physics **20**, 100466 (2021) – [HAL]

B. Bérini, M. Dallochio, A. David, U. Luders, Y. Bourlier, L. Rault, R. Coq Germanicus, W. Prellier, Y. Dumont, V. Demange, A. Fouchet,

**"Morphology control of self-organised Sr<sub>3</sub>V<sub>2</sub>O<sub>8</sub> nanostructures on SrVO<sub>3</sub> grown onto single and poly-crystalline subjacent SrTiO<sub>3</sub> substrates"**,  
Applied Surface Science **566**, 150759 (2021) – [HAL]

Y. Bourlier, M. Frégnaux, B. Bérini, A. Fouchet, Y. Dumont, et D. Aureau,

**"XPS monitoring of SrVO<sub>3</sub> thin films from demixing to air ageing: The asset of treatment in water"**,  
Applied Surface Science **553**, 149536 (2021) – [HAL]

M. Deb, Elena Popova, S. P. Zeuschner, M. Hehn, N. Keller, S. Mangin, G. Malinowski, M. Bargheer,

**"Generation of spin waves via spin-phonon interaction in a buried dielectric thin film"**,  
Phys. Rev. B **103**, 024411 (2021) – [HAL]

## 2020

E. Chikoidze, T. Tchelidze, C. Sartel, Z. Chi, R. Kabouche, I. Madaci, C. Rubio, H. Mohamed, V. Sallet, F. Medjdoub, A. Perez-Tomas, Y. Dumont,

**"Ultra-high critical electric field of 13.2 MV/cm for Zn-doped p-type -Ga<sub>2</sub>O<sub>3</sub>"**

Mater. Today Phys. **15**, 100263 (2020) – [HAL]

D. M. Krichevsky, D. A. Sylgacheva, M. A. Kozhaev, A. N. Kuzmichev, A. N. Kalish, S. A. Dagesyan, Venu Gopal Achanta, E. Popova, N. Keller, V. I. Belotelov,

**"Enhanced magneto-optical Faraday effect in 2D magnetoplasmonic structures caused by orthogonal plasmonic oscillations"**

Phys. Rev. B **102**, 144408 (2020) - [HAL]

H. Bakkali, E. Blanco, M. Dominguez, M.B. de la Mora, C. Sanchez-Ake, M. Villagran-Muniz, D.S. Schmool, B. Berini, S.E. Lofland,

**"The effect of oblique-angle sputtering on large area deposition: a unidirectional ultrathin Au plasmonic film growth design"**

Nanotechnology **31**, 445701 (2020)

E. Martin, F. Roulland, S. Grenier, F. Appert, J. Juraszek, M. Trassin, C. Bouillet, E. Chikoidze, C. Arnold, B. Berini, Y. Dumont, S. Colis, S. Barre, G. Versini, D. Preziosi, C. Leuvrey, N. Blanc, N. Boudet, G. Pourroy, N. Viart, C. Lefevre,

**"Non-auxetic/auxetic transitions inducing modifications of the magnetic anisotropy in CoFe<sub>2</sub>O<sub>4</sub> thin films"**

J. Alloy Compd. **836**, 155425 (2020) – [HAL]

T.T. Huynh, E. Chikoidze, C.P. Irvine, M. Zakria, Y. Dumont, F.H. Teherani, E.V. Sandana, P. Bove, D.J. Rogers, M.R. Phillips, C. Ton-That,

**"Red luminescence in H-doped beta-Ga<sub>2</sub>O<sub>3</sub>"**

Phys. Rev. Mater. **4**, 085201 (2020) – [arXiv]

V. Demange, B. Bérini, B. Gautier, E. Popova, Y. Dumont, A. Fouchet,

**"Ca<sub>3</sub>(VO<sub>4</sub>)<sub>2</sub> Nanowires on Metallic CaVO<sub>3</sub> Films as Nanocapacitors"**

ACS Appl. Nano Mater. **3**, 6684 (2020) – [HAL]

A. Teurtrie, L. Bocher, A. Mougín, N. Keller, A. Gloter, E. Popova,

**"Evolution of structural and magnetic properties of multifunctional bismuth iron garnets upon Ca and Y doping"**

Phys. Rev. Mater. **4**, 064401 (2020) – [HAL]

S. P. Zeuschner, J.-E. Pudell, A. von Reppert, M. Deb, E. Popova, N. Keller, M. Rössle, M. Herzog, M. Bargheer,

## **"Measurement of transient strain induced by two-photon excitation"**

Phys. Rev. Research **2**, 022013(R) (2020) [HAL]

A.N. Kuzmichev, D.A. Sylgacheva, M.A. Kozhaev, D.M. Krichevsky, A.N. Shaposhnikov, V.N. Berzhansky, F. Freire-Fernandez, H.J. Qin, E. Popova, N. Keller, S. Van Dijken, A.I. Chernov, V.I. Belotelov,

## **"Influence of the Plasmonic Nanodisk Positions Inside a Magnetic Medium on the Faraday Effect Enhancement"**

Phys. Status Solidi RRL 1900682 (2020)

M.M. Gomaa, M.H. Sayed, E. Chikoidze, Y. Dumont, M. Boshta,

## **"V-doped ZnO diluted magnetic semiconductor prepared by chemical spray pyrolysis"**

Mat. Sci. Semicon. Proc. 109, 104944 (2020)

R. Coq Germanicus, Y. Bourlier, V. Notot, B. Bérini, V. Demange, M. Berthe, A. Boileau, M. Euchin, Y. Dumont, D. Aureau, M. Frégnaux, B. Grandidier, U. Lüders, A. David, W. Prellier, L. Biadala, A. Fouchet,

## **"Three dimensional resistance mapping of self-organized Sr<sub>3</sub>V<sub>2</sub>O<sub>8</sub> nanorods on metallic perovskite SrVO<sub>3</sub> matrix"**

Appl. Surf. Sci. **510**, 145522 (2020) – [HAL]

Y. Bourlier, B. Bérini, M. Frégnaux, A. Fouchet, D. Aureau, Y. Dumont,

## **"Transfer of Epitaxial SrTiO<sub>3</sub> Nanothick Layers Using Water-Soluble Sacrificial Perovskite Oxide"**

ACS Appl. Mater. Interfaces **12**, 8466 (2020) – [HAL]

F. Baudouin, V. Demange, S.Ollivier, L. Rault, A.S. Brito, A. Silva Maia, F. Gouttefangeas, V. Bousquet, S. Députier, B. Bérini, A. Fouchet, M. Guilloux-Viry,

## **"Orientation control of KNbO<sub>3</sub> film grown on glass substrates by Ca<sub>2</sub>Nb<sub>3</sub>O<sub>10</sub>-nanosheet seed layer"**

Thin Solid Films **693**, 137682 (2020) – [HAL]

## **2019**

A. Perez-Tomas, E. Chikoidze, Y. Dumont, M.R. Jennings, S.O. Russell, P. Vales-Castro, G. Catalan, M. Lira-Cantu, C. Ton-That, F.H. Teherani, V.E. Sandana, P. Bove, D.J. Rogers,

**"Giant bulk photovoltaic effect in solar cell architectures with ultra-wide bandgap Ga<sub>2</sub>O<sub>3</sub> transparent conducting electrodes"**

Mater. Today Energy **14**, 100350 (2019)

O.V. Borovkova, M. Levy, A.A. Voronov, M.A. Kozhaev, A. Chakravarty, H. Hashim, B. Blasiola, D. Karki, C. Sheidler, F. Jomard, S.A. Dagesyan, E. Popova, N. Keller, V.I. Belotelov,

**"Enhanced Magneto-Optic Response of the Ultrathin Iron-Garnet Films"**

2019 Thirteenth International Congress on Artificial Materials for Novel Wave Phenomena (Metamaterials), IEEE

F. Iori, A. Teurtrie, L. Bocher, E. Popova, N. Keller, O. Stephan, A. Gloter,

**"Bismuth iron garnet: ab initio study of electronic properties"**

Phys. Rev. B **100**, 245150 (2019) – [HAL]

M. Deb, E. Popova, N. Keller,

**"Different magneto-optical response of magnetic sub-lattices as a function of temperature in ferrimagnetic bismuth iron garnet films"**

Phys. Rev. B **100**, 224410 (2019) – [HAL]

E. Chikoidze, C. Sartel, H. Mohamed, I. Madaci, T. Tchelidze, M. Modreanu, P. Vales-Castro, C. Rubio, C. Arnold, V. Sallet, Y. Dumont, A. Perez-Tomas,

**"Enhancing the intrinsic p-type conductivity of the ultra-wide bandgap Ga<sub>2</sub>O<sub>3</sub> semiconductor"**

J. Mater. Chem. C **33**, 10231 (2019) – [HAL]

M. Deb, E. Popova, M. Hehn, N. Keller, S. Petit-Watelot, M. Bargheer, S. Mangin, G. Malinowski,

**"Damping of Standing Spin Waves in Bismuth-Substituted Yttrium Iron Garnet as Seen via the Time-Resolved Magneto-Optical Kerr Effect"**

Phys. Rev. Appl. **12**, 044006 (2019) – [HAL]

A. Teurtrie, E. Popova, I.E.K. Koita, E. Chikoidze, N. Keller, A. Gloter, L. Bocher,

**"Atmosphere-induced reversible resistivity changes in Ca/Y-doped bismuth iron garnet thin films"**

Adv. Funct. Mater. 1904958 (2019) – [HAL]

H.S. Tarazona, M. Tafur, J. Quispe-Marcatoma, C.V. Landauro, E. Baggio-Saitovitch, D.

S. Schmool,

**"Thickness effect on the easy axis distribution in exchange biased Co/IrMn bilayers"**

Physica B - Cond. Matter **567**, 11 (2019)

G. Ciatto, N. Aubert, M. Lecroard, C. Engblom, P. Fontaine, J.-M. Dubuisson, Y.-M. Abiven, P.-E. Janolin, J.-M. Kiat, Y. Dumont, B. Berini, A. Fouchet, N. Keller,

**"FORTE - a multipurpose high-vacuum diffractometer for tender X-ray diffraction and spectroscopy at the SIRIUS beamline of Synchrotron SOLEIL"**

J. Synchrotron Rad. **26**, 1374 (2019) – [HAL]

Y. Bourlier, M. Fregnaux, B. Berini, A. Fouchet, Y. Dumont, D. Aureau,

**"Surface Characterizations and Selective Etching of Sr-Rich Segregation on Top of SrVO<sub>3</sub> Thin-Films Grown by Pulsed Laser Deposition"**

ChemNanoMat **5**, 674 (2019) – [HAL]

E. Chikoidze, D.J. Rogers, F.H. Teherani, C. Rubio, G. Sauthier, H.J. Von Bardeleben, T. Tchelidze, C. Ton-That, A. Fellous, P. Bove, E.V. Sandana, Y. Dumont, A. Perez-Tomas,

**"Puzzling robust 2D metallic conductivity in undoped beta-Ga<sub>2</sub>O<sub>3</sub> thin films"**

Mater. Today Phys. **8**, 10 (2019) – [HAL]

M. Deb, E. Popova, M. Hehn, N. Keller, S. Petit-Watelot, M. Bargheer, S. Mangin, G. Malinowski,

**"Femtosecond laser-excitation-driven high frequency standing spin waves in nanoscale dielectric thin films of iron garnets"**

*Phys. Rev. Lett.* **123**, 027202 (2019) – [HAL]

M. Levy, O.V. Borovkova, C. Sheidler, B. Blasiola, D. Karki, F. Jomard, M.A. Kozhaev, E. Popova, N. Keller, V.I. Belotelov,

**"Faraday rotation in iron garnet films beyond elemental substitutions"**

Optica **6**, 642 (2019) – [HAL]

E. Haltz, J. Sampaio, R. Weil, Y. Dumont, A. Mougin,

**"Strong current actions on ferrimagnetic domain walls in the creep regime"**

Phys. Rev. B **99**, 104413 (2019) – [HAL]

**2018**

M. Deb, E. Popova, M. Hehn, N. Keller, S. Mangin, G. Malinowski,

**"Picosecond acoustic-excitation-driven ultrafast magnetization dynamics in dielectric Bi-substituted yttrium iron garnet"**

Phys. Rev. B **98**, 174407 (2018) – [HAL] – [arXiv]

E. Haltz, R. Weil, J. Sampaio, A. Pointillon, O. Rousseau, K. March, N. Brun, Z. Li, E. Briand, C. Bachelet, Y. Dumont, A. Mougin,

**"Deviations from bulk behavior in TbFe(Co) thin films: Interfaces contribution in the biased composition"**

Phys. Rev. Mat. **10**, 104410 (2018) – [HAL]

E. Haltz, J. Sampaio, R. Weil, Y. Dumont, A. Mougin,

**"Action of current on ferrimagnetic domain wall: 2 propagation regimes in creep and influence of domain wall structure"**

IEEE International Magnetism Conference (INTERMAG), Article Number: UNSP 1800CD09 (2018)

A. Pérez-Tomás, E. Chikoidze, M.R. Jennings, S.A.O. Russell, F.H. Teherani, P. Bove, E. V. Sandana, D.J. Rogers,

**"Wide and ultra-wide bandgap oxides: where paradigm-shift photovoltaics meets transparent power electronics"**

SPIE Proceedings, v. 10533, Oxide-based Materials and Devices IX, 105331Q (2018)

K. Ridier, D. Aureau, B. Bérini, Y. Dumont, N. Keller, J. Vigneron, A. Etcheberry, B. Domengès, A. Fouchet,

**"Tuning the electronic properties of LaAlO<sub>3</sub>/SrTiO<sub>3</sub> interfaces by irradiating the LaAlO<sub>3</sub> surface with low-energy cluster ion beams by argon cluster sputtering"**

Phys. Rev. B **97**, 035146 (2018) – [arXiv]

A. Fouchet, J.E. Rault, M. Allain, B. Berini, J.-P. Rueff, Y. Dumont, N. Keller,

**"Interface chemical and electronic properties of LaAlO<sub>3</sub>/SrVO<sub>3</sub> heterostructures"**

J. Appl. Phys. **123**, 055302 (2018) – [arXiv]

D. Cannesson, B. Berini, S. Buil, J.-P. Hermier, X. Quelin,

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

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

Publications 2013 - 2017

Publications 2008 - 2012