

Prénom : Philippe

Nom : TORCHIO

Discipline de Recherche : Physique / Sciences pour l'Ingénieur

Laboratoire de rattachement : IM2NP (Institut Matériaux Microélectronique Nanosciences de Provence), UMR-CNRS 7334

Position : Maître de Conférences HDR, HC

Liste de Publications 2010-2015 :

a) *Articles publiés dans des revues à comité de lecture 2010-2015 :*

- 1) Simon J.J., Flory F., Escoubas L., Torchio Ph., Chen Y.-J., and Duche D., "Nanophotonics for Efficient Photovoltaic Solar Cells", *Journal of Optoelectronics and Advanced Materials*, Vol. **12**, No 1, pp. 31-34 (2010).
- 2) Hocine D., Pasquinelli M., Escoubas L., Torchio Ph., Moreau A., and Belkaid M.S., "Structural and Optical Study of Titanium Dioxide Thin Films Elaborated by APCVD for Application in Silicon Solar Cells", *Renewable Energy & Power Quality Journal (RE&PQ-8)*, No 8, ref. 702 (2010).
- 3) Escoubas L., Bouffaron R., Brissonneau V., Simon J.J., Berginc G., Flory F., and Torchio Ph., "Sandcastle Bi-periodic Pattern for Spectral and Angular Broadening of Antireflective Properties", *Optics Letters*, Vol. **35**, No 9, pp. 1455-1457 (2010).
- 4) S. Vedraïne, Ph. Torchio, D. Duche, F. Flory, J.J. Simon, J. Le Rouzo, and L. Escoubas, "Intrinsic Absorption of Plasmonic Structures for Organic Solar Cells", *Solar Energy Materials and Solar Cells*, Vol. **95**, pp. S57-S64 (2011).
- 5) F. Flory, Y.-J. Chen, C.C. Lee, L. Escoubas, J.J. Simon, Ph. Torchio, J. Le Rouzo, S. Vedraïne, H. Derbal-Habak, I. Shupyk, Y. Didane, and J. Ackermann, "Optical Properties of Dielectric Thin Films Including Quantum Dots", *Applied Optics*, Vol. **50**, No. 9, pp. C129-C134 (2011).
- 6) D. Duche, E. Drouard, J.J. Simon, L. Escoubas, Ph. Torchio, J. Le Rouzo, and S. Vedraïne, "Light Harvesting in Organic Solar Cells", *Solar Energy Materials and Solar Cells*, Vol. **95**, pp. S18-S25 (2011).
- 7) L. Escoubas, J.J. Simon, Ph. Torchio, D. Duche, S. Vedraïne, W. Vervisch, J. Le Rouzo, F. Flory, G. Rivière, G. Yeabiyo, and H. Derbal, "Bringing Some Photonic Structures for Solar Cells to the Fore", *Applied Optics*, Vol. **50**, No. 9, pp. C329-C339 (2011).
- 8) W. Vervisch, S. Biondo, G. Rivière, D. Duche, L. Escoubas, Ph. Torchio, J.J. Simon, and J. Le Rouzo, "Optical-electrical Simulation of Organic Solar Cells: Excitonic Modeling Parameter Influence on Electrical Characteristics", *Applied Physics Letters*, Vol. **98**, 253306 (2011).
- 9) A. Merlen, V. Chevallier, J.C. Valmalette, L. Patrone, Ph. Torchio, S. Vedraïne, F. Flory, and G. Moula, "Surface Enhanced Spectroscopy with Gold Nanostructures on Silicon and Glass Substrates", *Surface Science*, Vol. 605, pp. 1214-1218 (2011).
- 10) W. Vervisch, G. Rivière, S. Vedraïne, S. Biondo, Ph. Torchio, D. Duche, J.J. Simon, and L. Escoubas, "Optical-electrical Simulation of Organic Solar Cells: Influence of Light Trapping by Photonic Crystal and ZnO Spacer on Electrical Characteristics", *Journal of Applied Physics*, Vol. **111**, No. 9, 094506 (2012).
- 11) S. Vedraïne, Ph. Torchio, A. Merlen, J. Bagierek, F. Flory, A. Sangar, and L. Escoubas, "Optical Characterization of Organic Blend Films integrating Metallic Nanoparticles", *Solar Energy Materials and Solar Cells*, Vol. **102**, pp. 31-35 (2012).

- 12) D.-T. Nguyen, S. Vedraïne, L. Cattin, Ph. Torchio, M. Morsli, F. Flory, and J.C. Bernède, "Effect of the Thickness of the MoO₃ Layers on Optical Properties of MoO₃/Ag/MoO₃ Multilayer Structures", *Journal of Applied Physics*, Vol. **112**, No. 6, 063505 (2012).
- 13) D. Hocine, M.S. Belkaid, M. Pasquinelli, L. Escoubas, Ph. Torchio, and A. Moreau, "Optical Modelling and Characterization of TiO₂ Antireflection Coatings Elaborated by APCVD for Monocrystalline Silicon Solar Cells", *International Review of Physics*, Vol. **6**, No. 5, pp. 390-397 (2012).
- 14) A. Sangar, A. Merlen, Ph. Torchio, S. Verdaine, F. Flory, L. Escoubas, L. Patrone, G. Delafosse, V. Chevallier, E. Moyen, and M. Hanbucken, "Fabrication and Characterization of Large Metallic Nanodots Arrays for Organic Thin Film Solar Cells using Anodic Aluminum Oxide Templates", *Solar Energy Materials and Solar Cells*, Vol. **117**, pp. 657–662 (2013).
- 15) S. Vedraïne, A. El Hajj, Ph. Torchio, and B. Lucas, "Optimized ITO-free Tri-layer Electrode for Organic Solar Cells", *Organic Electronics*, Vol. **14**, No. 4, pp. 1122-1129 (2013).
- 16) L. N. Deepak-Kallepalli, D. Grojo, L. Charmasson, P. Delaporte, O. Uteza, A. Merlen, A. Sangar, and Ph. Torchio, "Long Range Nanostructuring of Silicon Surfaces by Photonic Nanojets from Microsphere Langmuir Films", *Journal of Physics D:Applied Physics*, Vol. **46**, 145102 (2013).
- 17) M. Tabatabaei, A. Sangar, N. Kazemi, Ph. Torchio, A. Merlen, and F. Lagugne-Labarthe, "Optical Properties of Silver and Gold Tetrahedral Nanopyramid Arrays Prepared by Nanosphere Lithography", *The Journal of Physical Chemistry C, Journal of Physical Chemistry C*, Vol. **117**, pp. 14778–14786 (2013).
- 18) A. Sytchkova, M.L. Grilli, A. Rinaldi, S. Vedraïne, Ph. Torchio, A. Piegari, and F. Flory, "Radio frequency Sputtered Al:ZnO-Ag Transparent Conductor: a Plasmonic Nanostructure with Enhanced Optical and Electrical Properties", *Journal of Applied Physics*, Vol. **114**, No. 9, 094509 (2013).
- 19) A. Merlen, A. Sangar, Ph. Torchio, K. Deepak, D. Grojo, O. Uteza, and P. Delaporte, "Multi-wavelength Enhancement of Silicon Raman Scattering by Nanoscale Laser Surface Ablation", *Applied Surface Science*, Vol. **284**, pp. 545-548 (2013).
- 20) T. Abachi, L. Cattin, G. Louarn, Y. Lare, A. Bou, M. Makha, Ph. Torchio, M. Fleury, M. Morsly, M. Addou, and J.C. Bernède, "Highly Flexible, Conductive and Transparent MoO₃/Ag/MoO₃ Multilayer Electrode for Organic Photovoltaic Cells", *Thin Solid Films*, Vol. **545**, pp. 438–444 (2013).
- 21) A. El Hajj, T. M. Kraft, B. Lucas, M. Shirr-Bonnans, B. Ratier, and Ph. Torchio, "Flexible Inverted Polymer Solar Cells with an Indium-free Tri-layer Cathode", *Journal of Applied Physics*, Vol. **115**, No. 3, 033103 (2014).
- 22) A. Bou, Ph. Torchio, S. Vedraïne, D. Barakel, B. Lucas, J.C. Bernède, P.Y. Thoulon, and M. Ricci, "Numerical Optimization of Multilayer Electrodes Without Indium for Use in Organic Solar Cells", *Solar Energy Materials and Solar Cells*, Vol. **125**, pp. 310–317 (2014).
- 23) A. Bou, Ph. Torchio, D. Barakel, F. Thierry, A. Sangar, P.Y. Thoulon, and M. Ricci, "Indium Tin Oxide-free Transparent and Conductive Electrode based on SnO_x|Ag|SnO_x for Organic Solar Cells", *Journal of Applied Physics*, Vol. **116**, No. 2, 023105 (2014).
- 24) Y. Mouchaal, G. Louarn, A. Khelil, M. Morsli, N. Stephant, A. Bou, T. Abachi, L. Cattin, M. Makha, Ph. Torchio, and J.C. Bernède, "Broadening of the Transmission Range of Dielectric/Metal Multilayer Structures by using Different Metals", *Vacuum*, Vol. **111**, pp. 32-41 (2015).
- 25) D. Hocine, M.S. Belkaid, M. Pasquinelli, L. Escoubas, Ph. Torchio, and A. Moreau, "Characterization of TiO₂ Antireflection Coatings Elaborated by APCVD for Monocrystalline Silicon Solar Cells", *Physica Status Solidi C: Current Topics in Solid State Physics*, Vol. **12**, No. 3, pp. 323-326 (2015).
- 26) A. Bou, Ph. Torchio, D. Barakel, A. Guillou, T. Aviles, P.Y. Thoulon, and M. Ricci, "Optical and Electrical Properties of Structured Multilayer with Tunable Transparency Rate", *Journal of Physics D: Applied Physics*, Vol. **48**, 205102 (2015).

b) Publications sous forme d'actes ou de proceedings à des conférences internationales 2010-2015 :

- 1) Duche D., Simon J.J., Escoubas L., Torchio Ph., Le Rouzo J., Vervisch W., and Flory F., "Photonic Crystals for Light Trapping within Organic Solar Cells", IEEE publication, ICTON Mediterranean

- Winter Conference 2009, DOI: 10.1109/ICTONMW.2009.5385643, IEEE Photonics Society, pp. 1-4 (2010).
- 2) Flory F., Chen Y.-J., Escoubas L., Simon J.J., Torchio Ph., Brissonneau V., Duche D., and Bouffaron R., "Quantum Confinement and Optical Properties of Nanostructured Thin Films", Proceedings of the International Conference on "Optical Interference Coatings", OSA Technical Digest (Optical Society of America), Paper WB1 (2010).
 - 3) Escoubas L., Simon J.J., Torchio Ph., Duche D., Vedraïne D., Vervisch W., Le Rouzo J., Flory F., Riviere G., Yeabiyo G., and Derbal H., "State of the Art of Photonic Structures for Solar Cells", Proceedings of the International Conference on "Optical Interference Coatings", OSA Technical Digest (Optical Society of America), Paper MC1 (2010).
 - 4) Flory F., Chen Y.-J., Lee C.C., Escoubas L., Simon J.J., Torchio Ph., Le Rouzo J., Vedraïne S., Ackermann J., Shupyk I., and Didane Y., "Optical Properties of Dielectric Thin Films Including Quantum Dots", S.P.I.E. Proceedings to the "Optics and Photonics" 2010, "Nanostructured Thin Films III: Fabrication, Characterization and Application" Conference, Vol. **7766**, pp. 77660J (2010).
 - 5) Vedraïne S., Torchio Ph., Derbal-Habak H., Flory F., Brissonneau V., Duche D., Simon J.J., and Escoubas L., "Plasmonic Structures Integrated in Organic Solar Cells", S.P.I.E. Proceedings to the "Optics and Photonics" 2010, "Next Generation (Nano) Photonic and Cell Technologies for Solar Energy Conversion" Conference, Vol. **7772**, pp. 777219 (2010).
 - 6) Hocine D., Pasquinelli M., Escoubas L., Torchio Ph., Moreau A., and Belkaid M.S., "Atmospheric Pressure Chemical Vapor Deposition and Characterization of TiO₂ Antireflection Coatings for Monocrystalline Silicon Solar Cells", Proceedings of the 14th International Conference on Harmonics and Quality of Power (ICHQP'2010), IEEE-PES (Power & Energy Society), Bergamo (IT), September 26-29 (2010).
 - 7) Ph. Torchio, S. Vedraïne, W. Vervisch, L. Escoubas, F. Flory, and A. Merlen, "Intrinsic Absorption in Organic Thin Film including Metallic Nanoparticles", Proceedings of the International Conference on Physics, Chemistry and Application of Nanostructures "NANOMEETING-2011", World Scientific Publishing Company (Singapore), pp. 580-583 (2011).
 - 8) D. Hocine, M. Pasquinelli, L. Escoubas, Ph. Torchio, A. Moreau, and M.S. Belkaid, "Atmospheric Pressure Chemical Vapor Deposition and Characterization of TiO₂ Antireflection Coatings for Monocrystalline Silicon Solar Cells", Proceedings of the International Conference on Clean Electrical Power (ICCEP'2011), IEEE-IES (Industrial Electronics Society), pp. 145-152 (2011).
 - 9) S. Vedraïne, V. Gernigon, Ph. Torchio, F. Flory, T. Heiser, P. Leveque, and L. Escoubas, "Surface Plasmon Effect on Metallic Nanoparticles Integrated in Organic Solar Cells", S.P.I.E. Proceedings of the International Conference on Optical Complex Systems (OSC'11), Vol. **8172**, pp. 81720G (2011).
 - 10) D. Duche, L. Escoubas, J.J. Simon, C. Gourgon, C. Masclaux, Ph. Torchio, J. Le Rouzo, and F. Flory, "Photonic Crystals for Improving Light Absorption in Organic Solar Cells", S.P.I.E. Proceedings of the "Photonics West 2012" International Conference, "Physics, Simulation, and Photonic Engineering of Photovoltaic Devices", Vol. **8256**, pp. 82561K (2012).
 - 11) A. Sytchkova, M.L. Grilli, A. Rinaldi, A. Piegari, S. Vedraïne, Ph. Torchio, and F. Flory, "Surface Plasmons for Performance Enhancement of R.F. Sputtered Silver-AZO Transparent Electrodes", Proceedings of the International Conference on "Optical Interference Coatings", OSA Technical Digest (Optical Society of America), Paper MA.7 (2013).
 - 12) A. Bou, Ph. Torchio, D. Barakel, F. Thierry, P.-Y. Thoulon, and M. Ricci, "Numerical and Experimental Study of SnO_x | Ag | SnO_x Multilayer as Indium-Free Transparent Electrode for Organic Solar Cells", S.P.I.E. Proceedings of the "Photonics West 2014" International Conference, Oxide-based Materials and Devices V, Vol. **8987**, pp. 898706-1 (2014).
 - 13) L. Manai, B. D. Rezgui, A. Bou, D. Barakel, Ph. Torchio, R. B. Zaghoulani, O. Palais, and B. Bessais, "Enhanced Light Trapping using Plasmonic Nanoparticles", Journal of Physics: Conference Series (JPCS), Proceeding of the TJASST Symposium: R&D of Energy and Material Sciences, IOP Publishing, Vol. **596**, pp. 012002 (2015).

Liste de Communications 2010-2015 :

a) Conférences invitées

- 1) Flory F., Chen Y.-J., Escoubas L., Simon J.J., Torchio Ph., Brissonneau V., Duche D., and Bouffaron R., "Quantum Confinement and Optical Properties of Nanostructured Thin Films", International Conference on "Optical Interference Coatings", OSA, Tucson, Arizona (US), June 7-10 (2010).
- 2) Escoubas L., Simon J.J., Torchio Ph., Duche D., Vedraïne D., Vervisch W., Le Rouzo J., Flory F., Rivière G., and Yeabiyo G., "State of the Art of Photonic Structures for Solar Cells", International Conference on "Optical Interference Coatings", OSA, Tucson, Arizona (US), June 7-10 (2010).
- 3) Flory F., Chen Y.-J., Lee C.C., Escoubas L., Simon J.J., Torchio Ph., Le Rouzo J., Vedraïne S., Ackermann J., Shupyk I., and Didane Y., "Optical Properties of Dielectric Thin Films Including Quantum Dots", S.P.I.E. "Optics and Photonics" 2010, "Nanostructured Thin Films III: Fabrication, Characterization and Application" Conference, San Diego (US), August 1-5 (2010).
- 4) Ph. Torchio, S. Vedraïne, F. Flory, W. Vervisch, A. Merlen, J.J. Simon, and L. Escoubas, "Intrinsic Absorption in Organic Thin Film including Metallic Nanoparticles", 3rd Frontiers Seminar on Nanotechnologies and Nanomaterials in Energy Conversion, Minsk (BY), May 27-28 (2011).
- 5) D. Duche, L. Escoubas, J.J. Simon, C. Gourgon, C. Masclaux, Ph. Torchio, J. Le Rouzo, and F. Flory, "Photonic Crystals for Improving Light Absorption in Organic Solar Cells", S.P.I.E. Photonics West 2012 International Conference, San Diego (US), January 21-26 (2012).
- 6) D. Duche, L. Escoubas, J.J. Simon, C. Gourgon, C. Masclaux, Ph. Torchio, J. Le Rouzo, and F. Flory, "Enhanced Absorption of Light in Organic Solar Cells by Photonic Crystals", 4th International Conference on NANO-structures SELF-Assembly, NanoSEA 2012, S. Margherita di Pula (Sardigna, IT), June 25-29 (2012).
- 7) F. Flory, L. Escoubas, J.J. Simon, Ph. Torchio, J. Le Rouzo, and C.C. Lee, "Nano-optics and plasmonic effects of nanostructured materials", 68th IUVSTA Workshop, "Multifunctional Surface Engineering for Advanced Energy Applications", City University of Hong Kong (HK), December 9-13 (2012).
- 8) A. Merlen, A. Sangar, and Ph. Torchio, "What Can Surface Enhanced Spectroscopy Bring to Plasmonic Photovoltaic?", 96th Canadian Chemistry Conference and Exhibition (CSC 2013), Québec (Quebec, CA), May 26-30 (2013).
- 9) L. Escoubas, J.J. Simon, J. Le Rouzo et Ph. Torchio, "Photonique pour le Photovoltaïque Organique", Présentation orale au 22ième Congrès Général de la Société Française de Physique, Marseille, 1-5 juillet (2013).

b) Communications à des colloques avec publication des actes ou des résumés

- 1) Hocine D., Pasquinelli M., Escoubas L., Torchio Ph., Moreau A., and Belkaid M.S., "Structural and Optical Study of Titanium Dioxide Thin Films Elaborated by APCVD for Application in Silicon Solar Cells", International Conference on Renewable Energies and Power Quality (ICREPQ'10), Granada (ES), March 23-25 (2010).
- 2) Derbal-Habak H., Simon J.J., Escoubas L., Torchio Ph., Vervisch W., Le Rouzo J., Flory F., Duche D., Rivière G., Vedraïne S., and Yeabiyo G., "New Methods for Large Scale Production of Renewable and Green Energy for Tomorrow", Casam@nSun EnR 2010 Workshop, Ziguinchor University (SN), April 14-17 (2010).
- 3) Merlen A., Chevallier V., Torchio Ph., Vedraïne S. et Flory F., "Etude par Spectroscopie Raman Exaltée de Surface de Nanostructures Métalliques pour Dispositifs Photovoltaïques", Journées Scientifiques du Centre de compétences en Nanosciences et Nanotechnologies (C'NANO PACA 2010), Porquerolles, 10-12 mai (2010).
- 4) Vedraïne S., Torchio Ph., Duche D., Flory F., Simon J.J., and Escoubas L., "Improving Light Absorption in Organic Solar Cells via Localized Surface Plasmons on Metallic Nanoparticles", Journées Scientifiques de l'IM2NP, Presqu'île de Giens, 11-12 mai (2010).
- 5) Vedraïne S., Torchio Ph., Duche D., Flory F., Simon J.J., and Escoubas L., "Improving Light Absorption in Organic Solar Cells via Localized Surface Plasmon on Metallic Nanoparticles",

- International Photovoltaic Technical Conference (PVTC 2010), Thin Film 2010, Center of Aix-en-Provence (FR), May 27-28 (2010).
- 6) Duche D., Drouard E., Simon J.J., Escoubas L., Torchio Ph., Le Rouzo J., and Vedraïne S., "Light Harvesting in Organic Solar Cells", International Photovoltaic Technical Conference (PVTC 2010), Thin Film 2010, Congress Center of Aix-en-Provence (FR), May 27-28 (2010).
 - 7) Duche D., Drouard E., Simon J.J., Escoubas L., Torchio Ph., and Le Rouzo J., "Photonic Crystal and Light Trapping in Organic Solar Cells", International Conference on Organic Electronics (ICOE'2010), Paris Diderot University, Paris (FR), June 22-25 (2010).
 - 8) Vedraïne S., Torchio Ph., Derbal-Habak H., Flory F., Brissonneau V., Duche D., Simon J.J., and Escoubas L., "Plasmonic Structures Integrated in Organic Solar Cells", S.P.I.E. "Optics and Photonics" 2010, "Next Generation (Nano) Photonic and Cell Technologies for Solar Energy Conversion" Conference, Paper N° 7772-43, San Diego (US), August 1-5 (2010).
 - 9) Derbal-Habak H. Nunzi J.M., Simon J.J., Escoubas L., Riviere G., Vervisch W., Torchio Ph., Flory F., Bergeret C., and Cousseau J., "Increasing the Photovoltaic Properties of Organic Solar Cells by Structuring Photoactive Layer Based on P3HT:PCBM while Incorporating Functionalized SWCNTs", S.P.I.E. "Optics and Photonics" 2010, San Diego (US), August 1-5 (2010).
 - 10) Hocine D., Pasquinnelli M., Escoubas L., Torchio Ph., Moreau A., and Belkaid M.S., "Atmospheric Pressure Chemical Vapor Deposition and Characterization of TiO₂ Antireflection Coatings for Monocrystalline Silicon Solar Cells", 14th International Conference on Harmonics and Quality of Power (ICHQP'2010), IEEE-PES (Power & Energy Society), Bergamo (IT), September 26-29 (2010).
 - 11) A. Merlen, S. Vedraïne, Ph. Torchio, V. Chevalier et F. Flory, "Elaboration et Caractérisation de Nanostructures Métalliques pour Dispositifs Photovoltaïques Organiques", Conférence "Dispositifs Electroniques Organiques" (DIELOR 2010), Giens, 11-13 octobre (2010).
 - 12) S. Vedraïne, Ph. Torchio, F. Flory, W. Vervisch et L. Escoubas, "Etude Numérique de Nanostructures Plasmoniques au sein de Cellules Solaires Organiques", Présentation orale à la Conférence "Dispositifs Electroniques Organiques" (DIELOR 2010), Giens, 11-13 octobre (2010).
 - 13) S. Vedraïne, H. Derbal-Habak, Ph. Torchio, F. Flory, J.J. Simon et L. Escoubas, "Incorporation de Nanoparticules Métalliques dans une Cellule Photovoltaïque Organique", Conférence "Dispositifs Electroniques Organiques" (DIELOR 2010), Giens, 11-13 octobre (2010). Lauréat du Prix du "Meilleur Poster" de cette Conférence.
 - 14) D. Duche, E. Drouard, J.J. Simon, L. Escoubas, Ph. Torchio et J. Le Rouzo, "Cristaux Photoniques pour l'Amélioration des Cellules Solaires Organiques", Conférence "Dispositifs Electroniques Organiques" (DIELOR 2010), Giens, 11-13 octobre (2010).
 - 15) Y.-J. Chen, F. Flory, C.C. Lee, L. Escoubas, J.J. Simon, Ph. Torchio, J. Le Rouzo, and H. Derbal, "Optical Properties of Coupled and Non Coupled Quantum Structures Embedded in Thin Films", The European Optical Society Annual Meeting 2010 (EOSAM 2010), Paris (FR), October 26-29 (2010).
 - 16) Merlen, J. Bagierek, Ph. Torchio, V. Chevallier, S. Vedraïne, F. Flory et L. Porte, "Etudes par Microscopie à Force Atomique de Nanostructures Métalliques pour Applications Photovoltaïques", Forum des Microscopies à Sonde Locale, Ecully, 28 mars - 1 avril (2011).
 - 17) Ph. Torchio, S. Vedraïne, F. Flory, W. Vervisch et L. Escoubas, "Augmentation de l'Absorption Lumineuse dans une Cellule Solaire Organique via l'Excitation de Plasmons de Surface Localisés sur des Nanoparticules Métalliques", Journée "Photonique et Photovoltaïque", CNRS-MRCT, Carry-le-Rouet, 30-31 mars (2011).
 - 18) S. Vedraïne, Ph. Torchio, F. Flory, W. Vervisch et L. Escoubas, "Etude Numérique de Nanostructures Plasmoniques dans une Cellule Solaire Organique", Présentation orale aux Journées FEDESOL (Fédération Nationale de Recherche sur l'Energie Solaire) Junior, Campus de l'INSA-Lyon, 4-5 avril (2011).
 - 19) S. Vedraïne, Ph. Torchio, A. Merlen, J. Bagierek, F. Flory, L. Porte, and L. Escoubas, "Elaboration and Optical Characterizations of Plasmonic Structures for Organic Solar Cells", E-MRS 2011 Spring Meeting (European Materials Research Society), International Symposium on "Organic Photovoltaics: Science and Technology-OPV", Nice (FR), May 9-13 (2011).

- 20) V. Figa, H. Derbal-Habak, B. Kulyk, L. Escoubas, and Ph. Torchio, "Steady State Fluorescence Studies on Electrodeposited ZnO-Based Heterojunctions", "Electrochemistry in Nano Structuration of Substrates and Energy" (ElecNano4) - 7th ECHEMS Meeting, Paris, France (FR), May 23-26 (2011).
- 21) S. Vedraïne, Ph. Torchio, A. Merlen, J. Bagierek, F. Flory, L. Porte, and L. Escoubas, "Optical Characterizations of Plasmonic Structures for Organic Thin Film Solar Cells", International Photovoltaic Technical Conference 2011, "Thin Film and Advanced Solution", Congress Center of Aix-en-Provence (FR), May 25-27 (2011).
- 22) W. Vervisch, G. Rivière, S. Biondo, S. Vedraïne, D. Duche, Ph. Torchio, J.J. Simon, and L. Escoubas, "Optical-electrical Simulation of Organic Solar Cells", International Photovoltaic Technical Conference 2011, "Thin Film and Advanced Solution", Congress Center of Aix-en-Provence (FR), May 25-27 (2011).
- 23) D. Hocine, M. Pasquinelli, L. Escoubas, Ph. Torchio, A. Moreau, and M.S. Belkaid, "Atmospheric Pressure Chemical Vapor Deposition and Characterization of TiO₂ Antireflection Coatings for Monocrystalline Silicon Solar Cells", International Conference on Clean Electrical Power (ICCEP'2011), IEEE-IES (Industrial Electronics Society), Ischia (IT), June 14-16 (2011).
- 24) S. Vedraïne, V. Gernigon, Ph. Torchio, F. Flory, T. Heiser, P. Leveque, and L. Escoubas, "Surface Plasmon Effect on Metallic Nanoparticles Integrated in Organic Solar Cells", International Conference on Optical Complex Systems (OSC'11), collocated with S.P.I.E. International Symposium on Optical Systems Design, Marseille (FR), September 5-8 (2011).
- 25) D. Duche, C. Gourgon, F. Flory, J. Le Rouzo, C. Masclaux, J.J. Simon, Ph. Torchio, S. Vedraïne, W. Vervisch, and L. Escoubas, "Toward Photonic Structures to Improve Organic Solar Cells Efficiencies", European Materials Research Society (MRS) 2011 Fall Meeting, International Symposium on "Photonic and Plasmonic Materials for Enhanced Photovoltaic Performance", Boston (US), November 28 – December 2 (2011).
- 26) A. Sangar, A. Merlen, Ph. Torchio, S. Vedraïne, V. Chevallier, L. Patrone, F. Flory, E. Moyen, and M. Hanbucken, "Préparation, Caractérisation et Modélisation Numérique de Surfaces Métalliques Nanostructurées pour Cellules Solaires Organiques", 5^{èmes} Journées Scientifiques du Centre de compétences en Nanosciences et Nanotechnologies (C'NANO-PACA 2012), Porquerolles, 14-16 mai (2012).
- 27) S. Vedraïne, Ph. Torchio, F. Flory, W. Vervisch, and L. Escoubas, "Metal Nanoparticles to Improve Organic Solar Cells Absorption: Modeling and Experiment", European Materials Research Society (E-MRS) 2012 Spring Meeting, International Symposium on "Applied Nanoplasmonics: Nanoplasmonic Functional Materials and Devices", Strasbourg (FR), May 14-18 (2012).
- 28) A. Sangar, A. Merlen, Ph. Torchio, S. Vedraïne, V. Chevalier, L. Patrone, F. Flory, E. Moyen, and L. Escoubas, "Samples Preparation and Characterization of Metallic Nanostructures for Organic Thin Film Solar Cells and Surface-Enhanced Raman Spectroscopy Measurements", International Photovoltaic Technical Conference 2012 (PVTC 2012), "Thin Film and Advanced Solution", Congress Center of Aix-en-Provence (FR), June 6-8 (2012).
- 29) S. Vedraïne, Ph. Torchio, F. Flory, A. Merlen, A. Sangar, and L. Escoubas, "Metal Nanoparticles to Increase Light Absorption of Organic Thin Film Solar Cells", International Photovoltaic Technical Conference 2012 (PVTC 2012), "Thin Film and Advanced Solution", Congress Center of Aix-en-Provence (FR), June 6-8 (2012).
- 30) A. El-Hajj, S. Vedraïne, Ph. Torchio, B. Lucas, and F. Flory, "Numerical and Experimental Optimization of ZnO/Ag/ZnO Multilayer Electrodes for Optoelectronic Devices", Communication orale, 5th International Symposium on Flexible Organic Electronics (ISFOE 12), Thessaloniki (GR), July 2-5 (2012).
- 31) S. Vedraïne, Ph. Torchio et F. Flory, "Nanostructures Plasmoniques pour le Photovoltaïque Organique", Présentation orale aux Journées Scientifiques de l'IM2NP, Cassis, 10-11 juillet (2012).
- 32) S. Vedraïne, Ph. Torchio, F. Flory, A. Merlen, A. Sangar, and L. Escoubas, "Metal Nanoparticles to Increase Light Absorption of Organic Thin Film Solar Cells", Présentation d'un poster aux Journées Scientifiques de l'IM2NP, Cassis, 10-11 juillet (2012). Lauréat du Prix du "Meilleur Poster" de ces Journées.

- 33) S. Vedraïne, A. El-Hajj, Ph. Torchio, B. Lucas et F. Flory, "Optimisation Expérimentale et Numérique d'Electrodes Multicouches ZnO/Ag/ZnO pour Dispositifs Optoélectroniques", Présentation orale à la Conférence "Dispositifs Electroniques Organiques" (DIELOR 2012), Limoges, 14-16 novembre (2012).
A. Sangar, A. Merlen, Ph. Torchio, and F. Lagugne-Labarthet, "Development of a High Resolution Near-field Spectroscopic Mapping Technique for Plasmonic Metallic Nanostructures in Organic Photovoltaic Cells", 7ièmes Journées Scientifiques, Journée Nano-optique PACA, Toulon, 10 avril (2013).
- 34) A. Merlen, P. Courmontagne, A. Sangar, Ph. Torchio, S. Vedraïne, V. Chevallier, L. Patrone et F. Lagugne-Labarthet, "Analyse Statistique de Nanostructures Métalliques pour Applications en Optique", 7ièmes Journées Scientifiques, Journée Nano-optique PACA, Toulon, 10 avril (2013).
- 35) A. Merlen, A. Sangar, Ph. Torchio, and F. Lagugne-Labarthet, "Fabrication and Characterization of Metallic Nanostructures for Plasmonic Photovoltaic", Communication orale, Surface Canada 2013 Conference, Surface and Interfacial Science: Energy, Materials and Environment, London (Ontario, CA), May 7-10 (2013).
- 36) A. Merlen, A. Sangar, Ph. Torchio, S. Vedraïne, V. Chevallier, P. Courmontagne, and L. Patrone, "Statistical Study of Metallic Nanostructures Prepared by Nanosphere Lithography", Surface Canada 2013 Conference, Surface and Interfacial Science: Energy, Materials and Environment, London (Ontario, CA), May 7-10 (2013).
- 37) S. Vedraïne, Ph. Torchio, F. Flory, A. Merlen, A. Sangar, and L. Escoubas, "Metal Nanoparticles to Increase Light Absorption of Organic Thin Film Solar Cells", Surface Canada 2013 Conference, Surface and Interfacial Science: Energy, Materials and Environment, London (Ontario, CA), May 7-10 (2013).
- 38) A. Sangar, A. Merlen, Ph. Torchio, and F. Lagugne-Labarthet, "Development of a High Resolution Near-field Spectroscopic Mapping Technique for Plasmonic Metallic Nanostructures in Organic Photovoltaic Cells", Surface Canada 2013 Conference, Surface and Interfacial Science: Energy, Materials and Environment, London (Ontario, CA), May 7-10 (2013).
- 39) A. Bou, Ph. Torchio, S. Vedraïne, D. Barakel, B. Lucas, J.C. Bernède, P.Y. Thoulon, and M. Ricci, "Numerical Optimization of Multilayer Electrodes Without Indium for Use in Organic Solar Cells", Communication orale de type 'flash talk' et par affiche, International Photovoltaic Technical Conference 2013 (PVTTC 2013), "Thin Film and Advanced Solutions", Congress Center of Aix-en-Provence (FR), May 22-24 (2013).
- 40) A. Sangar, A. Merlen, Ph. Torchio, and F. Lagugne-Labarthet, "Development of a High Resolution Near-field Spectroscopic Mapping Technique for Plasmonic Metallic Nanostructures in Organic Photovoltaic Cells", 96th Canadian Chemistry Conference and Exhibition (CSC 2013), Québec (Quebec, CA), May 26-30 (2013).
- 41) A. Sytchkova, M.L. Grilli, A. Rinaldi, A. Piegari, S. Vedraïne, Ph. Torchio, and F. Flory, "Surface Plasmons for Performance Enhancement of R.F. Sputtered Silver-AZO Transparent Electrodes", International Conference on "Optical Interference Coatings" (OIC), Whistler (British Columbia, CA), June 16-21 (2013).
- 42) A. Sangar, A. Merlen, Ph. Torchio et F. Lagugne-Labarthet "Development of a High Resolution Near-field Spectroscopic Mapping Technique for Plasmonic Metallic Nanostructures in Organic Photovoltaic Cells", Communication orale de type 'flash talk' et par affiche, 6ièmes Journées Scientifiques du Centre de compétences en Nanosciences et Nanotechnologies (C'NANO-PACA 2013), Porquerolles, 19-21 juin (2013). ☆ Lauréat du Prix de la "Meilleure Image" de ces Journées.
- 43) A. Merlen, P. Courmontagne, A. Sangar, Ph. Torchio, S. Vedraïne, V. Chevallier, L. Patrone et F. Lagugne-Labarthet, "Statistical Study of Metallic Nanostructures Prepared by Nanosphere Lithography", Communication orale de type 'flash talk' et par affiche, 6ièmes Journées Scientifiques du Centre de compétences en Nanosciences et Nanotechnologies (C'NANO-PACA 2013), Porquerolles, 19-21 juin (2013).
- 44) D. Hocine, M.S. Belkaid, M. Pasquinelli, L. Escoubas, Ph. Torchio, and A. Moreau, "Microstructural, Optical and Electrical Characterization of TiO₂ Thin Films Grown by APCVD for Photovoltaic

- Application", European Congress and Exhibition on Advanced Materials and Processes (EUROMAT 2013), Sevilla (ES), September 8-13 (2013).
- 45) A. Merlen, A. Sangar, V. Chevallier, L. Patrone, Ph. Torchio et F. Flory, "CARIOCA : CARTographie Optique ChAmp Proche : application à des dispositifs photovoltaïques", Journées Nationales Nanosciences et Nanotechnologies (J3N 2013), World Trade Center - Marseille, 4-6 novembre (2013).
 - 46) A. Sangar, Ph. Torchio et A. Merlen, "Elaboration et Caractérisation de Nanostructures Métalliques (mesures Raman exaltées de surface,...) pour Cellules Photovoltaïques Organiques", Présentation orale aux Journées Jeunes Chercheurs en Photovoltaïque Organique et Hybride, Mèze (Hérault), 12-14 novembre (2013).
 - 47) A. Bou, Ph. Torchio, S. Vedraïne, D. Barakel, B. Lucas, J.C. Bernède, P.Y. Thoulon, and M. Ricci, "Numerical Optimization of Multilayer Electrodes Without Indium for Use in Organic Solar Cells", Journées Jeunes Chercheurs en Photovoltaïque Organique et Hybride, Mèze (Hérault), 12-14 novembre (2013).
 - 48) A. Sangar, A. Merlen, Ph. Torchio, and F. Lagugne-Labarthe, "Development of a High Resolution Near-field Spectroscopic Mapping Technique for Plasmonic Metallic Nanostructures in Organic Photovoltaic Cells", Journées Jeunes Chercheurs en Photovoltaïque Organique et Hybride, Mèze (Hérault), 12-14 novembre (2013).
 - 49) A. Bou, Ph. Torchio, D. Barakel, F. Thierry, P.-Y. Thoulon, and M. Ricci, "Numerical and Experimental Study of SnO_x | Ag | SnO_x Multilayer as Indium-Free Transparent Electrode for Organic Solar Cells", Communication orale et par affiche, S.P.I.E. Photonics West 2014 International Conference, San Diego (US), February 1-6 (2014).
 - 50) A. Bou, Ph. Torchio, D. Barakel, P.Y. Thoulon, and M. Ricci, "Structured Multilayer Electrodes with Tunable Transparency Rate for Organic Solar Cells", Communication orale de type 'flash talk' et par affiche, International Photovoltaic Technical Conference 2014 (PVTC 2014), "Thin Film and Advanced Solutions", Congress Center of Aix-en-Provence (FR), May 21-23 (2014).
 - 51) A. Merlen, A. Sangar, G. Delafosse, Ph. Torchio et S. Coussan, "La molécule d'Aminothiophenol en Spectroscopie Raman Exaltée de Surface", Journées plénières du GDR Plasmonique Moléculaire et Spectroscopies Exaltées, Paris, 2-3 juin (2014).
 - 52) C. Gadio, A. Merlen, Ph. Torchio et A. Sangar, "Résonance Optique de Surfaces de Plasmons de Nanostructures d'or: Evolution des Propriétés Optiques en Taille et en Forme", 7^{èmes} Journées Scientifiques du Centre de compétences en Nanosciences et Nanotechnologies (C'NANO-PACA 2014), Porquerolles, 23-25 juin (2014).
 - 53) D. Hocine, M.S. Belkaid, M. Pasquinelli, L. Escoubas, Ph. Torchio, and A. Moreau, "Characterization of TiO₂ Antireflection Coatings Elaborated by APCVD for Monocrystalline Silicon Solar Cells", European Materials Research Society (E-MRS) 2014 Spring Meeting, International Symposium H:ALTECH (Analytical Techniques for Precise Characterization of Nanomaterials), Lille (FR), May 26-30 (2014).
 - 54) M. Leila, B. D. Rezgui, D. Barakel, Ph. Torchio, R. Benabderrahmane, O. Palais, and B. Bessais, "Enhanced Light Trapping using Plasmonic Nanoparticles", Communication orale,
 - 55) Tunisia-Japan Symposium 2014 (TJASST), R&D on Energy and Materials Science for Sustainable Society, Gammarth (TN), November 28-30 (2014).
 - 56) A. Bou, Ph. Torchio, D. Barakel, P.Y. Thoulon et M. Ricci, "Electrodes Multicouches Transparentes et Conductrices sans Indium de type Oxyde|Métal|Oxyde pour Cellules Solaires Organiques", Communication orale, Workshop "Oxydes pour l'Optique et la Photonique" du GDR OXYFUN, CNRS-Meudon, 8-9 décembre (2014).
 - 57) A. Bou, Ph. Torchio, D. Barakel, P.Y. Thoulon, and M. Ricci, "Optimized TiO_x|Ag|TiO_x Transparent and Conductive Electrode for Organic Solar Cells", Communication orale, European Materials Research Society (E-MRS) 2015 Spring Meeting, International Symposium on "Multifunctional binary and complex oxides films and nanostructures for nanoelectronics and energy applications - II", Session M.XVI, Lille (FR), May 11-15 (2015).
 - 58) A. Bou, Ph. Torchio, D. Barakel, P.Y. Thoulon et M. Ricci, "Electrodes Multicouches de Type Oxyde | Métal | Oxyde à Transparence Accordable", Publication d'actes et présentation, Optique Bretagne 2015, 2^{èmes} Journées du Club Nanophotonique, Congrès de la SFO, Rennes, 6-9 juillet (2015).

Liste d'ouvrages 2010-2015 :

- Flory F., Escoubas L., Simon J.J., Torchio Ph., Le Rouzo J., and Vervisch W., "Nanophotonics for Photovoltaics", in the 2nd edition of the Encyclopaedia of Optical Engineering, Encyclopaedia Program. Editors Taylor & Francis Group: New York, Published online: 01 Oct 2012; 1-12 (2012).

Participations GDR, plates formes-technologiques, expertises, autres ... :

- Membre du réseau national NANORGASOL (NANOcomposites ORGaniques pour le SOLaire) de la MRCT (Mission Ressources et Compétences Technologiques)-CNRS.
- Membre du Groupe de Travail "Electrodes Indium Free" du réseau NANORGASOL (MRCT-CNRS) (2010-2014).
- Membre du Comité d'Organisation de 2 Conférences Nationales (DIELOR 2010 / Congrès Général de la SFP 2013).
- Missions d'Expertise auprès de l'U.S. Department of Energy (DoE) pour l'expertise de plusieurs projets de recherche du programme "American Recovery and Reinvestment Act" dans les spécialités "Métamatériaux" et "Photovoltaïque" (2010).
- Membre du Comité d'Experts de l'Observatoire des Micro et Nanotechnologies (OMNT) sur la thématique "Energie - Photovoltaïque" (depuis 2012).
- Rapporteur auprès de l'IFCPAR/CEFIPRA (Indo-French Centre for the Promotion of Advanced Research/Centre Franco-Indien Pour la Recherche Avancée) pour l'expertise de projets internationaux dans le domaine de la Physique-STIC (2013).
- Missions d'Expertise auprès de l'ANR (Agence Nationale de la Recherche) pour des projets des Programmes P2N – Nanotechnologies et Nanosystèmes (2012), PROGELEC – Production Renouvelable et Gestion de l'Electricité (2012), ENERGIE (2014) et GENERIQUE (2015, 2016).
- Rapporteur auprès du Comité ECOS-Sud (Comité : Evaluation-Orientation de la Coopération Scientifique, Argentine-Chili-Uruguay) pour l'expertise de collaborations scientifiques internationales de haut niveau (2014).

Collaborations (nationales et/ou internationales) avec d'autres laboratoires de Recherche ou partenaires socio-économiques :

- Responsable scientifique pour l'IM2NP de 2 projets C'Nano PACA "SURPLASTO" (2011-2012) et "NAMEO" (2011-2012).
- Responsable scientifique pour l'IM2NP d'un Projet de recherche PTI (Projet Technologique Interdisciplinaire) de la MRCT-CNRS intitulé "NECT" pour "Nouvelles Electrodes Conductrices Transparentes exemptes d'Indium" (2010-2014).
- Co-responsable partenaire du projet ANR-CARIOCA (2011-2014).
- Responsable scientifique d'un contrat de recherche CIFRE/ANRT (2013-2014).
- Responsable scientifique d'un projet de recherche APRF/CR-PACA "ENERGLASS 60-120" (2013-2016).
- Responsable scientifique pour l'IM2NP du projet Européen ERANET-MED "NINFFE", financé par le 7^{ème} Programme Cadre de la Commission Européenne (2016-2019).

Autres points importants non mentionnés ci-dessus :

- Direction ou co-direction de 7 thèses de Doctorat (soutenues ou en cours), et membre de 12 jurys de thèse.

- Membre de la Commission Recherche de l'IUT d'Aix-Marseille (depuis 2013).
- Membre du Bureau de la Section Provence de la Société Française de Physique.
- Membre de la Commission Recherche (Plénier et Restreint) et du Conseil Académique (Plénier et Restreint) d'Aix-Marseille Université (depuis 2015).
- Rapporteur pour les revues "Applied Optics", "Optics Express", "Journal of Optics A: Pure and Applied Optics", "Organic Electronics", "European Physical Journal", "Synthetic Metals", "Materials", "Thin Solid Films", "Journal of Applied Physics", "ACS Applied Materials & Interfaces", "Nano Energy",...

- Habilitation à Diriger des Recherches (2011)
- PES (2010-2014)
- PEDR (2014-2018)
- Qualifié aux fonctions de Professeur des Universités (depuis 2012) :
 - Date du résultat : 03/02/2012 ; N° de Qualification (63° Section CNU) : 12163225104
 - Date du résultat : 10/02/2012 ; N° de Qualification (28° Section CNU) : 12128225104
 - Date du résultat : 15/02/2012 ; N° de Qualification (30° Section CNU) : 12130225104

<http://www.im2np.fr/perso/torchio.html>

<http://www.researcherid.com/rid/D-4348-2012>

<http://scholar.google.fr/citations?user=WCL-WWIAAAAJ&hl=fr&oi=ao>