

**Prénom :** Jean-Jacques

**Nom :** SIMON

**Brevet :**

“Dispositif de photoreflectance”, (Nexcis), Antonin Moreau, Véronica Bermudez, Ludovic Escoubas, Jean-Jacques Simon, N° de soumission 1000173906 (décembre 2012).

**Publications :**

1. Brückner, J. B., Le Rouzo, J., Escoubas, L., Berginc, G., Desplats, O., Gourgon, C., Simon, J. J. Flat-topped and top-patterned silicon cone gratings for visible and mid infrared antireflective properties.", *Optics Express*, Vol. 21 Issue 13, pp.16043-160 (2013).
2. Hocine, D., Belkaid, M. S., Pasquinelli, M., Escoubas, L., Simon, J. J., Rivière, G. A., & Moussi, A. "Improved efficiency of multicrystalline silicon solar cells by  $\text{TiO}_2$  antireflection coatings derived by APCVD process". *Materials Science in Semiconductor Processing*, 16(1), 113-117. (2013).
3. Vervisch, W., Riviere, G., Vedraïne, S., Biondo, S., Torchio, P., Duché, D. Simon, J-J. Escoubas, L. Optical-electrical simulation of organic solar cells: Influence of light trapping by photonic crystal and ZnO spacer on electrical characteristics. *Journal of Applied Physics*, 111(9), 094506-094506. (2012).
4. V. Brissonneau, F. Flory, L. Escoubas, G. Berginc, JJ Simon “Statistically modified surfaces: experimental solutions for controlled scattered light”, *J. Appl. Phys.* 112, 114325 (2012).
5. G. Rivière, J.-J. Simon, L. Escoubas, W. Vervisch, M. Pasquinelli, « Photo-electrical characterizations of Plastic Solar Modules », *Solar Energy Materials & Solar Cells* 102, 19–25 (2012).
6. Y. T. Gizachew, L. Escoubas, J. J. Simon, M. Pasquinelli, J. Loiret, P.Y. Leguen, J. C. Jimeno, J. Martin, A. Apraiz, J. P. Aguerre, “Towards ink-jet printed fine line front side metallization of crystalline silicon solar cells”, *Solar Energy Materials and Solar Cells* 95, S70-S82 (2011).

7. D. Duché, E. Drouard, J.J. Simon, L. Escoubas, Ph. Torchio, J. Le Rouzo, S. Vedraïne, "Light harvesting in organic solar cells", *Solar Energy Materials & Solar Cells* 95, S18–S25 (2011).
8. H. Derbal-Habak, C. Bergeret, J. Cousseau, J.-J. Simon, L. Escoubas and J.M. Nunzi, "New fullerene derivatives for the photovoltaic application", *Journal of Photonics for Energy* 1, 011120-1 - 011120-7 (2011).
9. W. Vervisch, S. Biondo, G. Rivière, D. Duché, L. Escoubas, P. Torchio, J.-J. Simon, J. Le Rouzo, "Optical-electrical simulation of organic solar cells: excitonic modeling parameter influence on electrical characteristics", *Applied Physics Letters* 98, 253306 (2011).
10. 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).
11. F. Flory, Y.-J. Chen, C.-C. Lee, L. Escoubas, J.-J. Simon, P. 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* 50 (9), C129 – C134 (2011).
12. R. Bouffaron, L. Escoubas, V. Brissonneau, J. J. Simon, G. Berginc, Ph. Torchio, F. Flory, and Ph. Masolet, "Sand-castle bi-periodic pattern for spectral and angular broadening of antireflective properties", *Optics Express* (2010).
13. J.J. Simon, F. Flory, L. Escoubas, P. Torchio, Yu-chen Chen, D. Duché, "Nanophotonics for efficient photovoltaic solar cells", *Journal of Optoelectronics and Advanced Materials*, vol. 12, 1 pp 31-34 (2010).
14. L. Escoubas, R. Bouffaron, V. Brissonneau, J.J. Simon, G. Berginc, F. Flory, Ph. Torchio, "Sand-castle bi-periodic pattern for spectral and angular broadening of antireflective properties", *Optics Letters* 35 (9), 1455 – 1457 (2010).
15. R. Bouffaron, L. Escoubas, V. Brissonneau, J. J. Simon, G. Berginc, Ph. Torchio, F. Flory, and Ph. Masolet " Spherically shaped micro-structured antireflective surfaces" *Optics Express*, Vol. 17, Issue 24, pp. 21590-21597 (2009).
16. R. Bouffaron et al. " Spherically shaped micro-structured antireflective surfaces " *Optics Express*, Vol. 17, Issue 24, pp. 21590-21597 (2009).

17. J.J. Simon, L. Escoubas, F. Monestier, P. Torchio, F. Flory, "Optical properties engineering for organic solar cells", Article invité International Journal of Materials and Product Technology 2009 - Vol. 34, No.4 pp. 469 - 487 (2009).
18. D. Duche, P. Torchio, L. Escoubas, F. Monestier, J.J. Simon, F. Flory, G. Mathian "Improving light absorption in organic solar cells by plasmonic contribution", Solar Energy Materials and Solar Cells 93(8) 1377-1382 (2009).

### **Liste des Communications 2009-2013 : (Internationales seulement)**

#### **2013**

1. J.-J. Simon, L. Escoubas, D. Duché, G Rivièrè, J. Le Rouzo, F. Flory, "Organic photovoltaic: present and future", Invited Conference at EMCMRE 2013, Istres, France.
2. F. Bencheikh, D. Duché, J.J. Simon, L. Escoubas, "Extraction of optical constants of hybrid active layers by spectroscopic ellipsometry", Poster at the International Conference on Spectroscopic Ellipsometry - ICSE 6 (2013), Japon.
3. D. Duché, F. Bencheikh, S. Ben Dkhil, N. Berton, J. Ackermann, J.J Simon and L. Escoubas "Finite element method to predict opto-electrical properties of printable hybrid solar cells", Oral at PVTC 2013, Aix-en-Provence, France.
4. A. Moreau, L. Escoubas, J.J Simon, C. Ruiz, V. Izquierdo, V. Bermudez "Correlations between photorefectance spectra and optoelectronic properties of CIGS-based solar cells", Conference at PVTC 2013, Aix-en-Provence, France.

#### **2012**

1. F. Flory, L. Escoubas, J.J. Simon, P. Torchio, J. Le Rouzo, C.C. Lee, "Nano-optics and plasmonic effects of nanostructured materials", Invited Conference at "Multifunctional Surface Engineering for Advanced Energy Applications", 2012 (Hong Kong)
2. D. Duché, L. Escoubas, J.-J. Simon, C. Gourgon, C. Masclaux, Ph. Torchio, J. Le Rouzo, F. Flory, "Photonic crystals for improving light absorption in organic solar cells", Invited Conference at SPIE Photonic West, 2012 (San Francisco)
3. Duché, L. Escoubas, J.-J. Simon, C. Gourgon, C. Masclaux, Ph. Torchio, J. Le Rouzo, F. Flory, "Enhanced absorption of light in organic solar cells by photonic crystals", Invited Conference at NANOSEA, Fourth International Conference on Nano-structures Self-Assembly, 25-29 June 2012, S. Margherita di Pula (Cagliari, Italy).

4. V. Brissonneau, L. Escoubas, F. Flory, G. Berginc and J.-J. Simon, « Tuning of random rough surface statistics for optoelectronics », Conference at SPIE Photonic West, 2012 (San Francisco).
5. A. Moreau, L. Escoubas, J.-J. Simon, C. M. Ruiz, V. Bermudez, "Photoreflectance spectroscopy applied to CIGS solar cells", Conference at PVTC 2012, Aix-en-Provence, France.
6. Y. T. Gizachew, L. Escoubas, J. J. Simon, J. Loiret, P.Y. Leguen, "Surface preparation and characterization of indium tin oxide substrates for Ink-jet printed organic photovoltaic devices", Conference at PVTC 2012, Aix-en-Provence, France
7. G. Rivière, S. Chambon, J.J. Simon, G. Wantz, W. Vervisch, L. Hirsch and L. Escoubas, "Inverted organic solar cells investigation by LBIC technique", Conference at PVTC 2012, Aix-en-Provence, France
8. A Moreau, D. Fuertes-Marron, I. Artacho, L. Escoubas, J.-J. Simon, C. M. Ruiz, V. Bermudez, "Photoreflectance analysis of CIGS electrodeposited solar cell devices," Conference in SPIE Solar Energy + Technology 2012 San Diego, CA United States

## **2011**

9. Y. T. Gizachew, J.J. Simon, L. Escoubas, D. Barakel, J. Loiret, P.Y. Leguen, J.-L. Gardarein, F. Rigollet "Infrared thermal imaging for non destructive evaluation of ink-jet printed conductive silver track on front side of crystalline solar cells", Conference at PVTC 2011, Aix-en-Provence, France
10. J. Revel, G. Riviere, A. Demolliens, B. Dunne, B. Bertrand, V. Bermudez, J.-J. Simon, L. Escoubas, "Analysis of defects in thin-film CIGS solar cells using electroluminescence, LBIC and thermal imaging techniques", Conference at PVTC 2011, Aix-en-Provence, France
11. G. Rivière, W. Vervisch, J.J. Simon and L. Escoubas, "Light beam induced current mapping of organic solar cell module", Conference at PVTC 2011, Aix-en-Provence, France
12. G. Rivière, W. Vervisch, F. Bassani, H. Derbal, J.J. Simon and L. Escoubas, « Electrical AFM measurement and simulation of organic solar cells », Poster at the International Photovoltaic Technical Conference Thin Film and Advanced Solutions 2011, 24th-26th May, Aix-en-Provence, France

13. A. Moreau, J.-J. Simon, L. Escoubas, V. Bermudez, "Optical characterization and simulation of electro-deposited CIGS thin-film solar cell", Poster at PVTC 2011, Aix-en-Provence, France
14. M. Zhu, J. Le Rouzo, F. Flory, V. Brissonneau, J.-J. Simon, L. Escoubas, "Opto-electronic properties of photovoltaic solar cells including silicon nanowires », Conference at SPIE Optical Complex Systems (OCS), 2011, Marseille, France.
15. G. Rivière, J.J. Simon, L. Escoubas, W. Vervisch, H. Derbal, F. Bassani, "Photoconductive AFM study of bulk heterojunction organic solar cells", Poster at EMRS Spring Meeting, (2011), Nice, France.
16. A. Moreau, W. Vervisch, J.-J. Simon, L. Escoubas, V. Bermudez, C. Ruiz, "Optical characterization and opto-electrical simulation of electro-deposited CIGS based thin-film solar cells", Poster at EMRS Spring Meeting, (2011), Nice, France
17. D. Duché, J.-J. Simon, L. Escoubas, Ph. Torchio, C. Gourgon, C. Masclaux, J. Le Rouzo, S. Vedraïne, "Photonic crystals for light trapping in organic solar cells: modeling and experimentations", Conference at EMRS Spring Meeting, (2011), Nice, France.
18. D. Duché, J. Le Rouzo, F. Flory, J.-J. Simon, L. Escoubas, "Toward photonic structures to improve organic solar cells efficiencies", Conference at MRS Fall Meeting–Symposium J , 2011 (Boston), USA.

## **2010**

19. F. Flory, L. Escoubas, JJ Simon, P. Torchio, YJ Chen, V. Brissoneau, D. Duché, R. Bouffaron "Quantum confinement and optical properties of nanostructured thin films", Invited Conference at OSA conference of Optical Interference Coatings (2010), Tucson, USA.
20. Escoubas L., Simon JJ., Torchio Ph., Le Rouzo J. , Duché D., Rivière G., Yeabiyo G., Flory F., "State of the art of photonic nanostructures for solar cells", Invited Conference at OSA conference of Optical Interference Coatings (2010), Tucson, USA.
21. Flory F., Chen YJ., Brissoneau V., Vedraïne S., Torchio Ph., Simon JJ., Escoubas L., Lee CC. "Applications of dielectric and metallic nanoparticles included in optical thin films", Invited Conference at "Thin films with Nanostructured Thin Films III" conference in SPIE NanoScience + Engineering 2010 conference (2010) San Diego, USA..

22. D. Duché, E. Drouard, J.J. Simon, L. Escoubas, Ph. Torchio, J. Le Rouzo, « Photonic crystals and light trapping in organic solar cells », Conference at the International Conference on Organic Electronics (ICOE) (2010), Paris, France.
23. YJ Chen, F. Flory, C.C. Lee, L. Escoubas, J.J. Simon, P. Torchio, J. Le-Rouzo, H. Djerbal, "Optical properties of coupled and non coupled quantum structures embedded in thin films", Conference at the EOS Annual Meeting, (2010), Paris, France.
24. D. Duché, E. Drouard, J.J. Simon, L. Escoubas, Ph. Torchio, J. Le-Rouzo, S. Vedraïne, « Light harvesting in organic solar cells », Conference at PVTC 2010, Aix-en-Provence, France.
25. Y. T. Gizachew, J. Loiret, P.Y. Leguen, J. J. Simon, L. Escoubas, "Towards ink-jet printed fine line front side metallization of crystalline silicon solar cells", Conference at PVTC 2010, Aix-en-Provence, France.
26. A. Moreau, V. Bermudez, O. Roussel, N. Rodriguez, J.-J. Simon, L. Escoubas, "Optical characterizations of CdS buffer layer obtained by chemical bath deposition", Poster at PVTC 2010, Aix-en-Provence, France.

## 2009

27. J.J. Simon, F. Flory, L. Escoubas, Ph. Torchio, Yu-Jen Chen, D. Duché, "Nanophotonics for efficient photovoltaic solar cells", Invited conference at ROMOPTO 2009, (2009), Sibiu, Roumanie.
28. D. Duché, J.J. Simon, L. Escoubas, Ph. Torchio, J. Le Rouzo, W. Vervisch, F. Flory "Cellules solaires organiques et cristaux photoniques ", Conference at MNPC09, (2009), Arcachon, France.
29. Duche D., Torchio Ph., Escoubas L., Simon J.J., Vedraïne S., Le Rouzo J., Vervisch W., Flory F. "Plasmonic Effects for Improving the Absorption of Organic Solar Cells", Poster at the E-MRS 2009 Spring Meeting (European Materials Research Society), Strasbourg (2009).
30. Duche D., Escoubas L., Simon J.J., Torchio Ph., Le Rouzo J., Vervisch W., Flory F., Labeyrie A., Roumigières J.L. "Enhancing the Absorption of Organic Solar Cells by Nanostructuring P3HT and PCBM Independently", Poster at the E-MRS 2009 Spring Meeting (European Materials Research Society), Strasbourg, (2009).
31. Duche D., Escoubas L., Simon J.J., Torchio Ph., Le Rouzo J., Vervisch W., Flory F., Labeyrie A., Roumigières J.L. "Photonic Crystals for Improving Organic Solar Cell

Efficiency", Conference at the Optics and Photonics for Advanced Energy Technology, OSA Topical Meeting, MIT-Cambridge (USA), (2009).

32. D. Duché, J.J. Simon, L. Escoubas, P. Torchio, J. Le Rouzo, W. Vervisch, F. Flory "Photonic crystals for light trapping within organic solar cells", Conference at ICTON 09 Angers (2009).

#### **Liste d'ouvrages 2009-2013 :**

1. Special Issue « Organic, Dye Sensitized and Innovative approaches for Photovoltaic Applications » (ODIPA), Guest Editors : L. Escoubas, J.-J. Simon, L. Jeannerot, K. Chopra, Volume 102, July (2012)
2. F. Flory, L. Escoubas, J.-J. Simon, J. Le-Rouzo, P. Torchio, W. Vervisch, "Nanophotonics for Photovoltaics" in the 2nd edition of the Encyclopaedia of Optical Engineering, Encyclopaedia Program. Editors Taylor & Francis Group: New York, (2012).
3. Special issue: "Thin film photovoltaic applications" (TFPA), Guest Editors : L. Escoubas, K. Chopra, V. Charrier, L. Jeannerot, Solar Energy Materials and Solar Cells, Volume 95, Supplement 1, May (2011)
4. J. Le Rouzo, D. Duché, J.-J. Simon, L. Escoubas, Ph. Torchio, S. Vedraïne, W. Vervisch, F. Flory "Cellules solaires et photonique organique", Revue Photoniques, 2010.

#### **Participations GDR, plateformes technologiques, autres ... :**

- Membre du comité de pilotage du GDR Electronique Organique (depuis 2010).
- Membre du comité de pilotage du CNano PACA et responsable thématique énergie (depuis 2009).
- Membre du comité d'experts de l'Observatoire des Micro et Nano Technologies (OMNT), sur la thématique Electronique Organique (depuis 2010).
- Membre du comité de pilotage du CNano PACA et responsable thématique énergie (depuis 2009).
- Membre du comité de pilotage de l'OESS "Organic Electronics Summer School" depuis 2013.
- Membre du comité scientifique de la conférence DIELOR (Dispositifs Electroniques Organiques – depuis 2008).

- Membre du comité scientifique de la conférence PVTC (Photovoltaic Technical Conference – depuis 2010).
- Membre du comité scientifique de la conférence NextgenNanoPV (Nanotechnology for Next Generation High Efficiency Photovoltaics – depuis 2013)
- Membre du comité d'organisation des conférences DIELOR 2012, NEXGEN2013 et PVTC depuis 2010.

### **Collaborations (nationales et/ou internationales) avec d'autres laboratoires de Recherche**

#### **(2009-2013) :**

- Responsable scientifique pour l'IM2NP de 4 projets ANR depuis 2008 (NANORGYSOL-SPARCS-IMPEC-TANDORI)
- Responsable scientifique pour l'IM2NP du projet FUI OSEO « SFUMATO » (2012-2015)
- Responsable scientifique pour l'IM2NP du projet Défi Energie CNRS « VICTOR » (2013).
- Co-responsable projet Européen "Kestcells" FP7-PEOPLE-2012-ITN Marie-Curie, (2012-2016).
- Participant projet OSEO ISI "SOLCIS" (2012) et projet ADEME "PVCIS " (2013).

#### **Autres points importants non mentionnés ci-dessus :**

- Co-responsable équipe OPTO-PV (département Micro-nanotechnologies de l'IM2NP)
- Direction ou co-direction de 10 thèses (soutenues et en cours), Participation à 6 jurys de thèse et HDR.
- Membre des comités de lecture des revues Optics Letters, Optics Express, Thin Solid Films et Solar Energy Materials and Solar Cells.
- Expert pour les projets POLYMOL (Photovoltaïque) PV ERA NET FP6 et pour l'ANR (depuis 2010).