

PERSONAL DETAILS

Salvatore Gambino
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 Energy Platform
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EDUCATION

- 10/02/2006 **PhD in Electronic Engineering**, University of Palermo. Thesis title: *Experimental study of charge transport properties of organic semiconductors by the Time of Flight technique.*
- 08/11/2001 **Laurea in Electronic Engineering**, University of Palermo. **Final mark:** 109/110. Thesis title: *Fabrication and characterisation of Alq₃ based light emitting diodes.*

PROFESSIONAL EXPERIENCE

- Sep '12 – present **Senior Post Doc**, Energy Platform, IIT-CBN@UniLe.
Research activity:
 i) Realization and characterization of optical organic microcavity;
 ii) Photophysical characterization of organic semiconductors;
 iii) Study of charge transport properties of organic semiconductors;
- May '08 – Aug '12 **Senior Research Fellow**, Organic Semiconductor Centre, School of Physics and Astronomy, University of St Andrews (UK).
Research activity:
 i) Photophysical characterization of organic semiconductors both in thin films and solutions;
 ii) Study of charge transport properties of organic semiconductors by the Time of Flight (TOF) technique and Charge Extraction by Linearly Increasing Voltage (CELIV) method;
 iii) OLEDs fabrication and testing;
 iv) Organic solar cells fabrication and testing;
- Oct.'06 – April '08 **Research Fellow**, Dipartimento di Ingegneria Elettrica, Elettronica e delle Telecomunicazioni, University of Palermo (Italy).
Research activity: *Realization and characterization of single, double and bulkheterojunction layer organic solar cells.*
- Jan.'06 – Sept.'06 **Research Assistant**, Laboratorio Micro e Nano strutture per la Fotonica, ENEA Research Centre, Frascati (Italy).
- Jan.'04 – Nov.'05 **Visiting Research Student**, Organic Semiconductor Centre, School of Physics and Astronomy, University of St Andrews (UK).
Research activity: *Study of charge transport properties of solution processable organic materials using the Time of Flight method.*

- Oct. '02 – Dec. '03 **PhD Student**, Dipartimento di Ingegneria Elettrica, Elettronica e delle Telecomunicazioni, University of Palermo (Italy).
Research activity: *Study of charge transport properties of thermally evaporated small molecules using the Time of Flight method.*
- Jan. '02 – June'02 **INFM Fellow**, Laboratorio Micro e Nano strutture per la Fotonica, ENEA Research Centre, Frascati (Italy).
Post graduate project: *Fabrication and characterisation of Alq₃ based light emitting diodes.*
- Nov.'00 – Nov.'01 **Under graduate project student**, Laboratorio Micro e Nano strutture per la Fotonica, ENEA Research Centre, Frascati (Italy). Thesis supervisors: Dr. Rosa Maria Montereali and Prof. Claudio Calì.
Under graduate project: *Fabrication and characterisation of Alq₃ based light emitting diodes.*

PROFESSIONAL QUALIFICATION

July 2002 Certified Professional Engineer

TEACHING EXPERIENCE

- 2012 **Electronics teaching lab demonstrator**, School of Physics and Astronomy, University of St Andrews (UK).
- 2011 – 2012 **Optics teaching lab demonstrator**, School of Physics and Astronomy, University of St Andrews (UK).
- 2006 - 2007 **Tutorials in Electronic Devices**, Dipartimento di Ingegneria Elettrica, Elettronica e delle Telecomunicazioni, University of Palermo (Italy).

UNDER GRADUATE STUDENTS SUPERVISOR

- Jan. – May 2012 Msc. project student. Thesis title: *Charge mobility measurements for organic solar cells.*
- Jan. – May 2012 Msc. project student. Thesis title: *Effect of Magnetic Fields and Magnetisation on the Photophysical Properties of Conjugated Polymer.*
- June – Aug. 2011 EPSRC summer project student. Project title: *Charge Transport in Organic Photovoltaics.*

Collaborative Research Projects:

- 2013 – 2015 Project title: *Plastic electroluminescent transistors* – Ministero degli Affari Esteri - Bilaterale canada/italia

Publications in refereed journals:

[1] - D. Ballarini, M. De Giorgi, **S. Gambino**, G. Lerario, M. Mazzeo, A. Genco, G. Accorsi, C. Giansante, S. Colella, S. D'Agostino, P. Cazzato, D. Sanvitto, G. Gigli, "Polariton Induced Enhanced Emission from an Organic Dye under Strong Coupling Regime", *Adv. Opt. Mat.*, (2014) in press.

[2] - M. Mazzeo, A. Genco, **S. Gambino**, D. Ballarini, F. Mangione, O. Di Stefano, S. Patanè, S. Savasta, D. Sanvitto, G. Gigli, *Ultrastrong light-matter coupling in electrically doped microcavity OLEDs*, *Appl. Phys. Lett.* 104, 233303 (2014).

[3] - C. Triolo, S. Patanè, M. Mazzeo, **S. Gambino**, G. Gigli, M. Allegrini, *Pure optical nano-writing on light-switchable spirobypyrans/merocyanine thin film*, *Optics Express*, Vol. 22, Issue 1, pp. 283-288 (2014).

[4] - G. Accorsi, S. Carallo, M. Mazzeo, A. Genco, **S. Gambino**, G. Gigli, *Colour tunable microcavity by weak-to-strong coupling regime transition through light-switchable material*, *Chem. Commun.* 50, 1122-1124 (2014).

[5] - S. Arumugam, I.A. Wright, A.R. Inigo, **S. Gambino**, C.T. Howells, A.L. Kanibolotsky, P.J. Skabara, I.D.W. Samuel, *Charge transport in a two-dimensional molecular organic semiconductor*. *J. Mater. Chem. C* 2, 34-39 (2014).

[6] - **S. Gambino**, A.K. Bansal, I.D.W. Samuel, *Photophysical and charge-transporting properties of the copolymer SuperYellow*, *Org. Electron.* 14, 1980–1987, (2013).

[7] - D. Cortizo-Lacalle, C.T Howells, **S. Gambino**, F. Vilela, Z. Vobecka, N.J. Findlay, A.R. Inigo, S.A.J. Thomson, P.J. Skabara, I.D.W. Samuel, *BODIPY-based conjugated polymers for broadband light sensing and harvesting applications*, *J. Mater. Chem.* 22, 14119-14126 (2012).

[8] - I.A. Wright, A.L. Kanibolotsky, J. Cameron, T. Tuttle, P.J. Skabara, S.J. Coles, C.T. Howells, S.A.J. Thomson, **S. Gambino**, I.D.W. Samuel, *Oligothiophene Cruciform with a Germanium Spiro Center: A Promising Material for Organic Photovoltaics*, *Angew. Chem. Int. Ed.* 51, 4562 - 4567, (2012).

[9] - **S. Gambino**, S.-C. Lo, Z. Liu, P. Burn, I.D.W. Samuel, *Charge transport in a highly phosphorescent iridium(III) complex-cored dendrimer with double dendrons*, *Adv. Funct. Mater.* 22, 157-165, (2012).

[10] - I.A. Wright, P.J. Skabara, J.C. Forgie, A.L. Kanibolotsky, B. Gonzalez, S.J. Coles, **S. Gambino**, I.D.W. Samuel, *Electronic, redox and charge transport properties of an unusual hybrid structure: a bis(septithiophene) bridged by a fused tetrathiafulvalene (TTF)*, *J. Mater. Chem.* 21, 1462-1469, (2011).

[11] - S. V. Vickers, H. Barcena, K. A. Knights, R. K. Thomas, J.-C. Ribierre, **S. Gambino**, I. D. W. Samuel, P. L. Burn, G. Fragneto, *Light-emitting dendrimer film morphology: A neutron reflectivity study*, *Appl. Phys. Lett.* 96, 263302, (2010).

[12] - G.J. McEntee, P.J. Skabara, F. Vilela, S. Tierney, I.D.W. Samuel, **S. Gambino**, S.J. Coles, M.B. Hursthouse, R.W. Harrington, W. Clegg, *Synthesis and Electropolymerization of Hexadecyl Functionalized Bithiophene and Thieno[3,2-b]thiophene End-Capped with EDOT and EDTT Units*, Chem. Mater. 22, 3000-3008, (2010).

[13] - **S. Gambino**, A.K. Bansal, I.D.W. Samuel, *Comparison of hole mobility in thick and thin films of a conjugated polymer*, Org. Electron. 11, 467 - 471, (2010).

[14] - **S. Gambino**, S.G. Stevenson, K.A. Knights, P.L. Burn, I.D.W. Samuel, *Control of charge transport in iridium(III) complex-cored carbazole dendrimers by generation and structural modification*, Adv. Funct. Mater. 19, 317-323, (2009).

[15] - K.A. Knights, S.G. Stevenson, C.P. Shipley, S-C Lo, S. Olsen, R.E. Harding, **S. Gambino**, P.L. Burn, I.D.W. Samuel, *A rapid route to carbazole containing dendrons and phosphorescent dendrimers*, J. Mater. Chem. 18, 2121-2130, (2008).

[16] - **S. Gambino**, I.D.W. Samuel, H. Barcena and P. Burn, *Electric field and temperature dependence of the hole mobility in a bis-fluorene cored dendrimer*, Org. Electron. 9, 220–226, (2008).

[17] - P. Cusumano, **S. Gambino**, *Space charge and carrier trapping effects on the transient photocurrents of organic materials using the time of flight technique*, J. Electron. Mater. 37, 231, (2008).

[18] - **S. Gambino**, P. Cusumano, C. Calì, *Measurement of drift mobilities in amorphous organic films using the Time of Flight method*, in Proc. of SPIE, Organic Optoelectronics and Photonics, Vol. 5464, 280-291 (2004).

[19] - R.M. Montereali, **S. Gambino**, S. Loretì, S. Gagliardi, A. Pace, G. Baldacchini, F. Michelotti, *Morphological, electrical and optical properties of organic light-emitting diodes with a LiF/Al cathode and an Al-hydroxyquinoline/diamine junction*, Synth. Metal. 143, 171–174, (2004).

PUBLICATIONS IN CONFERENCE PROCEEDINGS

[1] - D. Sanvitto, M. De Giorgi, D. Ballarini, L. Dominici, G. Lerario, **S. Gambino**, M. Mazzeo, A. Genco, F.P. Laussy, G. Gigli, *Polaritons: condensate dynamics and their role for all-optical devices*, META'14 – Singapore, The 5th International Conference on Metamaterials, Photonic Crystals and Plasmonics, May 20 – 23, Singapore (2014).

[2] - **S. Gambino**, M. Mazzeo, A. Genco, O. Di Stefano, S. Savasta, S. Patanè, D. Ballarini, G. Lerario, D. Sanvitto, G. Gigli, *Ultrastrong Coupling in Organic Polariton Microcavities*, in Fotonica AEIT 2014, Convegno Italiano delle Tecnologie Fotoniche, Napoli, 12-14 maggio (2014). [codice ISBN-A10.978.8887237/191]

[3] - D. Ballarini, M. De Giorgi, **S. Gambino**, M. Mazzeo, G. Lerario, F. Mariano, P.Cazzato, G. Gigli, D. Sanvitto, *Polariton enhanced emission in organic molecules*, Abstracts/Proceedings 13th International Conference on Optics of Excitons in Confined Systems (OECS13), Rome (Italy), (2013).

[4] - **S. Gambino**, Z. Lu, K.A. Knights, S.-C. Lo, P.L. Burn, I.D.W. Samuel, *Charge transporting properties of a family of highly phosphorescent iridium(III) complex-cored dendrimers*, Abstracts 5th International Symposium on Flexible Organic Electronics (2012).

[5] - **S. Gambino**, S. Chen, I.D.W. Samuel, P. André, *Effects of coated magnetic nanocolloids of hybrid OLEDs*, in SPIE Newsroom, (2010).

[6] - **S. Gambino**, K.A. Knights, P.L. Burn, I.D.W. Samuel, *Charge transporting properties of a family of highly phosphorescent iridium(III) cored dendrimers with carbazole dendrons*, Abstracts SID Organic Electronics UK Conference, (2008).

[7] - A.K. Bansal, **S. Gambino**, I.D.W. Samuel, *Charge Transport and Photophysical Studies of a Fluorescent Copolymer – Superyellow*”, Abstracts SID Organic Electronics UK Conference, (2008).

[8] - **S. Gambino**, P. Cusumano, C. Calì, I.D.W. Samuel, P.L. Burn, *Misura della mobilità dei portatori di carica in semiconduttori organici*, in Proc. of Elettroottica 2006, 351-354 (2006).

[9] - **S. Gambino**, G. Baldacchini, S. Gagliardi, S. Loreti, R. M. Montereali, A. Pace, F. Michelotti, F. Onorati. *Fabrication and Characterization of Organic Light Emitting Diodes Based on Alq₃*, in Proc. of the 24th Course of the International School of Solid State Physics, EPIOPTICS-7, 105-110 (2004).

[10] - G. Baldacchini, S. Gagliardi, **S. Gambino**, A. Pace, R.M. Montereali. *Optical spectroscopy of organic Alq₃ thin films*, in Proc. 11 International Workshop on Inorganic and Organic Electroluminescence & 2002 International Conference on the Science and Technology of Emissive Display and Lighting, 173-176 (2002).

[11] - G. Baldacchini, S. Gagliardi, **S. Gambino**, F. Michelotti, R. M. Montereali, A. Pace. *Fabrication and characterisation of Alq₃ based light emitting diodes*, in Proc. CXLIX Course: Organic Nanostructures: Science and Applications, of the International School of Physics "Enrico Fermi", 561-567 (2002).

[12] - C. Calì, P. Cusumano, **S. Gambino**, M. Mosca, G. Baldacchini, S. Gagliardi, R.M. Montereali, A. Pace, R.B.Pode. *Film sottili di Alq₃ realizzati mediante evaporazione termica ed ablazione laser per dispositivi eletroluminescenti*, in Proc. Elettroottica 2002, 377-380 (2002).

[13] - C. Calì, P. Cusumano, **S. Gambino**, M. Mosca, G. Baldacchini, S. Gagliardi, R.M. Montereali, A. Pace, R.B.Pode. *Alq₃ thin films grown by pulsed laser deposition and thermal evaporation for electroluminescent devices*, Abstracts INFMeeting 2002, Conferenza Nazionale sulla Fisica della Materia, (2002).

REPORTS AND TECHNICAL PUBLICATIONS:

[1] - **S. Gambino**, G. Baldacchini, I. Franzini, R. M. Montereali, M.A. Vincenti e V. Mussi, *Crescita e caratterizzazione di film sottili di Fluoruro di Litio*, in technical report RT/2006/68/FIM, ENEA, (2007).

[2] - G. Baldacchini, S. Gagliardi, **S. Gambino**, S. Loretì, R.M. Montereali, A. Pace, *Diodi organici luminescenti*, in technical report Energia, Ambiente e Innovazione 4, ENEA, 83-84 (2003).

[3] - R.M. Montereali, T. Marolo, **S. Gambino**, S. Gagliardi. *Spettroscopia combinata di emissione ed eccitazione (CEES): una tecnica promettente per lo studio di nuovi materiali emettitori di luce*, in technical report RT/2002/57/FIS, ENEA, (2003).

[4] - G. Baldacchini, S. Gagliardi, S. Loretì, R. M. Montereali, A. Pace, F. Michelotti, **S. Gambino**. *Realizzazione e Caratterizzazione di Diodi Organici Elettroluminescenti*, in technical report RT/2002/66/FIS, ENEA, (2003).

[5] - G. Baldacchini, S. Loretì, R. M. Montereali, A. Pace, S. Gagliardi, **S. Gambino**, F. Michelotti, F. Onorati. *Realizzazione e Caratterizzazione di Diodi Organici basati su Alq₃*, in technical report RT/2002/59/FIS, ENEA, (2003).

CONFERENCES & WORKSHOPS

[1] - **Fotonica AEIT 2014**, Convegno Italiano delle Tecnologie Fotoniche, Napoli, 12-14 maggio 2014. Oral presentation: “Ultrastrong Coupling in Organic Polariton Microcavities”.

[2] - **5th International Symposium on Flexible Organic Electronics (ISFOE12)**, 2-5 July 2012, Thessaloniki, Greece. Oral presentation: “Charge transporting properties of a family of highly phosphorescent iridium(III) complex-cored dendrimers”.

[3] - **SU2P Symposium**, Heriot-Watt University, Edinburgh, 23-24 April 2012. Oral presentation: “Novel cruciform material for organic photovoltaics”. Poster presentation: “Functionalized acceptors for organic solar cells”.

[4] - National workshop on **Advances in Display Technologies**, Scottish Optoelectronic Association (SOA), Royal Scots Club, Edinburgh, 17 February 2010. Oral presentation: “Organic Semiconductor Displays and Lighting”.

[5] - **SID Organic Electronics UK Conference**, Imperial College, London, 16 & 17 September 2008. Oral presentation: “Charge transporting properties of a family of highly phosphorescent iridium(III) cored dendrimers with carbazole dendrons”. Poster presentation: “Charge Transport and Photophysical Studies of a Fluorescent Copolymer – Superyellow”.

[6] - 9° National Congress “Strumentazione e Metodi di Misura Elettroottici”, **Elettroottica 2006**, Frascati (RM), 6-8 June 2006. Oral presentation: “Misura della mobilità dei portatori di carica in semiconduttori organici”.

[7] - National Workshop “XVI Settimana della Cultura Scientifica e Tecnologica”, C.R. ENEA Frascati (RM), 13-17 March 2006.

[8] - **Photonics Europe**, Strasbourg (France), 28-30 April 2004. Poster presentation: “*Measurement of drift mobilities in amorphous organic films using the Time of Flight method*”.

[9] - 11th International Workshop on **Inorganic and Organic Electroluminescence & 2002 International Conference on the Science and Technology of Emissive Display and Lighting**, Ghent University, Ghent (Belgium), 23-26 September 2002. Poster presentation: “*Optical spectroscopy of organic Alq₃ thin films*”.

[10] - 7° National Congress “Strumentazione e Metodi di Misura Elettroottici”, **Elettroottica 2002**, Montecatini (Pisa), 29-31 May 2002. Poster presentation: “*Film sottili di Alq₃ realizzati mediante evaporazione termica ed ablazione laser per dispositivi elettroluminescenti*”.

[11] - International Congress on “Polysilicon technology and applications for AM-LCD and AM-OLEDs”, **The SID-ME Spring 2002 Meeting**, Roma, 21-22 March 2002.

SCHOOLS

[1] - **24th Course of the International School of Solid State Physics, EPIOPTICS-7**, ERICE, 20-26 July 2002. Poster presentation: “*Fabrication and Characterization of Organic Light Emitting Diodes Based on Alq₃*”.

[2] - **2nd Optoelectronic & Photonics Winter School** “Advances on Molecular and Hybrid Photonics”, Sardagna (TN), 23-28 February 2003. Poster presentation: “*Measurement of drift mobilities in amorphous organic films using the Time of Flight method*”.

[3] - **Elettronica a Semiconduttori Organici: Display, circuiti ed applicazioni speciali**, Politecnico di Milano, Milan, 26-28 March 2003.

SKILLS

- ✓ Thin film deposition techniques:
 - (i) High vacuum thermal evaporation
 - (ii) Spin coating
 - (iii) Drop casting
- ✓ Morphological characterization of thin films using a profilometer
- ✓ Photophysical characterization of organic semiconductors both in solutions and thin films:
 - (i) Absorption measurements
 - (ii) Pholuminescence measurements
 - (iii) Photoluminescence quantum yield (PLQY) measurements
 - (iv) Time correlated single photon counting (TCSPC) measurements
- ✓ Realization and characterization of organic light-emitting diodes (OLEDs):
 - (i) Single and multilayer device fabrication
 - (ii) Device encapsulation

- (iii) Electrical characterization (I-V measurements)
- (iv) Electruminescent measurements (EL, EQE, Luminance, Power efficiency, C.I.E.)

- ✓ Realization and characterization of organic solar cells:
 - (i) Single, bi-layer and bulkheterojunction solar cells fabrication
 - (ii) Device encapsulation
 - (iii) Electrical characterization (I-V measurements, J_{sc} , V_{oc} , Fill Factor)
 - (iv) Efficiency measurements (Power conversion efficiency, IPCE)

- ✓ Study of charge transport properties of organic semiconductors:
 - (i) Space charge limited current (SCLC) measurements
 - (ii) Time of flight (TOF) measurement
 - (iii) Charge generation layer time of flight (CGL-TOF) measurements
 - (iv) In vacuum low temperature photocurrent transient measurements using a nitrogen cooled cryostat
 - (v) Charge Extraction by Linearly Increasing Voltage (CELIV) measurements

- ✓ Ability of using a glove-box;
- ✓ Experience of working in a clean room;

Il sottoscritto esprime il proprio consenso affinché i dati personali forniti possano essere trattati, nel rispetto del Decreto Legislativo n. 196/2003.

Data 14/07/14

Firma
Salvatore Gambino
