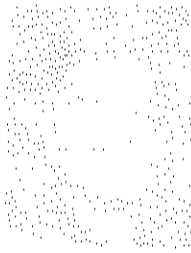


**CURRICULUM VITAE
OF STEFANO LAI**



PERSONAL INFORMATIONS

Surname, Name **LAI STEFANO**
 Address
 Telephone
 Cell
 E-mail
 Other Contacts

Nationality **Italian**
 Date and Place of Birth **04.02.1984, CAGLIARI (ITALY)**

WORK EXPERIENCE

• Dates	June 2014-present
• Employer	Department of Electrical and Electronic Engineering (DIEE), Via Marengo 3, 09123, Cagliari (ITALY)
• Type of sector	University of Cagliari
• Position held	PostDoctoral Researcher Fellow
• Topic	Design, fabrication and characterization of organic transistor to be integrated in flexible X-ray sensors; standardization of the fabrication process; modelling.

• Dates **June 2014-July 2014**
 • Employer **TechOnYou s.r.l., Villasor (Ca), Via La Guardia n.9/A**
 • Type of sector **Electronics**
 • Position held **Collaborator**
 • Topic **Design and testing of a printed-circuit board for the testing of memory elements based on organic semiconductor.**

• Dates	November 2010-December 2010
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• Employer	Department of Electrical and Electronic Engineering (DIEE), Via Marengo 3, 09123, Cagliari (ITALY)
• Type of sector	University of Cagliari
• Position held	Research Collaborator
• Topic	Fabrication of an electronic system for interfacing matrix of pressure sensor based on flexible, organic devices.

EDUCATION AND TRAINING

• Dates	March 2011-April 2014
• Employer	Department of Electrical and Electronic Engineering (DIEE), Via Marengo 3, 09123, Cagliari (ITALY)
• Type of sector	University of Cagliari
• Position held	Ph. D. Student
• Ph.D. School	Electronic and Information Engineering
• Grade	Philosophiae Doctor in Information Engineering, discussing a thesis titled "Charge-Modulated Field-Effect Transistor: Technologies and Applications for Biochemical Sensing"
• Dates	June 2011
• Title of qualification awarded	Title of Information Engineer, passing the State Examination for Engineering, University of Cagliari
• Dates	October 2007-October 2010
• Name and type of organization providing education and training	Department of Electrical and Electronic Engineering (DIEE), University of Cagliari, ITALY
• Principal subjects/occupational skills covered	Analogical and Digital Electronics, Microelectronics, Embedded Systems, Automatic Controls, Communications, Computer Engineering, Electromagnetics, Organic Electronics, Electrical and Electronic Measurements and Equipments
• Title of qualification awarded	Master Degree in Electronic Engineering
• Grade	Full grade "magna cum laude" (110 e lode/110) discussing a thesis titled "Developing and Characterization of Charge Sensors realized in CMOS technology and Organic Electronics"
• Dates	October 2003-April 2007
• Name and type of organization providing education and training	Department of Electrical and Electronic Engineering (DIEE), University of Cagliari, ITALY
• Principal subjects/occupational skills covered	Analogical and Digital Electronics, Automatic Controls, Communications, Computer Engineering, Electromagnetics, Electrical Measurements
• Title of qualification awarded	Bachelor Degree in Electronic Engineering
• Grade	Full grade "magna cum laude" (110 e lode/110)
• Dates	July 2003-September 1998
• Name and type of organization providing education and training	Scientific Lyceum "Antonio Pacinotti", Cagliari, Italy
• Principal subjects/occupational skills covered	Mathematics, Physics, Philosophy, Latin, History
• Title of qualification awarded	High School Graduation
• Grade	Full grade (100/100)

RESEARCH ACTIVITIES

• Topics

CMOS and organic chemosensors and biosensors for biomedical, pharmaceutical and forensic analysis; mechanical sensors in organic electronics, organic technology for low-voltage, high frequency applications; electronic readout of organic devices; standardization of fabrication process for organic devices; circuitual modelling of organic devices and circuitries; fabrication of organic devices by large area, high yield and high throughput processes.

• Journal Papers

- J1. P. Cosseddu, S. Lai, M. Barbaro, A. Bonfiglio, "Ultra-low voltage, organic thin film transistors fabricated on plastic substrates by a highly reproducible process", *Applied Physics Letters* 100 (9), 093305, 2012;
- J2. M. Barbaro, A. Caboni, D. Loi, S. Lai, A. Homsy, P.D. Van Der Wal, N.F. de Rooij, "Label-free, direct DNA detection by means of a standard CMOS electronic chip", *Sensors and Actuators B: Chemical*, vol. 171-172, pp. 148-154, 2012;
- J3. M. Demelas, S. Lai, G. Casula, E. Scavetta, M. Barbaro, A. Bonfiglio, "An organic, charge-modulated field effect transistor for DNA detection", *Sensors and Actuators B: Chemical*, vol. 171-172, pp. 198-203, 2012;
- J4. S. Lai, A. Caboni, D. Loi, M. Barbaro, "A CMOS Biocompatible Charge Detector for Biosensing Applications", *Electron Devices, IEEE Transactions on*, vol. 59 (9), pp. 2512-2519, 2012;
- J5. S. Lai, P. Cosseddu, G.C. Gazzadi, M. Barbaro, A. Bonfiglio, "Towards high frequency performances of ultra-low voltage OTFTs: Combining self-alignment and hybrid, nanosized dielectrics", *Organic Electronics*, vol. 14(3), pp. 754-761, 2013;
- J6. S. Lai, M. Demelas, G. Casula, P. Cosseddu, M. Barbaro, A. Bonfiglio, "Ultralow Voltage, OTFT-Based Sensor for Label-Free DNA Detection", *Advanced Materials* vol. 25 (1), pp. 103-107, 2013;
- J7. M. Demelas, S. Lai, A. Spanu, S. Martinoia, P. Cosseddu, M. Barbaro, A. Bonfiglio, "Charge sensing by Organic Charge-Modulated Field Effect Transistors: application to the detection of bio-related effects", *J. Mater. Chem. B*, 2013,1, 3811-3819;
- J8. S. Lai, P. Cosseddu, A. Bonfiglio, M. Barbaro, "Ultralow Voltage Pressure Sensors Based on Organic FETs and Compressible Capacitors", *Electron Device Letters, IEEE*, vol. 34(6), pp. 801-803, 2013.
- J9. A. Loi, L. Basirico, P. Cosseddu, S. Lai, M. Barbaro, A. Bonfiglio, P. Maiolino, E. Baglini, S. Denei, F. Mastrogiovanni, G. Cannata, "Organic Bendable and Stretchable Field Effect Devices for Sensing Applications," *Sensors Journal, IEEE* , vol.13, no.12, pp.4764,4772, Dec. 2013.
- J10. P. Cosseddu, F. Viola, S. Lai, L. Raffo, A. Bonfiglio, "A Temperature Transducer Based on a Low-Voltage Organic Thin-Film Transistor Detecting Pyroelectric Effect", *Electron Device Letters, IEEE*, vol. 35(12), pp. 1296-1298, 2014.
- J11. P. Cosseddu, S. Lai, G. Casula, L. Raffo, A. Bonfiglio, "High performance, foldable, organic memories based on ultra-low voltage, thin film transistors", *Organic Electronics*, vol. 15(12), pp. 3595-3600, 2014.
- J12. A. Spanu, S. Lai, P. Cosseddu, M. Tedesco, S. Martinoia, A. Bonfiglio, "An organic transistor-based system for reference-less electrophysiological monitoring of excitable cells", *Scientific Reports*, 5, 8807, 2015.
- J13. S. Lai, M. Barbaro, A. Bonfiglio, "The role of polarization-induced reorientation of DNA strands on organic field-effect transistor-based biosensors sensitivity at high ionic strength", *Applied Physics Letters* 107 (10), 103301, 2015.

• Conference Proceedings

- C1. S. Lai, D. Nessi, M.P. Cabasino, A. Giua e C. Seatzu, "A Comparison Between Two Diagnostic Tools Based on Automata and Petri Nets", 9th International Workshop on Discrete Event Systems, Goteborg, Sweden, May 28-30, 2008;
- C2. M. Demelas, S. Lai, M. Barbaro, A. Bonfiglio, "DNA Hybridization Detection based on an Organic Charge Modulated Field Effect Transistor", *IEEE Sensor 2011, Limerick (Ireland)*, pp. 1917-1920;
- C3. A. Loi, L. Basirico, P. Cosseddu, S. Lai, P. Maiolino, E. Baglini, S. Denei, F. Mastrogiovanni, G. Cannata, C. Palomba, M. Barbaro, A. Bonfiglio, "Matrices of inkjet printed OFETs for the realization of artificial robotic skin" *MRS Online Proceedings Library*, vol. 1401, 2012;

	<p>C4. P. Cosseddu, L. Basirico, A. Loi, <u>S. Lai</u>, P. Maiolino, E. Baglini, S. Denei, F. Mastrogiovanni, G. Cannata, A. Bonfiglio, "Inkjet printed Organic Thin Film Transistors based tactile transducers for artificial robotic skin", Biomedical Robotics and Biomechanics (BioRob), 2012 4th IEEE RAS & EMBS International Conference on, pp. 1907-1912;</p> <p>C5. P. Cosseddu, A. Loi, L. Basirico, <u>S. Lai</u>, A. Bonfiglio, "Organic bendable and stretchable field effect devices for sensing applications", Sensors, 2012 IEEE, pp. 1-4;</p> <p>C6. <u>S. Lai</u>, P. Cosseddu, G. C. Gazzadi, G. Martines, A. Bonfiglio, M. Barbaro, "Ultra-low Voltage, Self-aligned OTFTs for Frequency Applications", MRS Online Proceedings Library, vol. 1567, 2013.</p> <p>C7. A. Spanu, <u>S. Lai</u>, P. Cosseddu, A. Bonfiglio, M. Tedesco, S. Martinoia, "Organic FET device as a novel sensor for cell bioelectrical and metabolic activity recordings," Neural Engineering (NER), 2013 6th International IEEE/EMBS Conference on , pp.937,940, 6-8 Nov. 2013</p> <p>C8. P. Cosseddu, L. Seminara, L. Pinna, <u>S. Lai</u>, R.S. Dahiya, M. Valle, M. Capurro, A. Bonfiglio, "Tactile sensors based on the integration of a piezoelectric polymer with organic thin-film transistors", Sensors, 2014 IEEE.</p> <p>C9. A. Spanu, M. Tedesco, S. Martinoia, S. Lai, P. Cosseddu, A. Bonfiglio, "Bioelectrical and metabolic activity recordings by means of organic field effect transistors", IEEE AISEM Annual Conference, 2015 XVIII, pp. 1-3, 2015.</p> <p>C10. F. Viola, P. Cosseddu, <u>S. Lai</u>, A. Spanu, A. Bonfiglio, "Flexible temperature sensors based on charge modulated organic thin film transistors", Ph. D. Research in Microelectronics and Electronics (PRIME), 2015 11th Conference on, 278-281, 2015.</p> <p>C11. P. Cosseddu, G. Casula, <u>S. Lai</u>, A. Bonfiglio, "Flexible non-volatile memory devices based on organic semiconductors", SPIE Organic Photonics+ Electronics, 956906-956906-5, 2015.</p>
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• Book Chapters

• Patents

• Contributed talks (if presenter)

• Contributed posters (if presenter)

B1. M. Demelas, S. Lai, P. Cosseddu, A. Loi, M. Barbaro, A. Bonfiglio, "Chemical sensors using organic thin-film transistors (OTFTs)", in "Handbook of Flexible Organic Electronics: Materials, Manufacturing and Applications", Stergios Logothetidis Ed., Woodhead Publish., 2014.

P1. International Patent, "Low voltage organic transistors". Inventors: P. Cosseddu, S. Lai, M. Barbaro, A. Bonfiglio. Ownership: Università degli Studi di Cagliari. Filing date: August 3rd, 2011.

T1. "Hybrid gate dielectric for the fabrication of highly flexible organic thin film transistors operating at ultra-low voltage", 6th Winterschool on Organic Electronics, Planeralm (Austria), March 5th, 2012;

T2. "A CMOS biosensor for label-free, direct, in situ detection of DNA hybridization", Biosensors 2012, Cancun (Mexico), May 17th, 2012;

T3. "Ultra-Low Voltage, Self-Aligned Organic Thin-Film Transistors For Sensoristic Applications", Conferenza Gruppo Elettronica, Udine (Italy), June 21th, 2013;

T4. "Ultra-low voltage floating gate organic thin-film transistors for pressure sensing", 6th International Symposium on Flexible Organic Electronics, Thessaloniki (Greece), 8-11 July 2013.

T5. "Ultra-Low voltage Organic Devices for Sensing Applications", The Swiss Conference on Printed Electronics and Functional Materials, Basel (Switzerland), 21-22 November 2013.

T6. "Low voltage, organic DNA hybridization sensors operating at high ionic strength", Conferenza Gruppo Elettronica, Cagliari (Italy), June 18-21, 2014;

T7. "Organic charge sensing devices as powerful tools for the quantitative detection of biological, chemical, and physical variables", Bioelectronic Symposium, Singapore (Singapore), October 20-21, 2014.

T8. "Ultra-sensitive, OTFT-based sensor for DNA hybridization detection at high ionic strength", MRS Fall Meeting, Boston (USA), November 30-December 4, 2014.

T9.

P1. "Ultra-low voltage organic biosensor for DNA hybridization detection", Biosensors 2012, Cancun (Mexico), May 16th, 2012.

P2. "Towards in vivo detection of DNA hybridization by OTFT-based sensors", International Conference on Organic Electronics (ICOE), June 11-13, 2014, Modena (Italy).

TEACHING ACTIVITIES

• Thesis Tutor and Co-advisor

• Tutorship

• Lectures

- "Realizzazione e Caratterizzazione di sensori *low voltage* in elettronica organica per la rilevazione dell'ibridazione del DNA" (Fabrication and Characterization of low voltage sensors in organic electronics for DNA hybridization detection), M.Sc. Thesis of Giulia Casula, July 2011;
- "Biosensore basato su transistor organico per la rilevazione diretta dell'attività della telomerasi" (Organic transistor-based biosensor for direct detection of telomerase activity), M.Sc. Thesis of Corrado Napoli, March 2014;
- "Progettazione, realizzazione e caratterizzazione di un sistema di acquisizione per sensori di deformazione meccanica a semiconduttore organico" (Design, fabrication and characterization of an acquisition system for mechanical deformation sensors based on organic semiconductor), B.D. Thesis of Antonio Garufi, February 2015.
- official tutor for the course entitled "Elaborazione elettronica dei Segnali" (Electronic Elaboration of Signals), First Degree Course on Biomedical Engineering, University of Cagliari, 2009/2010.
- Laboratory responsible for the course entitled "Dispositivi Elettronici Avanzati" (Advanced Electron Devices), Electronic Engineering, University of Cagliari, 2010/2011.
- Laboratory responsible for the course entitled "Fabbricazione e Caratterizzazione di Transistor, Sensori e Biosensori a Semiconduttore Organico" (Fabrication and characterization of transistors, sensors and biosensors based on organic semiconductors), University of Cagliari, 2012/2013 and 2013/2014.
- official tutor for the course entitled "Bioelettronica" (Bioelectronics), First Degree Course on Biomedical Engineering, University of Cagliari, 2014/2015.
- "CMFET – Charge-Modulated Field-Effect Transistor", for the course entitled "Dispositivi Elettronici Avanzati" (Advanced Electron Devices), Electronic Engineering, University of Cagliari, 2010/2011.
- "OFET ad elevate prestazioni" (High-performances OFET), for the course entitled "Bioelettronica" (Bioelectronics), First Degree Course on Biomedical Engineering, University of Cagliari, 2012/2013;
- "An Overview on Chemical and Biological Sensors", for the course entitled "Fabbricazione e Caratterizzazione di Transistor, Sensori e Biosensori a Semiconduttore Organico" (Fabrication and characterization of transistors, sensors and biosensors based on organic semiconductors), 2012/2013 and 2013/2014.
- "Ingegnerizzazione delle Interfacce: Film sottili molecolari" (Surface Engineering: Molecular Thin-Films), for the course entitled "Bioelettronica" (Bioelectronics), First Degree Course on Biomedical Engineering, University of Cagliari, from 2011/2012 to 2014/2015.

PERSONAL SKILLS AND COMPETENCES

MOTHER TONGUE

ITALIAN

OTHER LANGUAGES

ENGLISH

- Reading
- Writing
- Speaking

C2
C2
C2

SOCIAL SKILLS

- Attitude to multicultural teamwork, acquired during the research activity as PhD student and PostDoctoral Research Fellow at the University of Cagliari. One of my basic activities in the European project "i-FLEXIS" is the collaboration with the partners for the fabrication and characterization of X-ray sensors; this collaboration requires a continuous exchange of information between the partners, by mail, conference calls and meetings.

ORGANIZATION SKILLS	<ul style="list-style-type: none"> Multi-year experience in the coordination of research activities involving Bachelor Degree students, Master Degree students, PhD students and researchers, acquired during the research activity as PhD Student and PostDoctoral Research Fellow. This includes the organization and management of stocks and facilities, coordination of teams and collaborators.
TECHNICAL SKILLS	<ul style="list-style-type: none"> Excellent knowledge of C programming language and JAVA object-oriented programming languages; Other programming languages: C++, Python (basic knowledge); Good knowledge of SQL query language and the principal relational DBMS (MySQL, Postgres); Excellent knowledge of Matlab and its toolboxes; excellent knowledge of open-source corresponding programs (Octave, SciLAB); Good knowledge of Verilog and SPICE for hardware description; Good knowledge of Origin and the basic programs for electronic devices' characterization; Experience in realizing organic electronic devices using different materials (polymers, metals, inorganic and organic dielectrics) and methods (thermal evaporation, chemical vapour deposition, spin coating, drop casting, soft-lithography, inkjet printing); Experience in measuring and characterizing of solid state and organic devices (oscilloscope, parameter analyzers, function generators, multimeters, impedance analyzers);
COMPUTER SKILLS	<ul style="list-style-type: none"> Basic knowledge of electronic microscopy characterization and analysis (SEM, TEM, AFM) Excellent knowledge of Windows OSs and Linux-based OSs (especially Ubuntu, Kubuntu, Suse); Excellent knowledge of the most important office packages (MS Office, OpenOffice, StarOffice); Excellent knowledge of the most important web browsers (MS Internet Explorer, Mozilla Firefox, Google Chrome, Opera) and mail browsers (MS Outlook, Thunderbird); Basic knowledge of networking in Windows environment.
AWARDS	<ul style="list-style-type: none"> Best 2011 M.Sc. Thesis on Information Technology, Association of the Engineers of Cagliari; Best presentation, Ph.D. Day Doctoral School on Electronics and Information Technology, Track B, 2013. Best PhD Thesis in Information Engineering, from Associazione Italiana Gruppo Elettronica.
DRIVING LICENCE(S)	Category B, car owner
OTHER INFORMATIONS	<ul style="list-style-type: none"> Teaching experience as private tutor for High School (maths and physics) and for preparation to admission test for university; In 2009/2010 he attended classes as official tutor for "Elaborazione elettronica dei Segnali" (Electronic Elaboration of Signals), First Degree Course on Biomedical Engineering, University of Cagliari. In 2013/2014 he attended classes as official tutor for "Bioelettronica" (Bioelectronics), First Degree Course on Biomedical Engineering, University of Cagliari.

Preso atto dell'informativa ai sensi del D. Lgs. 196/03 viene reso esplicito consenso al trattamento dei dati personali.