

Attachment 'C'

University Academic Curriculum Vitae

Personal information

Name: Giuseppe Cantarella
Place and date of birth: Catania 04-12-1989
Nationality: Italian
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Education

- 9-2008/7-2011 - Politecnico di Torino (Turin, Italy) & Politecnico di Milano (Milan, Italy)
 - Joint B.Sc. in Information and Communication Engineering;
- 9-2011/10-2013 - Politecnico di Torino (Turin, Italy), Grenoble INP (Grenoble, France) & Ecole Polytechnique Federale de Lausanne (EPFL) (Lausanne, Switzerland)
 - Joint M.Sc. in Nanotechnologies for ICTs;
- 10-2013/present – ETH Zurich (Zurich, Switzerland)
 - Ph.D. at the Department of Information Technology and Electrical Engineering.
 - Ph.D. Area: Stretchable and Large-area flexible electronics.
 - Ph.D. defense: December 2017

Professional experience

From / to	Job title	Name of academic Institution	Academic level	responsibilities
2-2011/ 7-2011	Student Research Assistant	Politecnico di Torino, Remote Sensing Group (Turin, Italy)	B.Sc. Student	- Responsible for the development of radar system using Software Defined Radio techniques
6-2012/ 9-2012	Student Research Assistant	Institute for Microelectronics and Microsystems (IMM) (Catania, Italy)	M.Sc. Student	- Responsible of material analysis for micro and nanotechnology using TEM (Transmission Electron Microscopy)
2-2013/ 8-2013	Student Research Assistant	Molecular Foundry, Lawrence Berkeley National Lab (LBNL) (Berkeley, USA)	M.Sc. Student	- Responsible for the nanofabrication and optical characterization of a 3 dimensional (3D) optical transformer
10-2013/ present	Research Assistant	Wearable Computing Lab,	Ph.D. Student	- Expert in the design, fabrication and

		ETH Zurich (Zurich Switzerland)		characterization of stretchable and large-area flexible electronics based on metal oxide semiconductors; - Author and co-author of >20 publications in peer-reviewed journal and conference proceedings; - Speaker at international conferences; - Supervisor and co-supervisor of Master students (>10); - Responsible and mentor for cleanroom users; - Collaborator with several academic partners in Europe and USA.
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Experience in academic teaching

- During my Ph.D.:
 - I have been teaching assistant for the course of "Digitaltechnik" (Digital Electronics), given at the first year of the B.Sc. in Electrical Engineering and Information Technology at ETH Zurich;
 - I have given lectures on flexible electronics in the course of "Wearable Systems II", which is part of the M.Sc. in Electrical Engineering and Information Technology at ETH Zurich;
- During my Ph.D., I have been the main supervisor of the following student thesis:
 - "Optimization and development of Negative Lithography on PDMS", 2014;
 - "Graphene-based flexible electronics", 2014;
 - "Graphene Transfer Process and Characterization", 2014;
 - "Superflexible transistors using non-standard geometries", 2015;
 - "Highly transparent and flexible Transistors on elastomeric substrate", 2016;
 - "Highly flexible Transistors using non-standard geometries on elastomeric substrate", 2016.
- During my Ph.D., I have mentored and trained Ph.D. and Post-Doc users (>30) on cleanroom machines in the FIRST clean room facility at ETH Zurich.

Other academic responsibilities

- 6-2016, Publication Chair at the 11th Body Sensor Networks (BSN2014).

Research

During my Ph.D., I am working on the several aspects concerning the design, fabrication and characterization of flexible Thin-Film electronics, based on Indium-Gallium-Zinc-Oxide (IGZO) as semiconductor. In particular, I have established two different techniques to bend, stretch and twist Thin-Film transistors (TFTs) and circuits. By properly shaping the flexible substrate (with a wrinkling approach or with mesa structures), electronics devices have shown functionality at strain up to 20%. Additionally, I have studied for the first time methods to realize large-scale circuits (analog and digital with > 40 TFTs) on flexible substrate and increase their electrical performances by reducing the parasitic effects. As proof of concept, I am currently working on the realization of a flexible active matrix display based on Perovskite Light-Emitting Diodes (PeLEDs).

Scholarships

- 9-2009/7-2010, Politecnico di Torino (Turin, Italy):
 - Received full scholarship for spending one year at the Tongji University (Shanghai, China), in the frame of the joint B.Sc. among the Politecnico di Torino (Turin, Italy), Politecnico di Milano (Milan, Italy) and the Tongji University (Shanghai, China), called *Politong*;
- 2-2012/2-2013, Politecnico di Torino (Turin, Italy):
 - Received full scholarship for spending one semester at the Grenoble INP (Grenoble, France) and one semester at the Ecole Polytechnique Federale de Lausanne (EPFL) (Lausanne, Switzerland), in the frame of the joint M.Sc. among the Politecnico di Torino (Turin, Italy), Grenoble INP (Grenoble, France) and the Ecole Polytechnique Federale de Lausanne (EPFL) (Lausanne, Switzerland).

Selected Publications

Peer-reviewed journal papers:

- Polyakov, A.; Melli, M.; Cantarella, G.; Schwartzberg, A.; Weber-Bargioni, A.; Schuck, P. J.; Cabrini, S., "*Coupling model for an extended-range plasmonic optical transformer scanning probe*", Light: Science and Applications, 2014, **DOI:** 10.1038/lisa.2014.76.
- Munzenrieder, N.; Cantarella, G.; Vogt, C.; Petti, L.; Buthe, L.; Salvatore, G. A.; Fang, Y.; Andri, R.; Lam, Y.; Libanori, R.; Widner, D.; Studart, A. R.; Troster, G., "*Stretchable and Conformable Oxide Thin-Film Electronics*", Advanced Electronic Materials, 2015, **DOI:** 10.1002/aelm.201400038.
- (*) Cantarella, G.; Munzenrieder, N.; Petti, L.; Vogt, C.; Buthe, L.; Salvatore, G. A.; Daus, A.; Troster, G., "*Flexible In-Ga-Zn-O Thin-Film Transistors on Elastomeric Substrate Bent to 2.3% Strain*", IEEE Electron Device Letters, 2015, **DOI:** 10.1109/LED.2015.2442271.

- Petti, L.; Munzenrieder, N.; Vogt, C.; Faber, H.; Buthe, L.; Cantarella, G.; Bottacchi, F.; Anthopoulos, T. D.; Troster, G., "Metal oxide semiconductor thin-film transistors for flexible electronics", Applied Physics Reviews, 2016, **DOI:** <http://dx.doi.org/10.1063/1.4953034>.
- (*) Cantarella, G.; Ishida, K.; Petti, L.; Munzenrieder, N.; Meister, T.; Shabanpour, R.; Carta, C.; Ellinger, F.; Troster, G.; Salvatore, G. A., "Flexible In-Ga-Zn-O-Based Circuits With Two and Three Metal Layers: Simulation and Fabrication Study", IEEE Electron Device Letters, 2016, **DOI:** 10.1109/LED.2016.2619738.
- Salvatore, G. A.; Sulzle, J.; Dalla Valle, F.; Cantarella, G.; Robotti, F.; Jokic, P.; Knobelspies, S.; Daus, A.; Buthe, L.; Petti, L.; Kirchgessner, N.; Hopf, R.; Magno, M.; Troster, G., "Biodegradable and Highly Deformable Temperature Sensors for the Internet of Things", Advanced Functional Materials, 2017, **DOI:** 10.1002/adfm.201702390.
- (*) Cantarella, G.; Vogt, C.; Hopf, R.; Munzenrieder, N.; Andrianakis, P.; Petti, L.; Daus, A.; Knobelspies, S.; Buthe, L.; Troster, G.; Salvatore, G. A., "Buckled Thin-Film Transistors and Circuits on Soft Elastomers for Stretchable Electronics", ACS Applied Materials & Interfaces, 2017, **DOI:** 10.1021/acsami.7b08153.

Peer-reviewed conference papers:

- Petti, L.; Bottacchi, F.; Münzenrieder, N.; Faber, H.; Cantarella, G.; Vogt, C.; Büthe, L.; Namal, I.; Späth, F.; Hertel, T.; Anthopoulos, T.D.; Tröster, G., "Integration of solution-processed (7, 5) SWCNTs with sputtered and spray-coated metal oxides for flexible complementary inverters", International Electron Devices Meeting (IEDM), IEEE, 2014.

**Selected
contributed talks**

- (*) Cantarella, G.; Münzenrieder, N.; Petti, L.; Vogt, C.; Büthe, L.; Salvatore, G.A.; Daus, A.; Tröster, G.; "Wrinkled IGZO-TFTs on Flexible PDMS Substrate", International Thin-Film Conference (ITC), 2015.
- (*) Cantarella, G.; Ferrero, A.; Petti, L.; Vogt, C.; Münzenrieder, N.; Salvatore, G.A.; Daus, A.; Knobelspies, S.; Büthe, L.; Tröster, G.; "Highly stretchable electronic devices using non-standard geometries", Trend in Nanotechnology (TNT), 2017.
- (*) Cantarella, G.; Ferrero, A.; Petti, L.; Vogt, C.; Münzenrieder, N.; Salvatore, G.A.; Daus, A.; Knobelspies, S.; Büthe, L.; Tröster, G.; "Highly stretchable electronic devices using non-standard geometries", International Thin-Film Conference (ITC), 2017.

Awards

- 2-2016 - International Thin-Film Conference (ITC), National Chiao Tung University, Hsinchu, Taiwan
 - Winner of the best poster paper award.

**Reviewing
Activity**

- Reviewer of *IEEE Electron Device Letters*.
- Reviewer of *IEEE Transactions on Electron Devices*.
- Reviewer of *Solid-State Electronics*.
- Reviewer of *Applied Physics Letters*.

**Statement
interest**

of Considering my education background and the work I have been doing during my Ph.D., I strongly believe I can fit the desired requirements for the open position. My experience in design, fabrication and characterization of flexible electronics is proved by the published papers, the recognized and continuous collaboration with several academic partners and the involvement in European and Swiss research projects (Flexibility FP7, FFlexcom/Wisdom,..). In particular, I have been working on a broad range of devices (such as transistors, analog amplifiers, digital circuits, active matrices and sensors), together with experts in different fields (Mechanics, Chemistry, Physics,..), to create high-impact and multidisciplinary results. Furthermore, the expertise in electronics laboratory and clean room facilities completes my educational profile. My experience and background can successfully match the expected contributions requested and I am convinced to possess the skills and motivation required to prove myself to be a suitable candidate for the Free University of Bozen-Bolzano.

**Language
competence**

- Italian = Native (written and spoken)
- English = Fluent – IELTS 6.5
- German = Basic – A2.1. Sprachenzentrum ETH Zurich
- French = Basic
- Chinese = Basic

Date

16/10/2017

Signature

