

# CURRICULUM VITAE

FORMATO EUROPEO/EUROPEAN FORMAT

## PERSONAL INFORMATION

Name, Surname	<b>MATTEO RAPISARDA</b>
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Nationality	Italian
Place and Date of birth	ROMA, 27/01/1980

## WORK EXPERIENCE

<b>CNR IDENTIFICATION NUMBER</b>	<b>15304</b>
<b>POSITION</b>	<b>RESEARCHER</b>
<b>LEVEL</b>	<b>1</b>

Dates (from – to)	<b>SINCE 02/05/2013</b>
Name and address of employer	ISTITUTO PER LA MICROELETTRONICA E MICROSISTEMI (IMM) – CONSIGLIO NAZIONALE DELLE RICERCHE (CNR) AREA DELLA RICERCA ROMA 2, VIA DEL FOSSO DEL CAVALIERE 100, 00133, ROMA
Type of business or sector	PUBLIC ITALIAN RESEARCH
Occupation or position held	RESEARCHER WITH SEMI-PERMANENT POSITION
Main activities and responsibilities	FABRICATION, ELECTRICAL CHARACTERIZATION, NUMERICAL SIMULATIONS AND DEVELOPMENT OF COMPACT MODELS FOR ORGANIC SEMICONDUCTOR DEVICES IN EUROPEAN PROJECT COSMIC AND PLASTIC2. IMPLEMENTATION OF CIRCUITRY APPLICATIONS AND SENSORS.

Dates (from – to)	<b>SINCE 06/11/2009 TO 01/05/2013</b>
Name and address of employer	ISTITUTO PER LA MICROELETTRONICA E MICROSISTEMI (IMM) – CONSIGLIO NAZIONALE DELLE RICERCHE (CNR) AREA DELLA RICERCA ROMA 2, VIA DEL FOSSO DEL CAVALIERE 100, 00133, ROMA
Type of business or sector	PUBLIC ITALIAN RESEARCH
Occupation or position held	Post-doc position
Main activities and responsibilities	FABRICATION, ELECTRICAL CHARACTERIZATION, NUMERICAL SIMULATIONS AND DEVELOPMENT OF COMPACT MODELS FOR ORGANIC SEMICONDUCTOR DEVICES IN EUROPEAN PROJECT COSMIC

Dates (from – to)	<b>SINCE 01/11/2006 TO 05/11/2009</b>
Name and address of employer	ISTITUTO PER LA MICROELETTRONICA E MICROSISTEMI (IMM) – CONSIGLIO NAZIONALE DELLE RICERCHE (CNR) AREA DELLA RICERCA ROMA 2, VIA DEL FOSSO DEL CAVALIERE 100, 00133, ROMA
Type of business or sector	PUBLIC ITALIAN RESEARCH
Occupation or position held	PhD Student
Main activities and responsibilities	FABRICATION, ELECTRICAL CHARACTERIZATION, NUMERICAL SIMULATIONS AND DEVELOPMENT OF COMPACT MODELS FOR ORGANIC SEMICONDUCTOR DEVICES IN EUROPEAN PROJECT PLASTIC

Dates (from – to)	<b>SINCE 01/07/2006 TO 31/10/2006</b>
Name and address of employer	Istituto per la Fotonica e Nanotecnologie (IFN) – Consiglio Nazionale delle Ricerche (CNR), Via Cineto Romano 42, 00156, Roma

Type of business or sector	PUBLIC ITALIAN RESEARCH
Occupation or position held	CNR Grant
Main activities and responsibilities	FABRICATION, ELECTRICAL CHARACTERIZATION, NUMERICAL SIMULATIONS AND DEVELOPMENT OF COMPACT MODELS FOR ORGANIC SEMICONDUCTOR DEVICES IN EUROPEAN PROJECT FLEXIDIS
Dates (from – to)	<b>SINCE 13/09/2004 TO 30/05/2005</b>
Name and address of employer	Istituto per la Fotonica e Nanotecnologie (IFN) – Consiglio Nazionale delle Ricerche (CNR), Via Cineto Romano 42, 00156, Roma
Type of business or sector	PUBLIC ITALIAN RESEARCH
Occupation or position held	Stage
Main activities and responsibilities	ELECTRICAL CHARACTERIZATION, NUMERICAL SIMULATIONS AND DEVELOPMENT OF COMPACT MODELS FOR POLYCRISTALLINE SILICON DEVICES

## EDUCATION AND TRAINING

Dates (from – to)	01/11/2006 – 20/01/2010
Name and type of organisation providing education and training	Università di Roma Tre
Principal subjects occupational skills covered	Thesis: "Thin film Transistors with pentacene active layer: electrical stability in different environment condition and study of material for passivation layer"
Title of qualification awarded	Doctor in Physics
Level in National classification	
Dates (from – to)	30/05/2005
Name and type of organisation providing education and training	Università di Roma "Tor Vergata"
Principal subjects occupational skills covered	Thesis: "Electrical hot-carrier induced instability in polysilicon Thin Film Transistors made with Gate Overlapped Lightly Doped Drain architecture"
Title of qualification awarded	Master in Physics
Level in National classification	101/110

## RESEARCH ACTIVITIES

Research sectors      Fabrication, characterization and modelling of inorganic and organic semiconductor devices. Use of innovative plastic flexible substrates. Studies of the physics of the devices. Implementation of circuitry applications with the use of organic thin film transistors. Fabrication and characterization of sensing elements with the use of organic materials.

Recent Scientific Activities.      Investigations on the use of innovative techniques for the fabrication of organic transistors, such as printing techniques (inkjet, gravure printing, screen printing). Fabrication of flexible piezoelectric sensors based on PVDF capacitors made on Polyimide and PEN films. Integration of sensors with OTFTs. Study on the response of sensing material and evaluation of the effects of mechanical and electrical stress on sensors components.

## Books and Articles

**Citations:** 442

**H-index:** 11

1. (2018) - Calvi, S., Maita, F., **Rapisarda, M.**, Fortunato, G., Valletta, A., Preziosi, V., Cassinese, A., Mariucci, L.; Gravure printed organic thin film transistors: Study on the ink printability improvement, *Organic Electronics: physics, materials, applications*, Volume 61, October 2018, Pages 104-112;. DOI: 10.1016/j.orgel.2018.06.026
2. (2018) - Tortora, L., Urbini, M., Fabbri, A., Branchini, P., Mariucci, L., **Rapisarda, M.**, Barra, M., Chiarella, F., Cassinese, A., Di Capua, F., Aloisio, A.; Three-dimensional characterization of OTFT on modified hydrophobic flexible polymeric substrate by low energy Cs+ ion sputtering, *Applied Surface Science*, Volume 448, 1 August 2018, Pages 628-635. DOI: 10.1016/j.apsusc.2018.04.097
3. (2018) - **Rapisarda, M.**, Calvi, S., Barra, M., Chiarella, F., Di Capua, F., Cassinese, A., Aloisio, A., Mariucci, L.; *Staggered top-gate PDIF-CN2 N-type thin film transistors on flexible plastic substrates*, *Organic Electronics: physics, materials, applications*, Volume 57, June 2018, Pages 226-231; DOI: 10.1016/j.orgel.2018.03.019
4. (2017) - Valletta, A., **Rapisarda, M.**, Calvi, S., Mariucci, L., Fortunato, G.; *A large signal non quasi static model of printed organic TFTs and simulation of CMOS circuits*, 2017 European Conference on Circuit Theory and Design, ECCTD 2017, 31 October 2017, Article number 8093225; DOI: 10.1109/ECCTD.2017.8093225
5. (2017) - Branchini, P., Fabbri, A., Riondino, D., Mariucci, L., **Rapisarda, M.**, Valletta, A., Aloisio, A., Di Capua, F.; *Logic gates and memory elements design and simulation using PMOS organic transistor*, IEEE International Symposium on Industrial Electronics, 3 August 2017, Article number 8001580, Pages 2097-2101; DOI: 10.1109/ISIE.2017.8001580
6. (2017) - Valletta, A., **Rapisarda, M.**, Calvi, S., Fortunato, G., Frasca, M., Maira, G., Ciccazzo, A., Mariucci, L.; *A DC and small signal AC model for organic thin film transistors including contact effects and non quasi static regime*, *Organic Electronics: physics, materials, applications* 41, pp. 345-354; DOI: 10.1016/j.orgel.2016.11.027
7. (2016) - Giusi, G., O., Scandurra, G., Calvi, S., **Rapisarda, M.**, Mariucci, L., Ciofi, C.; *Investigation of Gate Direct-Current and Fluctuations in Organic p-Type Thin-Film Transistors*, *IEEE Electron Device Letters* Volume 37, Issue 12, December 2016, Article number 7593337, Pages 1625-1627; DOI: 10.1109/LED.2016.2618757
8. (2016) - Giusi, G., Giordano, O., Scandurra, G., Calvi, S., Fortunato, G., **Rapisarda, M.**, Mariucci, L., Ciofi, C.; *Correlated Mobility Fluctuations and Contact Effects in p-Type Organic Thin-Film Transistors*, *IEEE TRANSACTIONS ON ELECTRON DEVICES*, VOL. 63, NO. 3, DOI: 10.1109/TED.2016.2518305
9. (2015) - Giusi, G., Giordano, O., Scandurra, G., Calvi, S., Fortunato, G., **Rapisarda, M.**, Mariucci, L., Ciofi, C.; *Evidence of Correlated Mobility Fluctuations in p-Type Organic Thin-Film Transistors*, *IEEE Electron Device Letters*, 36 (4), art. no. 7031895, pp. 390-392, DOI: 10.1109/LED.2015.2400422
10. (2015) - Torricelli, F., Ghittorelli, M., **Rapisarda, M.**, Valletta, A., Mariucci, L., Jacob, S., Coppard, R., Cantatore, E., Kovács-Vajna, Z.M., Colalongo, L.; *Unified drain-current model of complementary p- and n-type OTFTs*, *Organic Electronics: physics, materials, applications*, 22, pp. 5-11. DOI:

11. (2015) - **Rapisarda, M.**, Calvi, S., Valletta, A., Fortunato, G., Mariucci; *The Role of Defective Regions Near the Contacts on the Electrical Characteristics of Bottom-Gate Bottom-Contact Organic TFTs*, Journal of Display Technology (Volume:12, Issue: 3), pp 252 – 257. DOI: 10.1109/JDT.2015.2466531
12. (2014) - Valletta, A., **Rapisarda, M.**, Calvi, S., Fortunato, G., Jacob, S., Fischer, V., Benwadih, M., Bablet, J., Chartier, I., Coppard, R., Mariucci, L.; *Modeling of capacitance characteristics of printed p-type organic thin-film transistors*, IEEE Transactions on Electron Devices, 61 (12), art. no. 2364451, pp. 4120-4127, DOI: 10.1109/TED.2014.2364451
13. (2014) - Mariucci, L., **Rapisarda, M.**, Valletta, A., Calvi, S., Benwadih, M., Coppard, R., Fortunato, G.; *Contact effects in organic thin film transistors with different device structures*, ECS Transactions, 64 (10), pp. 131-142. DOI: 10.1149/06410.0131ecst
14. (2014) - **Rapisarda, M.**, Maiolo, L., Maita, F., Calvi, S., Ferrone, A., Minotti, A., Pecora, A., Mariucci, L., Fortunato, G.; *Fully-organic flexible tactile sensor for advanced robotic applications*, 2014 IEEE 9th Nanotechnology Materials and Devices Conference, NMDC 2014, art. no. 6997418, pp. 45-48., DOI: 10.1109/NMDC.2014.6997418
15. (2013) - Fortunato, G., **Rapisarda, M.**, Valletta, A., Mariucci, L.; *Contact effects in organic and inorganic thin film transistors*, ECS Transactions, 54 (1), pp. 171-185., DOI: 10.1149/05401.0171ecst
16. (2013) - Coppard, R., Jacob, S., Charbonneau, M., Benwadih, M., Bablet, J., Fischer, V., Gwoziecki, R., Chartier, I., Abdinia, S., Cantatore, E., Maddiona, L., Maiellaro, G., Mariucci, L., **Rapisarda, M.**, Tramontana, F.; *Printed organic TFTs on flexible substrate for complementary circuits*, ECS Transactions, 54 (1), pp. 153-163, DOI: 10.1149/05401.0153ecst
17. (2013) - Valletta, A., Mariucci, L., **Rapisarda, M.**, Fortunato, G.; *Principle of operation and modeling of source-gated transistors*, Journal of Applied Physics, 114 (6), art. no. 064501, . DOI: 10.1063/1.4817502
18. (2013) - Jacob, S., Abdinia, S., Benwadih, M., Bablet, J., Chartier, I., Gwoziecki, R., Cantatore, E., Van Roermund, A.H.M., Maddiona, L., Tramontana, F., Maiellaro, G., Mariucci, L., **Rapisarda, M.**, Palmisano, G., Coppard, R.; *High performance printed N and P-type OTFTs enabling digital and analog complementary circuits on flexible plastic substrate*, Solid-State Electronics, 84, pp. 167-178. DOI: 10.1016/j.sse.2013.02.022
19. (2013) - Mariucci, L., **Rapisarda, M.**, Valletta, A., Jacob, S., Benwadih, M., Fortunato, G.; *Current spreading effects in fully printed p-channel organic thin film transistors with Schottky source-drain contacts*, Organic Electronics: physics, materials, applications, 14 (1), pp. 86-93. DOI: 10.1016/j.orgel.2012.10.002
20. (2012) - Abdinia, S., Benwadih, M., Cantatore, E., Chartier, I., Jacob, S., Maddiona, L., Maiellaro, G., Mariucci, L., Palmisano, G., **Rapisarda, M.**, Tramontana, F., Van Roermund, A.H.M.; *Design of analog and digital building blocks in a fully printed complementary organic technology*, European Solid-State Circuits Conference, art. no. 6341310, pp. 145-148. DOI: 10.1109/ESSCIRC.2012.6341310
21. (2012) - **Rapisarda, M.**, Fortunato, G., Valletta, A., Jacob, S., Benwadih, M., Coppard, R., Chartier, I., Mariucci, L.; *Self-heating effects on the electrical instability of fully printed p-type organic thin film transistors*, Applied Physics Letters, 101 (23), art. no. 233304. DOI: 10.1063/1.4769819
22. (2012) - Maiolo, L., Maita, F., Pecora, A., **Rapisarda, M.**, Mariucci, L., Benwadih, M., Jacob, S., Chartier, I., Coppard, R.; *Flexible PVDF-TrFE pyroelectric sensor integrated on a fully printed p-channel organic transistor*, Procedia Engineering, 47, pp. 526-529. DOI: 10.1016/j.proeng.2012.09.200
23. (2012) – **Rapisarda, M.**, Valletta, A., Daami, A., Jacob, S., Benwadih, M., Coppard, R., Fortunato, G., Mariucci, L.; *Analysis of contact effects in fully printed p-channel organic thin film transistors*, Organic Electronics: physics, materials, applications, 13 (10), pp. 2017-2027. DOI: 10.1016/j.orgel.2012.06.003
24. (2011) - Valletta, A., Daami, A., Benwadih, M., Coppard, R., Fortunato, G., **Rapisarda, M.**, Torricelli, F., Mariucci, L.; *Contact effects in high performance fully printed p-channel organic thin film transistors*, Applied Physics Letters, 99 (23), art. no. 233309, DOI: 10.1063/1.3669701
25. (2011) - Simeone, D., **Rapisarda, M.**, Fortunato, G., Valletta, A., Mariucci, L.; *Influence of structural properties on environmental stability of pentacene thin film transistors*, Organic Electronics: physics, materials, applications, 12 (3), pp. 447-452, DOI: 10.1016/j.orgel.2010.12.013
26. (2011) - **Rapisarda, M.**, Simeone, D., Fortunato, G., Valletta, A., Mariucci, L.; *Pentacene thin film transistors with (polytetrafluoroethylene) PTFE-like encapsulation layer*, Organic Electronics: physics,

27. (2009) - Simeone, D., Cipolloni, S., Mariucci, L., **Rapisarda, M.**, Minotti, A., Pecora, A., Cuscutà, M., Maiolo, L., Fortunato, G.; *Pentacene TFTs with parylene passivation layer*, Thin Solid Films, 517 (23), pp. 6283-6286. DOI: 10.1016/j.tsf.2009.02.088
28. (2009) - Valletta, A., **Rapisarda, M.**, Mariucci, L., Pecora, A., Fortunato, G., Caligiore, C., Fontana, E., Tramontana, F., Leonardi, S.; *Effective channel length and parasitic resistance determination in non self-aligned low temperature polycrystalline silicon thin film transistors*, Thin Solid Films, 517 (23), pp. 6353-6357. DOI: 10.1016/j.tsf.2009.02.067
29. (2008) - **Rapisarda, M.**, Mariucci, L., Valletta, A., Pecora, A., Fortunato, G., Caligiore, C., Fontana, E., Leonardi, S., Tramontana, F.; *Electrical instability in self-aligned p-channel polysilicon TFTs related to damaged regions present at the gate edges*, Solid-State Electronics, 52 (3), pp. 406-411. DOI: 10.1016/j.sse.2007.10.009
30. (2007) - Valletta, A., Bonfiglietti, A., **Rapisarda, M.**, Mariucci, L., Pecora, A., Fortunato, G., Brotherton, S.D.; *Grain boundary characterisation in sequentially laterally solidified polycrystalline-silicon thin film transistors*, ECS Transactions, 8 (1), pp. 211-216. DOI: 10.1149/1.2767310
31. (2007) - Bonfiglietti, A., Cuscutà, M., **Rapisarda, M.**, Pecora, A., Mariucci, L., Fortunato, G., Caligiore, C., Fontana, E., Leonardi, S., Tramontana, F.; *Asymmetric fingered polysilicon p-channel thin film transistor structure for kink effect suppression*, Thin Solid Films, 515 (19 SPEC. ISS.), pp. 7433-7436. DOI: 10.1016/j.tsf.2006.11.093
32. (2007) - Valletta, A., Bonfiglietti, A., **Rapisarda, M.**, Mariucci, L., Fortunato, G., Brotherton, S.D.; *Grain boundary evaluation in sequentially laterally solidified polycrystalline-silicon devices*, Journal of Applied Physics, 101 (9), art. no. 094502. DOI: 10.1063/1.2717259
33. (2006) - Fortunato, G., Bonfiglietti, A., Valletta, A., Mariucci, L., **Rapisarda, M.**, Brotherton, S.D.; *Analysis of transport properties of SLS polysilicon TFTs*, Proceedings of International Meeting on Information Display, 2006, pp. 513-518.
34. (2006) - Bonfiglietti, A., Valletta, A., **Rapisarda, M.**, Mariucci, L., Fortunato, G.; *Effects of fabrication parameters on the electrical stability of gate overlapped lightly doped drain polysilicon thin-film transistors*, Japanese Journal of Applied Physics, Part 1: Regular Papers and Short Notes and Review Papers, 45 (5 B), pp. 4384-4388., DOI: 10.1143/JJAP.45.4384

## ADDITIONAL INFORMATION

MOTHER TONGUE	ITALIAN
<b>Other Languages</b>	<b>ENGLISH</b>
• Read	EXCELLENT
• Written	EXCELLENT
• Spoken	VERY GOOD

TECHNICAL SKILLS

HE'S EXPERT IN THE MAIN FABRICATION TECHNIQUES, IN THE CHARACTERIZATION AND IN THE MODELLING OF ORGANIC AND INORGANIC SEMICONDUCTOR DEVICES

INFORMATICS SKILLS

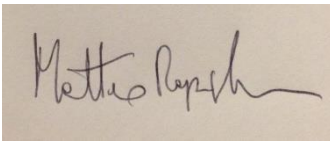
DEEP KNOWLEDGE OF THE MAIN OPERATIVE SYSTEMS, ENTIRE OFFICE SUITE, WEB APPLICATIONS, EMAIL AND OTHERS

**INFORMATION ON  
PERSONAL DATA  
PROCESSING**

*The Undersigned hereby authorises the CNR to utilize and store the personal sensitive data contained in the attached Curriculum Vitae for the purposes of bilateral Joint research projects and within the framework of the Data protection Act No. 196, dates 30 June 2003 as promulgated by the Italian Government.*

**2<sup>nd</sup> September 2019**

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**Matteo Rapisarda**