

## Europass Curriculum Vitae



### Personal information

First name / Surname	<b>Alessandro Pecora</b>		
Address	37, via Pia Nalli, I-00134, Roma, Italy		
Telephone(s)	+39 06 49934064 (office)	Mobile:	+39 339 6527682
Fax(es)	+39 06 45488066		
E-mail	alessandro.pecora@cnr.it		
Nationality	Italian		
Date of birth	29.05.1962		
Gender	Male		

### Desired employment / Occupational field

### Strategic activities related to international R&D context

### Work experience

Dates	17.09.2001 - present
Occupation or position held	Permanent Researcher at the National Research Council (CNR)
Main activities and responsibilities	<p>Advanced devices for large area electronics, sensors and devices based on thin film transistors, low temperature processes for the development of devices and circuits on flexible substrates, nanostructured materials.</p> <p>Responsible of the CNR task "MD.P5.001.004 / devices for large area electronics", his current research activity focuses on the following themes: (1) development of micro-fabrication techniques for the realization of thin film transistors based on polycrystalline silicon (p-Si TFT) on flexible substrates at low processing temperatures, (2) study of electronic properties of transport such as the effects related to high electric fields, off-currents, noise performances, etc., (3) characterization of the dielectric layers used as gate insulators in TFT deposited by Plasma-Enhanced Chemical Vapour Deposition, (4) development of physical and chemical sensors and their integration with readout electronic based on p-Si TFT technology.</p> <p>Participation to European projects and Principal Investigator in national projects.</p>
Name and address of employer	Institute for Microelectronics and Microsystems (IMM) – CNR , Rome Unit, research area "Tor Vergata"
Type of business or sector	Applied Research
Dates	03.02.1997 – 31.08.2000
Occupation or position held	Fixed-term Researcher supported through the participation to European and national projects.
Main activities and responsibilities	<p>Development, by excimer laser, of amorphous silicon crystallization processes for the realization of polycrystalline silicon thin film transistors at high electrical performances.</p> <p>Participation to European and national projects.</p> <p>Collaboration with the top-level semiconductors companies such as STMicroelectronics, Philips, Thales and national research centres as ENEA.</p>
Name and address of employer	Institute for Photonics and Nanotechnologies (IFN) – CNR , Rome Unit. 42, via Cineto Romano, I-00156 Rome (Italy)
Type of business or sector	Applied Research

Dates May 1990 – January 1997

Occupation or position held Ph.D. (equiv.) (CNR grant) - Consultant

Main activities and responsibilities Development of semiconductor and dielectric thin films for the realization of transistors. Applications of Thin Film Transistors as ion and gas sensors. Participation to European and national projects. Consultant for companies: Eniricerche, Sorin Biomedica, General Electric..

Name and address of employer Institute for Photonics and Nanotechnologies (IFN) – CNR , Rome Unit. 42, via Cineto Romano, I-00156 Rome (Italy)

Type of business or sector Applied Research

Dates September 2000 – August 2001

Occupation or position held Secondary school Teacher in Physics (permanent position) at the Institute "De Amicis" of Rome

Main activities and responsibilities He also received other secondary schools teaching assignments for Mathematics and Electrical Engineering in the period 1991-97.

Name and address of employer Institute IPSSS "Edmondo De Amicis", 6, Via Galvani, 00153 Roma.

Type of business or sector Education Sector

## Education and training

Dates October 1981 – February 1990

Title of qualification awarded Master degree in Physics

Principal subjects/occupational skills covered Design and fabrication of a UHV laboratory for the study of the physics of semiconductor surfaces by electron spectroscopy techniques such as Auger (AES), electron energy loss (EELS), photoemission (UPS), low energy electron diffraction (LEED ).

Name and type of organisation providing education and training University of Rome "La Sapienza"

Level in national classification 100/110

Dates September 1988 – September 1989

Title of qualification awarded Italian Army

Principal subjects/occupational skills covered Transmissions

Name and type of organisation providing education and training Scuola Militare di Guerra – Civitavecchia

## Personal skills and competences

Mother tongue(s) **Italian**

Other language(s)

Self-assessment

*European level (\*)*

**English**

Understanding				Speaking				Writing	
Listening		Reading		Spoken interaction		Spoken production			
C1	Proficient user	C1	Proficient user	C1	Proficient user	C1	Proficient user	C1	Proficient user

(\*) [Common European Framework of Reference for Languages](http://europass.cedefop.europa.eu)

Technical skills and competences	<p>excellent skills in use of systems and equipment for manufacturing processes of micro-electronics and analysis tools such as SEM and AFM.</p> <p>excellent experience of static and dynamic electrical characterization of electronic devices and circuits.</p>
Computer skills and competences	<p>Advanced knowledge of personal computer and scientific software.</p> <p>Advanced knowledge of programming languages such as C + +, Visual Basic, Visual C + +.</p> <p>Knowledge of CAD programs for masks design such as LASI and Autocad.</p> <p>Participation to the training course "The Web sites of the CNR structures" – Rome.</p> <p>In 2002 he participated to the training course "Management of infrastructure and services in the CNR network," Santa Tecla - Acireale (CT).</p> <p>He was appointed Referent of the Telecommunications Network of the Institute of Photonics and Nanotechnologies, and has realized the website of the Institute.</p> <p>In 2007 he was appointed "Official Webmaster" and member of the Program Committee of the Conference ITC07 "International Thin Film Transistors Conference" held in Rome.</p> <p>In 1993 he received a consulting assignment from SISTEC Srl for developing software for the control of the deposition system of thin films by ion-sputtering.</p> <p>In 1997 he received a consulting assignment from NOUS Informatica as software developer at Telesoft.</p>
<b>Selected papers</b> 1990 - 2012	<p>He has published more than 90 refereed articles in proceedings of international conferences and journals and has participated in several international conferences also as invited speaker.</p> <ol style="list-style-type: none"> <li>Valletta A, Maiolo L, Mariucci L, PECORA A., Rapisarda M, Fortunato G, Brotherton SD (2012). Reduction of Short Channel Effects and Hot Carrier Induced Instability in Fully Self-Aligned Gate Overlapped Lightly Doped Drain Polysilicon TFTs. JOURNAL OF DISPLAY TECHNOLOGY, vol. 8; p. 18-22.</li> <li>Mariucci L, Gaucci P, Valletta A, PECORA A., Maiolo L, Cuscuna M, Fortunato G (2011). Edge Effects in Self-Heating-Related Instabilities in p-Channel Polycrystalline-Silicon Thin-Film Transistors. IEEE ELECTRON DEVICE LETTERS, vol. 32; p. 1707-1709.</li> <li>Zampetti E, Maiolo L, PECORA A., Maita F, Pantalei S, Minotti A, Valletta A, Cuscuna M, Macagnano A, Fortunato G, Bearzotti A (2011). Flexible sensorial system based on capacitive chemical sensors integrated with readout circuits fully fabricated on ultra thin substrate RID F-3398-2011. SENSORS AND ACTUATORS. B, CHEMICAL, vol. 155; p. 768-774.</li> <li>Cuscuna M, Convertino A, Mariucci L, Fortunato G, Felisari L, Nicotra G, Spinella C, PECORA A., Martelli F (2010). Low-temperature, self-catalyzed growth of Si nanowires RID C-8015-2011. NANOTECHNOLOGY, vol. 21.</li> <li>Valletta A, Gaucci P, Mariucci L, PECORA A., Cuscuna M, Maiolo L, Fortunato G (2010). Threshold voltage in short channel polycrystalline silicon thin film transistors: Influence of drain induced barrier lowering and floating body effects. JOURNAL OF APPLIED PHYSICS, vol. 107.</li> <li>Fortunato G, Cuscuna M, Gaucci P, Maiolo L, Mariucci L, PECORA A., Valletta A, Templier F (2009). Self-Heating Effects in p-Channel Polysilicon TFTs Fabricated on Different Substrates. JOURNAL OF THE KOREAN PHYSICAL SOCIETY, vol. 54; p. 455-462.</li> <li>Maiolo L, Cuscuna M, Mariucci L, Minotti A, PECORA A., Simeone D, Valletta A, Fortunato G (2009). Analysis of self-heating related instability in n-channel polysilicon thin film transistors fabricated on polyimide RID F-3398-2011. THIN SOLID FILMS, vol. 517; p. 6371-6374.</li> <li>Valletta A, Gaucci P, Mariucci L, PECORA A., Cuscuna M, Maiolo L, Fortunato G, Brotherton SD (2009). Role of gate oxide thickness in controlling short channel effects in polycrystalline silicon thin film transistors. APPLIED PHYSICS LETTERS, vol. 95.</li> <li>Valletta A, Rapisarda M, Mariucci L, PECORA A., Fortunato G, Caligiore C, Fontana E, Tramontana F, Leonardi S (2009). Effective channel length and parasitic resistance determination in non self-aligned low temperature polycrystalline silicon thin film transistors. THIN SOLID FILMS, vol. 517; p. 6353-6357.</li> <li>Zampetti E, Pantalei S, PECORA A., Valletta A, Maiolo L, Minotti A, Macagnano A, Fortunato G, Bearzotti A (2009). Design and optimization of an ultra thin flexible capacitive humidity sensor RID F-3398-2011. SENSORS AND ACTUATORS. B, CHEMICAL, vol. 143; p. 302-307.</li> </ol>

- 11 PECORA A., L. Maiolo, M. Cuscunà, D. Simeone, A. Minotti, L. Mariucci and G. Fortunato (2008). Low-temperature polysilicon Thin Film Transistors on Polyimide substrates for electronics on plastic. SOLID-STATE ELECTRONICS.
- 12 PECORA A., Maiolo L, Cuscunà, M. Simeone, D. Minotti, A. Mariucci L, Fortunato G. (2008). Low-temperature polysilicon thin film transistors on polyimide substrates for electronics on plastic RID F-3398-2011. SOLID-STATE ELECTRONICS, vol. 52; p. 348-352.
- 13 Privitera V, Scalese S, La Magna A, PECORA A., Cuscunà M, Maiolo L, Minotti A, Simeone D, Mariucci L, Fortunato G, Caristia L, Mangano F, Di Marco S, Camalleri M, Ravesi S, Coffa S, Grimaldi MG, De Bastiani R, Badala P, Bagiante S (2008). Low-temperature annealing combined with laser crystallization for polycrystalline silicon TFTs on polymeric substrate RID C-9940-2010 RID F-3398-2011. JOURNAL OF THE ELECTROCHEMICAL SOCIETY, vol. 155; p. H764-H770.
- 14 M. Rapisarda, L. Mariucci, A. Valletta, PECORA A., C. Caligiore, E. Fontana, S. Leonardi, F. Tramontana (2008). Electrical instability in self-aligned p-channel polysilicon TFTs related to oxide residual damage. SOLID-STATE ELECTRONICS, ISSN: 0038-1101
- 15 A. Bonfiglietti, M. Cuscunà, PECORA A., L. Mariucci, G. Fortunato C. Caligiore, E. Fontana, S. Leonardi, F. Tramontana (2007). P-channel asymmetric fingered polysilicon Thin Film Transistors. THIN SOLID FILMS, ISSN: 0040-6090
- 16 L. Maiolo, PECORA A., M. Cuscunà and G. Fortunato (2007). Thermal annealing effects on the interface state density of metal-oxide-semiconductor capacitors with electron cyclotron resonance plasma enhanced chemical vapor deposition Silicon dioxide. THIN SOLID FILMS, ISSN: 0040-6090
- 17 Maiolo L, PECORA A., Cuscunà M, Fortunato G (2007). Thermal annealing effects on the interface state density of metal-oxide-semiconductor capacitors with electron cyclotron resonance plasma enhanced chemical vapor deposition Silicon dioxide. THIN SOLID FILMS, vol. 515; p. 7590-7593.
- 18 L. Maiolo, PECORA A., and G. Fortunato, N. D. Young (2006). Low-temperature electron cyclotron resonance plasma-enhanced chemical-vapor deposition silicon dioxide as gate insulator for polycrystalline silicon thin-film transistors. JOURNAL OF VACUUM SCIENCE & TECHNOLOGY. A, AN INTERNATIONAL JOURNAL DEVOTED TO VACUUM, SURFACES, AND FILMS, ISSN: 1553-1813
- 19 PECORA A., Maiolo L, Fortunato G, Caligiore C. (2006). A comparative analysis of silicon dioxide films deposited by ECR-PECVD, TEOS-PECVD and Vapox-APCVD. JOURNAL OF NON-CRYSTALLINE SOLIDS, vol. 352; p. 1430-1433.
- 20 PECORA A., L. Maiolo, A. Bonfiglietti, M. Cuscunà, F. Mecarini, L. Mariucci, G. Fortunato and N. D. Young (2005). Silicon dioxide deposited by ECR-PECVD for low-temperature Si devices. MICROELECTRONICS RELIABILITY, ISSN: 0026-2714
- 21 A. Bonfiglietti, A. Valletta, L. Mariucci, PECORA A. (2003). Noise performance of polycrystalline silicon thin-film transistors made by sequential lateral solidification. APPLIED PHYSICS LETTERS, ISSN: 0003-6951
- 22 Mariucci L, PECORA A., Fortunato G, Spinella C, Bongiorno C (2003). Crystallization mechanisms in laser irradiated thin amorphous silicon films. THIN SOLID FILMS, vol. 427; p. 91-95.
- 23 PECORA A., Carluccio R, Mariucci L, Fortunato G, Murra D, Bollanti S, Di Lazzaro P (2003). Observation of super lateral growth in long pulse (170 ns) excimer laser crystallization of a-Si films. THIN SOLID FILMS, vol. 427; p. 319-323, ISSN: 0040-6090, doi: 10.1016/S0040-6090(02)01164-1
- 24 PECORA A., Mariucci L, Piperno S, Fortunato G (2003). Lateral growth control by thickness spatial modulation of amorphous silicon film. THIN SOLID FILMS, vol. 427; p. 314-318.
- 25 Mariucci L, PECORA A., Carluccio R, Fortunato G (2001). Advanced excimer laser crystallization techniques. THIN SOLID FILMS, vol. 383; p. 39-44.
- 26 Mariucci L, Carluccio R, PECORA A., Fortunato G, Massucci F, Foglietti V, Della Sala D, Stoemenos J (1999). Grain boundary location control by patterned metal film in excimer laser crystallized polysilicon. DIFFUSION AND DEFECT DATA, SOLID STATE DATA. PART B, SOLID STATE PHENOMENA, vol. 67-8; p. 175-180, ISSN: 1012-0394

- 27 PECORA A., Massussi F, Mariucci L, Fortunato G, Ayres JR, Brotherton SD (1999). Numerical analysis of the electrical characteristics of gate overlapped lightly doped drain polysilicon thin film transistors. JAPANESE JOURNAL OF APPLIED PHYSICS. PART 2, LETTERS, vol. 38; p. 3475-3481, ISSN: 0021-4922, doi: 10.1143/JJAP.38.3475
- 28 Mariucci L, Giacometti F, PECORA A., Massussi F, Fortunato G, Valdinoci M, Colalongo L (1998). Numerical analysis of electrical characteristics of polysilicon thin film transistors fabricated by excimer laser crystallisation. ELECTRONICS LETTERS, vol. 34; p. 924-926.
- 29 PECORA A., Mariucci L, Carluccio R, Fortunato G, Legagneux P, Plais F, Reita C, Pribat D, Stoemenos J (1998). Combined solid phase crystallization and excimer laser annealing process for polysilicon thin-film transistors. PHYSICA STATUS SOLIDI. A, APPLIED RESEARCH, vol. 166; p. 707-714.
- 30 PECORA A., Fortunato G, Carluccio R, Sacco S (1993). Hydrogenated amorphous-silicon based light-addressable potentiometric sensor (LAPS) for hydrogen detection. JOURNAL OF NON-CRYSTALLINE SOLIDS, vol. 166; p. 793-796, ISSN: 0022-3093

**Signature**

Alessandro Pecora  
Rome – 30.06.2012

