

**EUROPEAN  
CURRICULUM VITAE  
FORMAT**

**PERSONAL INFORMATION**

Name **Di Pietrantonio Fabio**

**WORK EXPERIENCE**

- Dates (from – to) Since 16/02/2010
- Occupation or position held Researcher
- Name and address of employer Institute of Acoustics and Sensors “O. M. Corbino” (IDASC) – National Research Council (CNR)
- Type of business or sector Scientific research, public
- Main activities and responsibilities Experimental/Lab research in public organization, person in charge of the Micro-fabrication and piezoelectric materials Laboratory.
  
- Dates (from – to) 2007-2010
- Occupation or position held Research grant
- Name and address of employer Centro di Responsabilità di Attività di Ricerca ex Istituto Sperimentale di Acustica “O.M. Corbino” (IA) – National Research Council (CNR)
- Type of business or sector Scientific research, public
- Main activities and responsibilities Design and fabrication of electro-acoustic micro-devices
  
- Dates (from – to) 2006-2007
- Occupation or position held Agreement of collaboration
- Name and address of employer Department of Electronics – University of Rome “Tor Vergata”
- Type of business or sector Scientific research, public
- Main activities and responsibilities Characterization of quantum wires and integrated capacitors for fabrication of an integrated Kelvin Probe.

**EDUCATION AND TRAINING**

- Date 2012
- Name and type of organization providing education and training Comsol Multiphysics
- Principal subjects/skills covered Advanced courses on multiphysic simulations in the fields of acoustics, electromagnetics and MEMS
  
- Date 2008

- Name and type of organization providing education and training ISPESL (Rome)
- Principal subjects/skills covered Advanced course on optical microscopy
- Date 02/05/2007
- Title of qualification awarded Ph.D. in Microsystems Engineering
- Name and type of organization providing education and training University of Rome "Tor Vergata"
- Principal subjects/skills covered Electro-acoustic micro-devices for sensor applications: design and fabrication technology
- Date 05/05/2003
- Title of qualification awarded Degree in Electronic Engineering (score: 99/100)
- Name and type of organization providing education and training University of Rome "Tor Vergata"
- Principal subjects/skills covered Growth and characterization of Aluminum nitride/Diamond/Silicon multilayered structures for the realization of high frequency SAW devices

## PERSONAL SKILLS AND COMPETENCES

NATIVE LANGUAGE

**Italian**

OTHER LANGUAGES

**English**

- Reading skills
- Writing skills
- Verbal skills

good  
good  
good

ORGANIZATIONAL SKILLS AND COMPETENCES

Coordination of the scientific activity of the team of researchers involved in the Commessa of the CNR "micro-acusto-opto-electronic devices and chemical and physical sensors" (SP.P02.008).

TECHNICAL SKILLS AND COMPETENCES

**Topics of interest**

Micromachining techniques and thin film technology.  
Deposition and characterization of piezoelectric films (AlN, ZnO, PZT) by reactive sputtering.  
Theory of propagation of mechanical waves in solids and their simulation by Finite Element modeling (FEM).  
Design, fabrication and testing of Micro-electro-mechanical systems (MEMS), in particular surface acoustic wave (SAW) and bulk acoustic wave (BAW) devices such as SAW resonators, delay lines, filters and thin film resonators (TFBAR).  
Design and fabrication of wireless SAW devices and sensors such as smart tags.  
Design and fabrication of electronic circuit for signal characterization.  
Design and testing of chemical sensors, biosensors and physical sensors.  
Diamond based transistors.

**Techniques & technological applications**

Clean room; Vacuum and UHV equipment; design and set-up of Sputtering and related systems; thermal evaporation of metal and organics; reactive ion etching (RIE) of metals, oxides and piezoelectric materials; electro-plating of metals; lapping; micro-photolithography by using UV and Deep-UV radiation; set-up for gas and vapor sensing measurement equipment; set-up for biosensing measurement equipment; workstation for simulation.

## TUTORING

- Dates (from – to) 2004-2009
- Name of degree Degree in Electronic Engineering
- Name of organization Faculty of Engineering, University of Rome "Tor Vergata"

- Dates (from – to) 2006-2009
- Name of degree Degree in Medical Engineering
- Name of organization Faculty of Engineering, University of Rome “Tor Vergata”
  
- Dates (from – to) From 2013
- Name of degree Computer Engineering
- Name of organization Faculty of Engineering, Uninettuno University, Rome

## PEER REVIEWING SERVICE

### JOURNALS

Biosensors and Bioelectronics (Elsevier)  
 Sensors and Actuators B: Chemical (Elsevier)  
 Journal of Micromechanics and Microengineering (IOP)  
 Journal of Physics D: Applied Physics (IOP)  
 Smart Materials and Structures (IOP)  
 Sensor Letters (ASP)  
 Sensors (MDPI)  
 Recent Patents on Mechanical Engineering (BSP)  
 Nano (IOP)  
 Nature Scientific reports (Nature)  
 Applied Surface Science (Elsevier)

## RECENT RESEARCH ACTIVITIES

**e-LIFT:** "Laser printing of organic/inorganic material for the fabrication of electronic devices". Collaborative FP7 project (FP7-ICT project n° 247868) (2010-12). Chemical sensor based on chemoselective polymers SAW/BAW devices; biosensor based of biomolecules on SAW/BAW devices.

**NATO Science for Peace SfP 982671** program: "Polymers based piezoelectric sensor array for chemical warfare agents detection" (2007-10).

**POR FESR LAZIO 2007-2013** Activity 1.4 in collaboration with D. Marchiori Srl: "New productive model of a pressure transducer with sensor utilizing structures based on surface elastic waves" (N. 051/2009).

**Agreement of collaboration with University of L'Aquila and Thales Alenia Space** for the development of electroacoustic filters TFBAR for space applications (2009).

**Agreement with D.Marchiori Srl:** "Design and fabrication of a new pressure transducer with sensor utilizing structures based on surface elastic waves" (2007-08).

**Agreement with MD - Microdetectors S.p.A. (Modena):** "SAW – wireless" for large scale sensor applications (2008).

## CONFERENCES

F. Di Pietrantonio participated at more than 30 conferences as a presenting author or a coauthor and the most recent are:

**2013 UFFC, EFTF and PFM Symposium,** "Surface Acoustic Wave Biosensor based on Odorant Binding Proteins Deposited by Laser Induced Forward Transfer", F. Di Pietrantonio et al., 21-25 July 2013, Prague, Czech Republic.

**Bio-sensing technology,** "SH-SAW Biosensor for D-serine Detection", F. Di Pietrantonio et al., 12-15 May 2013, Sitges, Spain.

**European Materials Research Society (E-MRS),** "Tailoring Odorant-Binding protein coatings characteristics for Surface Acoustic Wave biosensor development", F. Di Pietrantonio et al., 27-31 May, Strasburg, France.

**2013 IEEE International Ultrasonic Symposium,** "Odorant detection via Solidly Mounted Resonator biosensor", D. Cannatà et al., 7-10 October 2012, Dresden, Germany.

**Biosensors 2012,** "Odorant detection via surface acoustic wave biosensor array based on odorant binding proteins", F. Di Pietrantonio et al., 15-18 May 2012, Cancun, Mexico.

## PUBLICATIONS

- [1] Verona, C., Ciccognani, W., Colangeli, S., Limiti, E., Marinelli, M., Verona-Rinati, G., Cannata, D., Benetti, M., Di Pietrantonio, F. "V2O5 MISFETs on H-Terminated Diamond" IEEE Transactions on Electron Devices, 63 (12), art. no. 7723850, pp. 4647-4653, 2016 DOI: 10.1109/TED.2016.2617362
- [2] Verona, C., Ciccognani, W., Colangeli, S., Limiti, E., Marinelli, M., Santoni, E., Verona-Rinati, G., Angelone, M., Pillon, M., Pompili, F., Benetti, M., Cannatà, D., Di Pietrantonio, F. "14.8-MeV Neutron Irradiation on H-Terminated Diamond-Based MESFETs" IEEE Electron Device Letters, 37 (12), art. no. 7605548, pp. 1597-1600, 2016 DOI: 10.1109/LED.2016.2620338
- [3] D'Agostino, S., Di Pietrantonio, F., Benetti, M., Cannata, D., Cavagnaro, M., Sardari, D., Stano, P., Ramundo-Orlando, A. "Small-size wire phantom to study the effect of MMW on nerve fibre" International Conference on Infrared, Millimeter, and Terahertz Waves, IRMMW-THz, 2016-November, art. no. 7758455, 2016. DOI: 10.1109/IRMMW-THz.2016.7758455
- [4] Colangeli S., Verona C., Ciccognani W., Marinelli M., Rinati G.V., Limiti E., Benetti M., Cannata D., Di Pietrantonio F. "H-Terminated Diamond MISFETs with V2O5 as Insulator" Technical Digest - IEEE Compound Semiconductor Integrated Circuit Symposium, CSIC, 2016-November, art. no. 7751046, 2016 DOI: 10.1109/CSICS.2016.7751046
- [5] Foglietti V., Yang N., Aruta C., Di Pietrantonio F., Cannatà D., Benetti M., Balestrino G. "High plasticity reversible resistive switching in heteroepitaxial metal/CeO<sub>2</sub>-x/Nb:SrTiO<sub>3</sub>/Ti/Pt structures" Nanotechnology, 27 (37), art. no. 375705, 2016 DOI: 10.1088/0957-4484/27/37/375705
- [6] Di Pietrantonio F., Benetti M., Cannatà D., Verona E., Girasole M., Fosca M., Dinarelli S., Staiano M., Marzullo V.M., Capo A., Varriale A., D'Auria S. "A Shear horizontal surface acoustic wave biosensor for a rapid and specific detection of d-serine", Sensors and Actuators, B: Chemical, 226, pp. 1-6, 2016. DOI: 10.1016/j.snb.2015.11.099
- [7] Claudio C., W. Ciccognani, S. Colangeli, F. Di Pietrantonio, E. Giovine, E. Limiti, M. Marinelli, G. Verona-Rinati, "Gate-Source Distance Scaling Effects in H-Terminated Diamond MESFETs", IEEE Transactions on Electron Devices, 62 (4), art. no. 7042929, pp. 1150-1156, 2015.
- [8] N. Cennamo, S. Di Giovanni, A. Varriale, M. Staiano, F. Di Pietrantonio, A. Notargiacomo, L. Zeni, S. D'Auria "Easy to use plastic optical fiber-based biosensor for detection of butanal", Plos One, 10 (3), art. no. e0116770, 2015.
- [9] Di Pietrantonio F., Benetti M., Cannatà D., Verona E., Palla-Papavlu A., Fernandez-Pradas, Serra P., Staiano M., Varriale A., D'Auria S., "A surface acoustic wave bio-electronic nose for detection of volatile odorant molecules", Biosensors and Bioelectronics, vol. 67, pp. 516-523, 2015.
- [10] J. Forneris, A. Lo Giudice, P. Olivero, F. Picollo, A. Re, Marco Marinelli, F. Pompili, C. Verona, G. Verona Rinati, M. Benetti, D. Cannata and F. Di Pietrantonio "A 3-dimensional interdigitated electrode geometry for the enhancement of charge collection efficiency in diamond detectors", Europhysics Letters (EPL), vol. 108, p. 18001, 2014.
- [11] Di Pietrantonio F., Benetti M., Dinca V., Cannatà D., Verona E., D'Auria S., Dinescu M., "Tailoring odorant-binding protein coatings characteristics for surface acoustic wave biosensor development", Applied Surface Science, vol. 302, pp. 250-255, 2014.
- [12] Palla-Papavlu A., Patrascioiu, A., Di Pietrantonio F., Fernandez-Pradas, Cannatà D., Benetti M., D'Auria S., Verona E., Serra P., "Preparation of surface acoustic wave odor sensors by laser-induced forward transfer", Sensors and Actuators, B: Chemical, vol.192, pp 369-377, 2014.
- [13] Di Pietrantonio F., Benetti M., Cannatà D., Varriale A., D'Auria S., Palla-Papavlu A., Serra P., Verona E., "Surface acoustic wave biosensor based on odorant binding proteins deposited by laser induced forward transfer", Proceedings of IEEE International Ultrasonics Symposium, IUS 2013; pp. 2144-2147; Prague; Czech Republic; 21 - 25 July 2013.
- [14] F. Di Pietrantonio, D. Cannatà, M. Benetti, E. Verona, A. Varriale, M. Staiano, and S. D'Auria, "Detection of odorant molecules via surface acoustic wave biosensor array based on odorant-binding proteins," Biosensors and Bioelectronics, vol. 41, pp. 328-334, 2013.

- [15] P. Delaporte, A. Ainsebaa, A. P. Alloncle, M. Benetti, C. Boutopoulos, D. Cannata, F. Di Pietrantonio, V. Dinca, M. Dinescu, J. Dutroncy, R. Eason, M. Feinaugle, J. M. Fernández-Pradas, A. Grisel, K. Kaur, U. Lehmann, T. Lippert, C. Lousert, M. Makrygianni, I. Manfredonia, T. Mattle, J. L. Morenza, M. Nagel, F. Nüesch, A. Palla-Papavlu, L. Rapp, N. Rizvi, G. Rodio, S. Sanaur, P. Serra, J. Shaw-Stewart, C. L. Sones, E. Verona, and I. Zergioti, "Applications of laser printing for organic electronics," 2013.
- [16] Cannatà, D.; Benetti, M.; Verona, E.; Varriale, A.; Staiano, M.; D'Auria, S.; Di Pietrantonio, F. "Odorant detection via Solidly Mounted Resonator biosensor". Proceedings of IEEE International Ultrasonics Symposium, IUS, Dresden. Germany, pp. 1537-1540, 7-10 October 2012.
- [17] M. Marinelli, E. Milani, G. Prestopino, C. Verona, G. Verona-Rinati, M. Angelone, M. Pillon, V. Kachkanov, N. Tartoni, M. Benetti, D. Cannatà, and F. Di Pietrantonio, "X-ray beam monitor made by thin-film CVD single-crystal diamond," Journal of Synchrotron Radiation, vol. 19, pp. 1015-1020, 2012.
- [18] F. Di Pietrantonio, M. Benetti, D. Cannatà, E. Verona, A. Palla-Papavlu, V. Dinca, M. Dinescu, T. Mattle, and T. Lippert, "Volatile toxic compound detection by surface acoustic wave sensor array coated with chemoselective polymers deposited by laser induced forward transfer: Application to sarin," Sensors and Actuators, B: Chemical, vol. 174, pp. 158-167, 2012.
- [19] D. Cannatà, M. Benetti, F. Di Pietrantonio, E. Verona, A. Palla-Papavlu, V. Dinca, M. Dinescu, and T. Lippert, "Nerve agent simulant detection by solidly mounted resonators (SMRs) polymer coated using laser induced forward transfer (LIFT) technique," Sensors and Actuators, B: Chemical, vol. 173, pp. 32-39, 2012.
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- [25] V. Dinca, A. Palla Papavlu, A. Matei, C. Luculescu, M. Dinescu, T. Lippert, F. Di Pietrantonio, D. Cannatà, M. Benetti, and E. Verona, "A comparative study of DRL-lift and lift on integrated polyisobutylene polymer matrices," Applied Physics A: Materials Science and Processing, vol. 101, pp. 429-434, 2010.
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- [29] Benetti, D. Cannatà, F. Di Pietrantonio, E. Verona, C. Di Natale, A. D'Amico, S. Paletti, M. Lemme, A. Tibuzzi, B. Margesin, G. Soncini, and G. F. D. Betta, "Polysilicon mesoscopic wires coated by Pd as H2 sensors", Proceedings of the 13Th Italian Conference on Sensors

and Microsystems, Pages: 161-165, 2009.

- [30] M. Benetti, D. Cannatà, F. Di Pietrantonio, E. Verona, C. Marchiori, and P. Persichetti, "Pressure sensor based on SAW resonators", Proceedings of the 13Th Italian Conference on Sensors and Microsystems, Pages: 313-325, 2009.
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- [35] M. Penza, P. Aversa, G. Cassano, D. Suriano, W. Wiodarski, M. Benetti, D. Cannatà, F. Di Pietrantonio, and E. Verona, "Thin-film bulk-acoustic-resonator gas sensor functionalized with a nanocomposite Langmuir-Blodgett layer of carbon nanotubes," IEEE Transactions on Electron Devices, vol. 55, pp. 1237-1243, May 2008.
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"Theoretical Investigation of PSAW Generation and Propagation in AlN/Isotropic Diamond/Si Structure," in 2006 IEEE Ultrasonics Symposium, Vols 1-5, Proceedings, ed, 2006, pp. 2318-2321.

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## PERSONAL DATA

Autorizzo il trattamento dei miei dati personali ai sensi del Decreto Legislativo 30 giugno 2003, n. 196 "Codice in materia di protezione dei dati personali".

Rome 19/09/2017

Fabio Di Pietrantonio