PERSONAL INFORMATION

Roberto Rella

CNR Institute for Microelectronic and Microsystems – CNR IMM Lecce Unit

Male | | *Nationality* Italian

Enterprise	University	EPR
☐ Management Level	☐ Full professor	☒ Research Director and 1st level Technologist / First Researcher and 2nd level Technologist
☐ Mid-Management Level	☐ Associate Professor	☐ Level III Researcher and Technologist
☐ Employee / worker level	☐ Researcher and Technologist of IV, V, VI and VII level / Technical collaborator	☐ Researcher and Technologist of IV, V, VI and VII level / Technical collaborator

WORK EXPERIENCE

from 1/10/2019 to today

Permanent Level 1st Research Director

Istituto per la Microelettronica e i Microsistemi del CNR (CNR – IMM), Unita' di Lecce (Italy)

- My main research activity is carried out in the Advanced Laboratories of Nanophotonics and Nanoplasmonics at the Institute for Microelectronics and Microsystems, Lecce section, which is an evolution of the previous existing Sensors Group. Research team led by me aims to advance science in the field of optical sensors and biosensors and develop novel optical sensors technologies for applications in biomolecular research and bioanalytic. All the competences was made available within the workgroups "Chemical, Physical and Biological Sensors" and "Plasmonics and Nanophotonics" in the ambit of the new organization activities of the Institute for Microelectronics and Microsystems, by coordinating their local activities in the Lecce IMM Unit. Research lines are devoted to advance science in the field of optical biosensors, in the design, realization and characterization of functional materials as well as in the development of novel optical sensitive, selective sensing technologies. In the last year the research group move towards the study of quantum properties of light and its interaction with matter at the nanoscale in plasmonic nanocavities in the VIS-IR spectral range. Interactions with quantum emitters in weak and strong coupling regime where molecular electronic dynamics can be modulated by the electric field of light and vacuum fluctuation of the resonator and their quantum chemistry applications will be investigated. To this purpose realization of single-photon sources and quantum lasers will be exploited for achieving single molecule quantum-based sensing platforms

Business or sector: Research

from 31/12/2001 to 09/2019

Permanent Level II Researcher

Istituto per la Microelettronica e i Microsistemi del CNR (CNR – IMM), Unita' di Lecce (Italy)

Business or sector: Research

from 21/01/2000 to 30/12/2001

Permanent Level III Researcher

Istituto per la Microelettronica e i Microsistemi del CNR (CNR – IMM), Unita' di Lecce (Italy)

Business or sector: Research

from 1998 to 12/2000

Temporary-term Level III Researcher

Istituto nuovi materiali per l'Elettronica CNR (CNR – IME), Lecce

Business or sector: Research

From 1994 to 1998

Temporary-term Level III Researcher

Istituto nuovi materiali per l'Elettronica CNR (CNR – IME), Lecce
five-year researcher competition
Business or sector: Research

From 1989 to 1993 **Temporary-term Level III Researcher**
Istituto nuovi materiali per l'Elettronica CNR (CNR – IME), Lecce
five-year researcher competition
Business or sector: Research

April 2016 IMM coordinator of the application and technological thematic area "Functional Materials and Devices" by the Director of the Institute for Microelectronics and Microsystems of the CNR

Mars 2016 IMM coordinator of the "chemical, physical and biological sensors" area working group by the Director of the Institute for Microelectronics and Microsystems of the CNR

From 2016 Coordinator of the research activities of the Sensors laboratory of the Institute for Microelectronics and Microsystems Unit of Lecce

From 2016 Coordinator of the activities of the new laboratory of Plasmonics and Magneto / Advanced Plasmonics (localized LSPR and surface SPR) for the realization of prototypes of nanostructured sensors with plasmon transduction and the realization and characterization of microfluidic devices for applications in environment and human health

From 2018 to 2019 President of the Italian Society of Optics and Photonics (SIOF)

From 1995 Member of the Scientific Council of the Institute for the study of new materials for Electronics IME of the CNR of Lecce

From1996 Member of "Associazione Italiana Sensori e Microsistemi (A.I.S.E.M.)."

From 2001 to 2003 Cycle of lectures by invitation for the PhD in Physics at the University of Lecce: "Optical Sensors" in relation to the Physics of Matter curriculum

From 1991 to 2001 as foreseen by the C.N.R.-University of Lecce Convention No. 207, art.2, of 29/1/1991, he carried out teaching assignments at the Faculty of Engineering of the University of Lecce regarding exercises and assistance to students and a series of seminars relating to the discipline "Physics I", fundamental for the Degree Course in Materials Engineering and Computer Engineering (letters sent by the Secretariat of the Faculty of Engineering of the University of Lecce: Prot. 215 of 20/7/92, prot. 1577 of 11/10/1995, prot. 789 of 30/6/1997, prot. 1500 of 13/9/99, Faculty of Engineering certificate of 15 March 2001). Moreover main teaching activity at the University of Salento as contract professor: Physics, Materials science, and technology; Sensors and Microsystems

From 2011 to 2013 Teaching University of Salento - contract lecturer - science and technology and transport phenomena in materials

2010 Lecturer at the "First National School on Optical Biosensors and Biophotonics - Plasmon Resonance Biosensors" Ischia 25 September 1 October 2010 2007 Director of the national school "First Biointerface School" held in Lecce from 12-16 November 2007 at the IMM of the CNR of Lecce.

From 2011 to 2014 PON RAISE "Research, Application, Innovation, SErvices in Bioimaging" - PON01_03054 Lecturer for the training course linked to the project for the training of technicians in the research and development of radiopharmaceuticals

2013 Lecturer in the national project PON Tasma "TASMA:" Training project for technicians and researchers' experts in microelectronic technologies and packaging technologies for innovative electronic devices "on the following topics:" Optical sensors, experimental configurations and functional characterization ".

EDUCATION AND TRAINING

2012 Qualification MIUR as Full Professor for the disciplinary area 02/B1 - FIS/03

From1983 to 1991 He attended National and International Schools in order to deepen his scientific culture in the field of Materials Science and Technology.

06/11/1985 Master Degree in Physics 110/110
Università degli Studi di Lecce (actually Università' del Salento) (Italy)

PERSONAL SKILLS

Mother tongue(s) Italian

Other language(s) English, Franch

P.I. and Polytechnic coordinator for research projects

2000-2023 GENESI - Sviluppo di radiofarmaci e biomarker innovativi per la diagnosi dei tumori dell'apparato riproduttivo maschile e femminile - Ministero Sviluppo Economico - Fondo crescita sostenibile – Coordinator CNR Unit

2019-2020 M3O3 Microsistemi multifunzionali per il monitoraggio dei processi ossidativi di oli da olive; Regione Puglia con l'avviso INNONETWORK "sostegno alle attività di R&S per lo sviluppo di nuove tecnologie sostenibili; Coordinator CNR Unit

2016.2017 CLASTER IN BIOIMAGING, codice: QZYCUM0, partners: ITEL Telecomunicazioni s.r.l. Leader soc. coop. Cons Amolab S.r.l. - Spin off CNR - Università degli Studi di Bari - Dipt. di Farmacia CNR - DSFTM - IMM" – Apulia Region (Area Politiche per lo Sviluppo, il Lavoro e l'Innovazione) n. AOO_144/0002962 del 19/11/2015; Coordinator CNR IMM Unit

2011-2014 PON RAISE Research, Application, Innovation, SErvices in Bioimaging - Progetto PON MIUR – Ottimizzazione dei processi di produzione dei radiotraccianti per diagnostica PET. Coordinator CNR Unit

2010-2013 EU Project "Surface Plasmon Resonance biosensor for pathogen detection of Agro-food interest (SPRAI)" Ministero sviluppo economico progetto n. A12/1992/01/X15 Decreto n. 1547 del 15/12/2010. Call Eurotransbio (EU)

2012-2014 FIRB "Nanoplasmag" project in the 2010 MIUR call coordinated by young researchers, "Nanostructured magneto-plasmonic materials: from nano-engineering to plasmonics; Scientific Partner

2010-2011 POR PUGLIA 2007-2013 Axis I Line 1.1 Action 1.1.2 - Call for "Aid for Investments in Research for SMEs - title" OPTILEG - development of an optical sensor for the detection of Legionella "

2008-2009 Scientific cooperation agreement between CNR and CNRST (Morocco) Bilateral project "Elaboration and environmental application of organic probes based on pyrazole et pyridine derivatives

2008-2010 European project FP7-NMP-2007-SMALL-1 NMP-2007-2.2-2 "NANOMAGMA: nanostructured materials with tailored magnetic properties" duration 36 months Scientific Director:

2006-2007 PON- "Minicontal - Development of systems based on innovative miniaturized devices for food control

2005-2007 "GoodFood" Integrated Project (FP6-IST-1-508774-IP) presented to the European community as part of the VIPQ "For the full safety and quality assurance along the complete food chain in the agrofood industry

2004-2005 European community project for the realization of a European Workshop on "NEW DEVELOPMENTS ON SENSORS FOR ENVIRONMENTAL CONTROL - ENVSENS" contract n. ICA1-CT

2002-2005 FIRB NEGOZIALI del MIUR call 2001, Project "POLYMER-BASED MICRO-DEVICES (MICROPOLYS)",

2002-2005	MIUR n. 12729 law 297 financed by PON 2001 funds "Modeling of an integrated system for the management of food safety in the durum wheat supply chain (SINSIAF)
2002-2005	MIUR- FISR "SAIA (MIUR decree n.117 / Ric dated 06/02/2003) Optical and electro-optical sensors for industrial and environmental applications"
2000-2003	5th framework program (Prog. Copernicus 2) Project: "Environmental control by means of a new gas detection principle: Gas sensing by metal oxide Heterojunction (GAS MOH)
1998-2001	MADESS II Finalized Project: "Opto-Spec sensors in guided optics for the measurement of liquid species by direct spectroscopy and gas species by chemically assisted spectroscopy
1999-2001	MURST project managerial decree n. 370 of 30/07/1999, relating to the Plans to upgrade the scientific and technological network entitled "New optoelectronic devices and sensors"
1999-2001	"Metal-oxide semiconductor thin films as resistive gas sensors" project presented in the framework of a bilateral agreement CNR / CONACYT (Mexico)
1994-1999	POP Puglia program Sub-program 7.4.1 CIRP protocol n. 417 / Pos 5 ° 1 of 11/17/99 entitled "Development of new optical transduction materials for the measurement of toxic gaseous species,

editorial committees of journals and referee	Guest Associate Editor of "Materials Science and Egineering C", volume C22, MDPI, Chemosensors, ACS Journal, RSC Journal, Elsevier, IEEE, SPIE; Sensors and Actuators B, Langmuir, Chemistry of Materials, Journal of Materials Chemistry, Thin solid Films, Journal of American Chemical Society, Biosensors and Bioelectronics.
technical program committee of international conferences	
2018	President of the Executive committee congress “Fotonica 2018” Lecce Italy
2015-2017	Organizing committee of the annual "Plasmonica" international workshop and organizer of the "Plasmonica 2017" congress July 5-7 2017 Lecce
2014	Director of the II° Scuola Nazionale Biosensori ottici e Biofotonica organizzata da SIOF (Socierà Italiana di Ottica e Fotonica) a Otranto 15-20 Settembre 2014
2007	Director of the Scientific Seminar "Biointerfaces Technology: preparation, characterization and applications" held at the Institute for Microelectronics and Microsystems of the National Research Council in Lecce, from 12 to 16 November 2007
1999	Rector's decree (Prot. 732 of 11/22/99), as Expert, member of the jury for the final doctoral exam in "Materials Engineering" XII cycle at the University 'of the Lecce studios.
From 1999 to 2007	Co-supervisor in the thesis of a specialist degree in Materials Engineering (old system) Faculty of Engineering – Physics - Biotechnology of University of Salento
From 2003 to 2016	Tutor for doctoral theses at the University of Salento
2001	Chairman of the international conference "European Conference on organized Films" held in Otranto (Lecce) Italy from 3-7 September 2001
2004	Member of the "Technical Program Committee" of the European conference "Eurosensors XVIII" held in Rome from 12 to 15 September.
1996	Organizing committee of the "International workshop on Thin Organic films: Properties and Applications" held in Gallipoli (Le) from 23 to 26 September 1996

Job-related skills	During his long career: Participation in examination commissions for Physics and materials engineering, doctoral examination commissions, referee of PhD thesis, member of the commissions of competitions for researcher and research grants at the CNR
Digital skills	• Knowledge of the data analysis software Origin. • Knowledge of the Microsoft Office suite

ADDITIONAL INFORMATION

Publications

Publications in peer-reviewed journals, . Author of more than 300 papers in refereed journals and of more than 200 communications to scientific meetings. Relevant to the proposed activity:

1 Colombelli A, Lospinoso D, Rella R, Manera MG (2022). Shape Modulation of Plasmonic Nanostructures by Unconventional Lithographic technique. NANOMATERIALS, ISSN: 2079-4991, doi: https://doi.org/10.3390/nano12030547

2 Lospinoso D, Colombelli, A, Lomascolo M, Rella R, Manera M G (2021). Self-Assembled Metal Nanohole Arrays with Tunable Plasmonic Properties for SERS Single-Molecule Detection. NANOMATERIALS, ISSN: 2079-4991, doi: https://doi.org/10.3390/nano12030380

3 Rizal C, Manera MG, Ignatyeva DO, Mejía-Salazar JR, Rella R, Belotelov VI, Pineider F, Maccaferri N (2021). Magnetophotonics for sensing and magnetometry toward industrial applications. JOURNAL OF APPLIED PHYSICS, ISSN: 0021-8979, doi: https://doi.org/10.1063/5.0072884

4 CESARIA, MAURA, Taurino A., Manera M. G., Minunni M., Scarano S., Rella R. (2019). Gold nanoholes fabricated by colloidal lithography: Novel insights into nanofabrication, short-range correlation and optical properties. NANOSCALE, vol. 11, p. 8416-8432, ISSN: 2040-3364, doi: 10.1039/c8nr09911a

5 Manera MG, Colombelli A, Taurino A, Martin AG, Rella R (2018). Magneto-Optical properties of noble-metal nanostructures: functional nanomaterials for bio sensing. SCIENTIFIC REPORTS, vol. 8, ISSN: 2045-2322, doi: 10.1038/s41598-018-30862-3

6 Colombelli A, Manera MG, Borovkov V, Giancane G, Valli L, Rella R (2017). Enhanced sensing properties of cobalt bis-porphyrin derivative thin films by a magneto-plasmonic-opto-chemical sensor. SENSORS AND ACTUATORS. B, CHEMICAL, vol. 246, p. 1039-1048, ISSN: 0925-4005, doi: 10.1016/j.snb.2017.01.192

7 Colombelli A, Manera MG, Taurino A, Catalano M, Convertino A, Rella R (2016). Au nanoparticles decoration of silica nanowires for improved optical bio-sensing. SENSORS AND ACTUATORS. B, CHEMICAL, vol. 226, p. 589-597, ISSN: 0925-4005, doi: 10.1016/j.snb.2015.11.075