

Salvatore Marino.

Citizenship of Italy

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Curriculum Vitae

Academic achievements:

- 22/07/2003. Graduate in physics. Title of thesis: "*Effetti elettroottici in celle a cristallo liquido nematico con l'inserzione di ossidi a conduzione mista preparati tramite tecnica sol-gel*". Institution: Università della Calabria.
- 31/10/2003 to 16/12/2006. PhD in Science and Technology of Mesophases and Molecular Materials. Title of thesis: "*Study of transparent thin films oxide and their interaction with nematic liquid crystals*". Institution: Università della Calabria.
- **Accreditations:** Accredited by the Spanish Ministerio de Educación y Cultura for the position of *Profesor Ayudante Doctor*.

Post doctoral activities:

- 01/09/2016 to 01/09/2017: "*Post doc position*". Institution: Dipartimento di Scienze e Ingegneria della Materia, Ambiente e Urbanistica (Università Politecnica delle Marche). Main researcher: Prof. O. Francescangeli. Main activities: *experimental study of new liquid-crystalline materials and polymer-based composites*.
- 28/09/2015 to 31/03/2016: "*Contract professor*". Institution: Escuela Politecnica Nacional (Quito, Ecuador). Subjects taught: *Thermal physics, Molecular physics and laboratory of molecular physics*.
- 10/03/2014 to 10/03/2015: "*Senior visiting researcher*". Institution: Campus de excelencia internacional Andalucía tech, Universidad de Málaga (Spain). Research group: Unidad de nanotecnología, departamento de física aplicada I. Director: Prof. J. R. Ramos Barrado. Main activities: *development of a technique for the generation of nanoparticles by laser irradiation of a microdroplet stream, and periodic nanostructuring of silicon via the induction of surface plasmons*.
- 01/09/2011 to 01/09/2013: "*Post doc position*". Institutions: Università della Calabria and Universidad de Málaga. Research group: LICRYL (main researcher: Prof. N. Scaramuzza) and departamento de física aplicada I. (Director: Prof. J. R. Ramos Barrado). Main activities: *study of nanocomposite materials formed by metallic nanoparticles dispersed in liquid crystals. Creation and characterization of nanostructured systems by mean of innovative pulsed laser deposition*.
- 05/05/2009 to 05/05/2011: "*Post doc position*". Institution: Universidad de Castilla – La Mancha. Research center: laboratorio de nanotecnología de la escuela politecnica universitaria. Director: Prof. M. T. Cuberes. Main activities: *scanning probe microscopy technique and innovative ultrasonic force microscopy technique (UFM) for characterization of nanocomposite materials formed by, by ceramic nano-particles incorporated in polymer matrix*.
- 01/06/2007 to 31/05/2009: "*Post doc position*". Institution: Università della Calabria. Research center: LICRYL laboratorios. Main researcher: Prof. N. Scaramuzza. Main

activities: *electric measurements on ferroelectric thin film oxides (PZT). Scanning probe microscopy technique and electrostatic force microscopy technique for characterization of ferroelectric thin films. Electrooptic characterization of nematic liquid crystals confined between ferroelectric thin films.*

Project participations:

- Title: ***“Ordered soft materials: electrical, optical and dielectric spectroscopy characterization”***. Funding entities: Università della Calabria, University of Bucarest. Starting date: 01/01/2013. Duration: 365 days.
- Title: ***“Tailored generation of nanostructures by laser irradiation of a precursor microdroplet stream”***. Funding entities: MICINN, Universidad de Malaga. Starting date: 01/12/2012. Duration: 1094 days.
- Title: ***“Physics and applications of the soft matter”***. Funding entities: MIUR, Università della Calabria. Starting date: 01/01/2012. Duration: 1095 days.
- Title: ***“Nanostructured and bioactive liquid crystals”***. Funding entities: Università della Calabria, Bulgarian Academy of science. Duration: 730 days.
- Title: ***“Microscopia de fuerzas atómicas con ultrasonidos: actuación ultrasónica en nanoparticulas”***. Funding entity: Ministerio de ciencia e innovación (MICCIN). Starting date: 01/01/2010. Duration: 364 days.
- Title: ***“Desarrollo de aplicaciones de microscopia de fuerza ultrasónica en geles poliméricos y síntesis de geles nanocompuestos”***. Funding entity: Junta de Comunidades de Castilla – La Mancha. Starting date: 01/01/2008. Duration: 2191 Days.
- Title: ***“High ordered nanostructured surfaces and liquid crystal anchoring properties”***. Funding entities: Università della Calabria, University of Bucarest. Starting date: 01/01/2006. Duration: 730 Days.
- Title: ***“Confined and nanostructured liquid crystals studied by method of flexoelectric spectroscopy”***. Funding entities: Consiglio nazionale delle ricerche (CNR), Bulgarian Academy of Science (BAS). Starting date: 01/01/2004. Duration: 731 Days.
- Title: ***“Development of liquid crystalline materials with innovative optical properties”***. Funding entity: MURST-CIPE. Starting date: 01/01/2004. Duration: 1460Days.

International stages:

- 17/10/2013 to 16/11/2013: stage at the University politechnica of Bucarest. Issue addressed: ***“Study of electrical, optical and dielectric properties of ordered soft materials systems”***.
- 09/04/2012 to 08/04/2013: stage at University of Malaga. Issue addressed: ***“Producción de nanoestructuras de varios tipos mediante irradiación laser de microgotas precursoras”***.
- 01/10/2008 to 30/11/2008: stage at the University of Bucarest. Issue addressed: ***“Study of conductivity and electro-optical properties of multilayered systems formed by oxides thin films and liquid crystals”***.
- 01/10/2005 to 14/11/2005: stage at Bulgarian Academy of Science, Sofia. Issue addressed: ***“Study of dielectric and flexoelectric oscillations in PDLC by flexoelectric spectroscopy and laser light diffraction”***.

List of publications:

1) E. Canelli, S. Marino, V. Bruno, M. Castriota, N. Scaramuzza, G. Strangi, C. Versace, R. Ceccato and G. Carturan. : ***“CHARACTERISATION OF MIXED B_iV OXIDE FILMS, DEPOSITED***

VIA SOL-GEL ROUTE, USED AS ELECTRODES IN ASYMMETRIC LIQUID CRYSTAL CELLS". Solid State Ionics 165 (2003) 201-208.

2) M. Castriota, S. Marino, C. Versace, G. Strangi, N. Scaramuzza and E. Cazzanelli: "CHARACTERIZATION OF TUNGSTEN TRIOXIDE THIN FILM DEPOSITED BY SPIN COATING AND THE EFFECT ON THEIR INSERTION IN LIQUID CRYSTAL CELLS". Molecular Crystal and Liquid Crystal., Vol. 429, pp.237-253, 2005.

3) S. Marino, M. Castriota, V. Bruno, E. Cazzanelli, G. Strangi, C. Versace and N. Scaramuzza: "CHANGES OF THE ELECTRO-OPTIC RESPONSE OF NEMATIC LIQUID CRYSTAL CELLS DUE TO INSERTED TITANIA-VADIA FILMS". Journal of Applied Physics 97, 013523, (2005).

4) V. Bruno, M. Castriota, S. Marino, C. Versace, G. Strangi, E. Cazzanelli and N. Scaramuzza: "ASYMMETRIC RESPONSE TO ELECTRIC FIELD IN NEMATIC LIQUID CRYSTAL CELLS CONTAINING VANADIUM OXIDE THIN FILMS PREPARED BY SOL-GEL SYNTHESIS". Molecular Crystals and Liquid Crystals Vol. 441, pp. 27-43, 2005.

5) A. G. Petrov, Y. Marinov, S. D'Elia, S. Marino, C. Versace, N. Scaramuzza: "DIELECTRIC AND FLEXOELECTRIC OSCILLATIONS IN PDLC STUDIED BY FLEXOELECTRIC SPECTROSCOPY AND LASER LIGHT DIFFRACTION". Journal of Optoelectronics and Advanced Materials Vol. 9, No. 2, February 2007, p. 420 – 423

6) S. Marino, M. Castriota, G. Strangi, E. Cazzanelli, N. Scaramuzza: "ASYMMETRIC NEMATIC LIQUID CRYSTAL CELLS CONTAINING LEAD ZIRCONIUM TITANATE (PZT) FILMS". Journal of Applied Physics. **102** 013112 (2007). Selected for Virtual Journal of Nanoscale Science & Technology July 30, 2007.

7) M. Castriota, E. Cazzanelli, G. Das, R. Kalendarev, A. Kuzmin, S. Marino, G. Mariotto, J. Purans and N. Scaramuzza: "PROTON PRESENCE AND MOTION IN RHENIUM OXIDE FILMS AND THEIR APPLICATION TO LIQUID CRYSTAL CELLS". Molecular Crystals and Liquid Crystals. Vol. 474, pp. 1-15, 2007

8) E. Bruno, M. P. De Santo, M. Castriota, S. Marino, G. Strangi, E. Cazzanelli, N. Scaramuzza: "MORPHOLOGICAL AND ELECTRICAL INVESTIGATIONS OF LEAD ZIRCONIUM TITANATE THIN FILMS OBTAINED BY SOLGEL SYNTHESIS ON INDIUM TIN OXIDE ELECTRODES". Journal of Applied Physics. 103, 064103 (2008)

9) Marco Castriota, Salvatore Marino, Giuseppe Strangi, Carlo Versace, Nicola Scaramuzza and Enzo Cazzanelli "ELECTRO-OPTICAL RESPONSE DUE TO MIXED CONDUCTION ELECTRODES, COMPARED TO FERROELECTRIC ONES, IN ASYMMETRIC NEMATIC LIQUID CRYSTAL CELLS". Ionics 15, 139-149, (2009).

10) E. Cazzanelli, M. Castriota, S. Marino, N. Scaramuzza, J. Purans, A. Kuzmin, R. Kalendarev, G. Mariotto, G. Das: "CHARACTERIZATION OF RHENIUM OXIDE FILMS AND THEIR APPLICATION TO LIQUID CRYSTAL CELLS". Journal of Applied Physics. 105, 1 (2009).

11) S. Marino, G. Nicastro, N. Scaramuzza, G. Strangi, A. Alexe Ionescu and A. Ionescu: "STATISTICAL ANALYSES OF REPOLARISATION CURRENT OF A PZT FILM DEPOSITED ON ITO ELECTRODE WITH DIFFERENT THERMAL TREATMENTS". Philosophical Magazine 90 (12) (2010) 1575-1584

12) A. Ionescu, A. L. Ionescu, S. Marino, M. Castriota, G. Strangi and N. Scaramuzza:

“ANOMALOUS CONDUCTIVITY IN PZT THIN FILM DEPOSITED ON A COPPER SUBSTRATE ELECTRODE”. Philosophical Magazine 90 (13) (2010) 1733-1742

13) M. Castriota, S. D’Elia, S. Marino, E. Cazzanelli, N. Scaramuzza: *“THERMAL INDUCED CHANGES OF LEAD ZIRCONIUM TITANATE FILMS AND THEIR CONSEQUENCES FOR LIQUID CRYSTAL DEVICES APPLICATION”*. Philosophical Magazine, 90, 2223-2233, 2010.

14) S. Marino, F. Le Preti, V. Carbone and N. Scaramuzza: *“STOCHASTIC FERROELECTRIC SWITCHING OF LEAD ZIRCONATE TITANATE THIN FILMS”*. European Physical Journal B 74, 475-477 (2010).

15) E. Bruno, F. Ciuchi, M. Castriota, S. Marino, G. Nicastro, E. Cazzanelli and N. Scaramuzza: *“STRUCTURAL TRANSFORMATION OF PZT 53/47 SOL-GEL FILMS ON DIFFERENT SUBSTRATES DRIVEN BY THERMAL TREATMENTS”*. Ferroelectrics 396, 49-59, 2010

16) L. Marino, E. Bruno, M.P. De Santo, F. Ciuchi, S. Marino and N. Scaramuzza: *“DIELECTRIC CHARACTERISATION OF AN ORTHOCONIC ANTIFERROELECTRIC LIQUID CRYSTAL MIXTURE”*. Molecular Crystals and Liquid Crystals 558, 120-126 (2012)

17) Y.G. Marinov, G.B. Hadjichristov, S. Marino, L. Todorova, S. D' Elia, C. Versace, N. Scaramuzza, A.G. Petrov: *“FLEXO-ELECTRIC OPTICAL BEHAVIOUR OF LAYERS FORMED BY POLYMER LIQUID-CRYSTAL PHASE SEPARATED COMPOSITES”*. Bulg. J. Phys. 39, 92–99 (2012).

18) L. Marino, A. Ionescu, S. Marino and N. Scaramuzza: *“DIELECTRIC INVESTIGATION ON A BENT-CORE LIQUID CRYSTAL”*. Journal of Applied Physics 112, 114113, (2012).

19) Y. G. Marinov, G. B. Hadjichristov, A. G. Petrov, S. Marino, C. Versace, and N. Scaramuzza: *“ELECTRO-OPTICAL RESPONSE OF POLYMER-DISPERSED LIQUID CRYSTAL SINGLE LAYERS OF LARGE NEMATIC DROPLETS ORIENTED BY RUBBED TEFLON NANOLAYERS”*. Journal of Applied Physics 113, 064301 (2013).

20) S. Palanco, S. Marino, M. Gabás, S. Bijani, L. Ayala and Jose R. Ramos-Barrado: *“MICRO AND NANOPARTICLE GENERATION DURING NANOSECOND LASER ABLATION: CORRELATION BETWEEN MASS AND OPTICAL EMISSIONS”*. Optic Express, 22-4, 3991-3999, (2014).

21) Y. G. Marinov, G. B. Hadjichristov, A. G. Petrov, S. Marino, C. Versace, and N. Scaramuzza: *“SELECTIVE AMPLITUDE-FREQUENCY ELECTRO-OPTICAL MODULATION BY POLYMER-DISPERSED LIQUID CRYSTAL FILMS ALIGNED BY TEFLON NANOLAYER”*. Compute rendus de Academie bulgare des Sciences. 66-6, 819-826, (2013).

22) G.B. Hadjichristov, I.G. Marinov, A.G. Petrov, S. Marino, C. Versace, N. Scaramuzza: *“SINGLE-LAYERED MICROSCALE PDLC FILMS FOR ELECTRO-OPTICALMODULATION OF LASER RADIATION”* Bulg. J. Phys. 40(2013) 301-306.

23) S. Palanco, S. Marino, M. Gabás, S. Bijani, L. Ayala and Jose R. Ramos-Barrado: *“PARTICLE FORMATION AND PLASMA RADIATIVE LOSSES DURING LASER ABLATION SUITABILITY OF THE SEDOV-TAYLOR SCALING”*. Optic Express, 22-13, 16552-16557, (2014).

- 24) F. Vita, K. Sparnacci, G. Panzarasa, I. F. Placentino, S. Marino, N. Scaramuzza, G. Portale, E. Di Cola, C. Ferrero, S. I. Torgova, G. Galli, M. Laus and O. Francescangeli: *“EVIDENCE OF CYBOTACTIC ORDER IN NEMATIC PHASE OF A MAIN CHAIN LIQUID CRYSTAL POLYMER WITH BENT-CORE REPEAT UNIT”*. ACS Macro, 3, 91-95, (2014).
- 25) L. Marino, A. Th. Ionescu, D. Pucci, S. Marino, E. Bruno and N. Scaramuzza: *“USE OF DIELECTRIC SPECTROSCOPY FOR EVIDENCING SUBPHASES IN AN ANTIFERROELECTRIC LIQUID CRYSTAL”*. Journal of Applied Physics, 116, 114101, (2014).
- 26) S. Marino, G. M. Joshi, A. Lusuardi, M. T. Cuberes: *“ULTRASONIC FORCE MICROSCOPY ON POLY(VINYL ALCOHOL)/SrTiO₃ NANO-PEROVSKITES HYBRID FILMS”*. Ultramicroscopy, 142, 32-39, (2014).
- 27) L. Marino, S. Marino, D. Wang, E. Bruno and N. Scaramuzza: *“NONVOLATILE MEMORY EFFECTS IN AN ORTHOCONIC SMECTIC LIQUID CRYSTAL MIXTURE DOPED WITH POLYMER-CAPPED GOLD NANOPARTICLES”*. Soft Matter, 10, 3842-3849, (2014).
- 28) S. Palanco, S. Marino, M. Gabás, L. Ayala and J. R. Ramos-Barrado: *“TAILORED SYNTHESIS OF NANOSTRUCTURES BY LASER IRRADIATION OF A PRECURSOR MICRODROPLET STREAM IN OPEN-AIR”*. Nanoscale, DOI: 10.1039/c4n204768k, (2014).
- 29) S. Marino, S. Palanco, M. Gabás, R. Romero and J. R. Ramos-Barrado: *“LASER NANO-AND MICRO-STRUCTURING OF SILICON USING A LASER-INDUCED PLASMA FOR BEAM CONDITIONING”*. Nanotechnology, 26, 055303, (2015).
- 30) Valeria Alzari, Daniele Nuvoli, Vanna Sanna, Tommaso Caruso, Salvatore Marino, and Nicola Scaramuzza: *“POLYMERIC NANOCOMPOSITES STUDY, PREPARED BY INSERTING GRAPHENE AND/OR Ag, Au AND ZnO NANOPARTICLES IN A TEGDA POLYMER MATRIX, BY THE USE OF DIELECTRIC SPECTROSCOPY”*. AIP Advancas, 6, 035005 (2016).
- 31) Lucia Marino, Nicola Scaramuzza, Salvatore Marino: *“NON-VOLATILE MEMORY EFFECT IN IRON NANOPARTICLES DISPERSED FERROELECTRIC LIQUID CRYSTAL”*. iJRDO-Journal of Applied Science, ISSN: 2455-6653, September 2019, Paper ID: 3170. Volume-5, Issue-9.

Patents:

- S. Palanco, M. Gabás, L. Ayala, Jose R. Ramos-Barrado, S. Bijani and S. Marino: *“Procedimiento y dispositivo para la producción de nanopartículas mediante irradiación láser de precursores líquidos de tamaño microscópico”* N.S: 201300740, N.P: ES2431266
- S. Palanco, S. Marino, M. Gabás, R. Romero and J. R. Ramos-Barrado: *“Nano- y Micro-Estructuración De Silicio Con Láser Usando Un Plasma Inducido Por Láser Para El Tratamiento Del Haz Láser De Procesado”*. N.S: 201401051, N.P: ES2559327

International conferences contributions:

- 1) IME-5, V International Meeting on Electrochromism, Golden, CO, USA, 2002. E. Cazzanelli, S. Marino, V. Bruno, M. Castriota, N. Scaramuzza, G. Strangi, C. Versace, R. Ceccato and G. Carturan *“Characterizations of Mixed Bi/V Oxide Films, Deposited via Sol-Gel route, used as Electrodes in Asymmetric Liquid Crystal Cells”*

- 2) The 2nd Japanese-Italian Workshop on Liquid Crystals, UST Tsu Hall, Tsu City, Mie Prefecture, Japan, September 5 – 8, 2004. Bruno V. , Marino S. , Castriota M. , Cazzanelli E. , Strangi G. , Versace C. C. , Scaramuzza N. *“Direct and Inverse Electrooptical Response in Liquid Crystal Cells Containing Oxide Thin Films”*
- 3) 8th European Conference on Liquid Crystals, Sesto (BZ), Italy, February 27 – March 4, 2005. V. Bruno, M. Castriota, S. Marino, C. Versace, G. Strangi, E. Cazzanelli, N. Scaramuzza *“Asymmetric Response to Electric Field in Nematic Liquid Crystal Cells Containing Vanadium Oxide Thin Films Prepared by Sol-Gel Synthesis”*
- 4) 7th International Meeting on Electrochromism, Istanbul, Turkey, September 03 – 07, 2006. E. Cazzanelli, M. Castriota, S. Marino, N. Scaramuzza, J. Purans, A. Kuzmin, R. Kalendarev, G. Das, G. Mariotto *“Characterization of Rhenium oxide films”*.
- 5) 13th Solid State Proton Conductors Conference, St Andrews, Scotland, UK, September 03 – 06, 2006. M. Castriota, E. Cazzanelli , G. Das, R. Kalendarev, A. Kuzmin, S. Marino, G. Mariotto, J. Purans, N. Scaramuzza, *“Proton Presence and Motion in Rhenium Oxide Films”*.
- 6) 1st International Symposium on Transparent Conductive Oxides, Crete, Greece, October 23 – 25, 2006. S. d’Elia, E. Bruno, S. Marino, C. vena, M. Castriota, M. De santo, C. Versace, E. Cazzanelli, N. Scaramuzza, *“Structural and Morphological Characterization by VASE Technique of Lead Zirconate-Titanate (PZT) Thin Films Deposited by Sol-Gel Method”*
- 7) 2nd International Symposium on Transparent Conductive Oxide, Crete, Greece, October 21-26, 2008. E. Bruno, S. Marino, M. Castriota, F. Ciuchi, E. Cazzanelli and N. Scaramuzza, *“Morphological, Electrical Investigations and Optical Properties of Lead Zirconium Titanate Thin Films Deposited on ITO and SiO₂ Substrate”*
- 8) CNR-Institute for Chemical-Physical processes-1st General Meeting 2012 (Cetraro, May 21-23, 2012). L. Marino, S. Marino, N. Scaramuzza: *“Dielectric Characterization of Gold Nanoparticles/Antiferroelectric Liquid Crystal Composites.”*
- 9) 20th International Liquid Crystal Conference, Ljubljana, Slovenia, July 4-9, 2004. S. Marino, E. Cazzanelli, V. Bruno, M. Castriota, G. Strangi, C. Versace, N. Scaramuzza *“Characterizations of Both Mixed Bi/V and Ti/V Oxide films, Deposited via Sol-Gel Route, Used as Electrode in Asymmetric Liquid Crystal Cells”*
- 10) 8th European Conference on Liquid Crystals, Sesto (BZ), Italy, February 27 – March 4, 2005. S. Marino, M. Castriota, V. Bruno, C. Versace, G. Strangi, N. Scaramuzza, E. Cazzanelli *“Characterization of Tungsten Trioxide Thin Film Deposited by Spin Coating and the Effect on Their Insertion in Liquid Crystal Cells”*
- 11) 1th International Symposium on Transparent Conductive Oxides, Crete, Greece, October 23 – 25, 2006. S. Marino, E. Bruno, M. Castriota, E. Cazzanelli, G. Strangi, C. Versace, N. Scaramuzza, *“Characterisation of PZT Thin Film on ITO Substrate Obtained by Sol-Gel Route: their Applications in Asymmetric Nematic Liquid Crystal Cells”*
- 12) 6th International European Conference on Nanostructured Polymers, ECNP conference , Madrid, Spain, 28th to 30th April, 2010. S. Marino, G. M. Joshi, N. Kumar, A. Lusuardi and M. T. Cuberes: *“ Ultrasonic Force Microscopy Investigation of SrTiO₃ embedded in a PolyVinyl Alcohol*

Matrix”

13) Broadband Dielectric Spectroscopy (BDS) and its Application 7th Conference of the International Dielectric Conference of the International Dielectric Society and 13th Conference on Dielectric & Related Phenomena. September 3 to 7, 2012, University of Leipzig, Germany. L. Marino, S. Marino, E. Bruno, N. Scaramuzza *"Dielectric characterization of gold nanoparticles/antiferroelectric liquid crystal composites"*

14) NanotechItaly 2013, 27-29 november 2013, Venezia-Italy. S. Marino, S. Palanco, M. Gabás, R. Romero, S. Bijani, L. Ayala, F. Martin, N. Scaramuzza, M. Giocondo, J. R. Ramos-Barrado: *"A novel technique for open-atmosphere nanostructuring using the interaction of a nanosecond laser pulse with a laser-induced plasma"*

15) NanotechItaly 2014, 26-28 november 2014, Venezia-Italy. S. Palanco, S. Marino, M. Gabás, F. Martin, J. R. Ramos-Barrado: *"Production of nanostructures in open air using nanosecond laser irradiation of precursor microdroplets"*