

# Curriculum Vitæ et Studiorum

## Dr. Regina Ciancio

### *Working address*

CNR-IOM, TASC Laboratory  
Area Science Park  
Basovizza S.S. 14 Km 163.5  
34149 Trieste, Italy  
Phone: +39 [REDACTED]  
Fax: +39 [REDACTED]  
e-mail: [REDACTED]

BORN: [REDACTED] CITIZENSHIP: [REDACTED] SEX: [REDACTED]

### *Education*

- 2007 PhD on Physics at University of Salerno, Italy  
(thesis defence 19<sup>th</sup> February 2007); Advisor Sandro Pace  
Thesis work: *Functional nanostructures and interfaces of strontium ruthenates single crystal*
- 2003 Physics Degree "cum laude" (full marks and honors) at University of Salerno, Italy  
Advisor Sandro Pace  
Thesis work: *Synthesis, melt-textured growth and superconducting properties of GdSr<sub>2</sub>RuCu<sub>2</sub>O<sub>x</sub>*

### *Academic career, fellowships and contracts*

- 01/2013-today Staff Research Scientist at CNR-IOM Trieste (Italy)
- 02/2009-01/2013 Research Scientist at CNR-IOM Trieste (Italy)
- 02/2007-02/2009 PostDoc Fellow at Physics Department, University of Salerno (Italy)
- 11/2008 Visiting Researcher at Instituto de Investigación de Nanociencia de Aragón, Zaragoza, Spain within the Short term mobility programme of CNR
- 2/2007-8/2007 Visiting Researcher at Microscopy and Microanalysis Group, Department of Applied Physics, Chalmers University of Technology, Göteborg (Sweden)  
Chalmers University of Technology within the research grant of the "Angelo Della Riccia Foundation"
- 04/2005-10/2006 Research fellow at Microscopy and Microanalysis Group, Department of Applied Physics, Chalmers University of Technology, Göteborg (Sweden)

### *Professional Skills*

- ⌘ High Resolution Transmission Electron Microscopy implemented by Energy Dispersive Spectroscopy (EDS) and High Angle Annular Dark Field (HAADF) Scanning TEM.
- ⌘ Sample preparation of TEM samples by standard polishing procedure, Precision Ion Polishing System and Focused Ion Beam SEM (FIB-SEM) "lift-out" technique.
- ⌘ Morphological characterization by Scanning Electron Microscopy (SEM) with EDS, Wavelength Dispersive Spectroscopy (WDS) analysis and Electron Backscatter Diffraction (EBSD) analysis.
- ⌘ Structural characterization by high resolution X-ray diffraction analysis.
- ⌘ Synthesis of polycrystalline and of oriented samples by Top Seeding Melt-textured growth.

### *Institutional responsibilities*

- ⌘ Head of the Center for Electron Microscopy at CNR-IOM (Scanning Electron Microscopy Laboratory and Transmission Electron Microscopy laboratory) at CNR-IOM (Prot. IOM-CNR N.0000082 del 25/03/2010)
- ⌘ Scientific responsible of the Task 6.2 "Development of multifunctional sample environment for in-operando applications" within EU-H2020 NFFA-Europe (Prot. IOM-CNR N. 0000668 del 03/03/2017).

- Peer Review and Science Communication Manager of NFFA-Europe from September 1 2015 (Prot. IOM-CNR N. 001070 del 29/03/2016).

#### *Participation to National/International Projects*

- Progetto PRIN 2010NR4MXA "Oxide - interfacce di ossidi: nuove proprietà emergenti, multifunzionalità e dispositivi per l'elettronica e l'energia"
- Progetto Premiale MIUR "USCEF - Proposta per l'aggiornamento delle spettroscopie del centro di microscopia elettronica" D.M. n. 973 del 25/11/2013
- Progetto Strategico "MIUR NFFA – Nanoscience Foundry and Fine Analysis" D.M. n.505 del 9/8/2012"
- "NFFA-EUROPE. nanoscience foundries and fine analysis for Europe", Research and Innovation Actions of H2020- INFRAIA-1-2014/2015 (Prog N°654360) *coordination*
- NFFA Europe Pilot"(NEP) INFRAIA-03-2020 Pilot di H2020, started on March 1st 2021 (5 years from now) *coordination*

#### *Organisation of scientific meetings*

- Chair and Organizers of the "Aldo Armigliato" SEM School in Materials Science 09/04/2019-12/04/2019, CNR-IOM - Trieste - <http://semschool.iom.cnr.it/>
- Chair and organizer of the Workshop on Combining electrons with X-rays for integrated in-operando experiments (COEX), 23-24/9/2017 - Trieste, Italy, <http://coex.iom.cnr.it/>
- Chair and organizer of the Workshop on Imaging with Femtosecond Electron and X-ray pulses (IFEXS), February 1-3 2016 Trieste, Italy, <http://ifexs.iom.cnr.it/>
- Director and Organizer of the School of Scanning Electron Microscopy on nanomaterials and innovative applications, October 11-13, 2015 Trieste, Italy, <http://semschool.iom.cnr.it/>
- Coordinator and Responsible of the interactive exhibition of physics experiments "divertiEsperimenti" of the INFN Unit of Salerno and Physics Department for the event "Scienza e Spazio" in "Quattro notti e...più di luna piena" 2004 edition – Benevento - Italy

#### *Appointments as Member of Evaluation Committees*

- Members of more than 20 Evaluation committees for Post-Doc positions at CNR-IOM
- Members of Committee: Gara d'appalto per l'aggiudicazione della fornitura di una strumentazione costituita da un microscopio di tipologia FE-SEM (Field Emission Scanning Electron Microscope) ed un microscopio ottico a super risoluzione (l'insieme dei due strumenti definito Correlative Light-Electron Microscopy, CLEM) per l'Università degli Studi di Trieste (Decreto di Nomina Commissione Gara N. 794/2019, Prot n. 79145 dell'Università degli Studi di Trieste)
- Members of Committee: Gara a procedura negoziata sotto soglia per l'affidamento della fornitura di un laser impulsato Nd:YAG per ablazione per l'Istituto CNR-IOM (Provvedimento di Nomina Commissione Gara – Prot CNR 0000818 del 15/04/2019)

#### *Mission of trust*

2014-2019 Executive Board of SISM, Società Italiana di Scienze Microscopiche  
2019-Today Vice President of SISM, Società Italiana di Scienze Microscopiche

#### *Current Research Activity*

Dr. Ciancio is currently Staff Research Scientist at CNR-IOM institute in Trieste (Italy). Her main research activity is the nanostructural characterisation on different material systems including oxide materials (grown both as single crystals and thin films), nanoparticles, nanocrystals and carbon nanotubes by High Resolution XRD, SEM and especially High resolution TEM with implemented EDS and High Angle Annular Dark Field (HAADF) Scanning TEM. She is scientific responsible of the SEM laboratory of the IOM Institute, being in charge of the training and assistance of the users and of the technological activities in support of commercial services for external users. She is direct responsible of many scientific collaboration with national (both from academia and from other Institutions) and international theoretical and experimental research groups.

Since 2009, Dr. Ciancio has been also fully involved in the activities of the NFFA Design Study EU project coordinated by CNR IOM. In particular, she has contributed to the design and planning of the basic infrastructure (cleanrooms, labs, instrumentation) characterized by nanocentres distributed over the European territory and co-located with synchrotron facilities, operating in "open access" mode and with a unified metrology. She edited the design part of the facility of high resolution microscopy and nanometrology, with particular attention to the definition of methodologies for Standards and Protocols and with a unified metrology. By being involved in a project of European competitiveness, she had the possibility to develop the capability of managing funds and most importantly to schedule the plan of the activities, to reach the ongoing goals of the project within the milestones and deliverables deadlines. She also contributed to the promotion and presentation of the project at international scientific contexts through participation to conferences and organization of meetings, workshops.

As a follow-up of the NFFA Design Study, the first NFFA Demonstrator at the Trieste site, the "NFFA-Trieste" project has been realized and funded by the Ministry of education whose purpose is to prepare the conditions for the further development of the European infrastructure. A first phase of funding made possible the establishment of a first pole of integrated services for nanoscience from growth to characterization techniques including spectroscopy with synchrotron radiation at CNR-IOM in Trieste. Within the general scientific offer, Dr. Ciancio is the contact person for access to SEM of CNR-IOM which is an integral part of the facility for characterization of NFFA-Trieste.

Dr. Ciancio also actively contributed to the preparation and writing project of NFFA-EUROPE in the framework of the Research and Innovation Action of Horizon 2020. The project approved and officially started on September 1<sup>st</sup>, 2015 involves 20 nanoscience centres distributed throughout Europe, half of which co-located with large scale facilities, operating in "open access" mode and with a single entry point to ensure an integrated lab environment for the advanced development of nanosciences from growth to atomic precision manufacturing, nanocharacterization and metrology. In addition to the access coordination to the SEM and TEM of CNR-IOM provided by WP5-TA4 Access to Nanocharacterization within Transnational Access Activities of the project, Dr. Ciancio is coordinator of a specific research activity (task 6.2) under the WP6-JRA1 Research on In-operando and high throughput methods. The research involves the design and development of a multifunctional device for in-operando experiments with TEM and spectroscopy with synchrotron radiation. In particular, the activity, which will involve five project partners, aims to manufacture micro-size cells capable of supporting variable pressure environments to enable the realization of catalytic reactions and the simultaneous analysis by using TEM and spectroscopy with synchrotron radiation of the changes induced in the sample by external stimuli.

*List of selected Publications on International Refereed Journals (chronological order)*

1. *Improved Structural Properties in Homogeneously Doped Sm<sub>0.4</sub>Ce<sub>0.6</sub>O<sub>2</sub>-delta Epitaxial Thin Films: High Doping Effect on the Electronic Bands*, N. Yang, D. Knez, G. Vinai, P. Torelli, R. Ciancio, P. Orgiani and C. Aruta. **ACS Appl. Mater. Interfaces** (2020), 12, 42, 47556–47563
2. *Unveiling Oxygen Vacancy Superstructures in Reduced Anatase Thin Films*, D. Knez, G. Drazic, SK Chaluvadi, P. Orgiani, S. Fabris, G. Panaccione, G. Rossi and R. Ciancio, *Nano Lett.* (2020), 20, 9, 6444–6451
3. *Tuning the Optical Absorption of Anatase Thin Films Across the Visible-To-Near-Infrared Spectral Region*, P. Orgiani, A. Perucchi, D. Knez, R. Ciancio, C. Bigi, S. K. Chaluvadi, J. Fujii, I. Vobornik, G. Panaccione, G. Rossi, S. Lupi and P. Di Pietro, **Phys. Rev. Appl.** 13, 044011 (2020)
4. *Distinct behavior of localized and delocalized carriers in anatase TiO<sub>2</sub> (001) during reaction with O<sub>2</sub>*, C. Bigi, Z. Tang, G.M. Pierantozzi, P. Orgiani, P.K Das, J. Fujii, I. Vobornik, T. Pincelli, A. Troglia, T.L. Lee, R. Ciancio, G. Drazic, A. Verdini, A. Regoutz, P. D. C. King, D. Biswas, G. Rossi, G. Panaccione and A. Selloni **Phys. Rev. Materials** 4, 025801 (2020)
5. *Untwinned YBa<sub>2</sub>Cu<sub>3</sub>O<sub>7</sub>-delta thin films on MgO substrates: A platform to study strain effects on the local orders in cuprates*, R. Arpaia, E. Andersson, A. Kalaboukhov, E. Schroder, E. Trabaldo; R. Ciancio, G. Drazic, P. Orgiani, T. Bauch, F. Lombardi **Phys. Rev. Materials** 3, 114804 (2019)

6. *Buried Interfaces Effects in Ionic Conductive LaF<sub>3</sub>-SrF<sub>2</sub> Multilayers*, K. Koshmak, A. Barschchikov, R. Ciancio, P. Orgiani, F. Borgatti, G. Panaccione, A. Giglia, D. Céolin, J. P. Rueff, N.S. Sokolov, and L. Pasquali, **Adv. Mater. Interfaces** 1600875 (2017)
7. *3D additive manufactured 316L components microstructural features and changes induced by working life cycles* M.L. Pace, A. Guarnaccio, P. Dolce, D. Mollica, G.P. Parisi, A. Lettino, L. Medici, V. Summa, R. Ciancio, A. Santagata, **Applied Surface Science** 418, 437-445 (2017)
8. *Layer-dependent quantum cooperation of electron and hole states in the anomalous semimetal WTe<sub>2</sub>*, P. Das, D. Di Sante, I. Vobornik, J. Fujii, T. Okuda, E. Bruyer, A. Gyenis, B. Feldman, J. Tao, R. Ciancio, G. Rossi, M. Ali, S. Picozzi, A. Yazdani, G. Panaccione and R. Cava, submitted to **Nature Communications** 7, 10847 (2016)
9. *On the reliability of powder diffraction Line Profile Analysis of plastically deformed nanocrystalline systems*, Luca Rebuffi, Andrea Troian, Regina Ciancio, Elvio Carlino, Amine Amimi, Alberto Leonardi and Paolo Scardi, **Scientific Reports** 6, 20712, 2016
10. *Chloride-based route for monodisperse Cu<sub>2</sub>ZnSnS<sub>4</sub> nanoparticles preparation*, C.L.A. Ricardo, F. Girardi, E. Cappelletto, R. D'Angelo, **R. Ciancio**, E. Carlino, P.C. Ricci, C. Malerba, A. Mittiga, R. Di Maggio, and P. Scardi, **Journal of Renewable and Sustainable Energy** 7, 043150 (2015)
11. *Modified structural and optical characteristics of Au-NPs-MWCNTs nanohybrids*, S. Mehmood, A. Naeem, S. Sabahat, **R. Ciancio**, E. Carlino, M.F. Bhopal, A.S. Bhatti, **Superlattices and Microstructures** 81, 248-264 (2015)
12. *High Tc superconductors for plasmonics and metamaterials fabrication: A preliminary normal state optical characterisation of Nd123 and Gd1212*, M. Gombos, S. Romano, I. Rendina, G. Carapella, **R. Ciancio**, and V. Mocella, (2013) **Journal of Applied Physics** 114, 083521.
13. *Evolution of nanostructures of anatase TiO<sub>2</sub> thin films grown on (001) LaAlO<sub>3</sub>*, **R. Ciancio**, A. Vittadini, A. Selloni, R. Arpaia, C. Aruta, F. Miletto Granozio, U. Scotti di Uccio, G. Rossi, E. Carlino, (2013) **J. Nanopart. Res.** 15, 1735.
14. *Magnéli-like phases in epitaxial anatase TiO<sub>2</sub> thin films*, **R. Ciancio**, E. Carlino, G. Rossi, C. Aruta, U. Scotti di Uccio, A. Vittadini, and A. Selloni, (2012) **Physical Review B** 86, 104110.
15. *Nanostructure of buried interface layers in TiO<sub>2</sub> anatase thin films grown on LaAlO<sub>3</sub> and SrTiO<sub>3</sub> substrates*, **R. Ciancio**, E. Carlino, C. Aruta, D. Maccariello, F. Miletto Granozio, U. Scotti di Uccio, (2012) **Nanoscale** 4, 91.
16. *Off-stoichiometry effect on orbital order in A-site manganites probed by x-ray absorption spectroscopy*, C. Aruta, M. Minola, A. Galdi, **R. Ciancio**, A. Yu. Petrov, N. B. Brookes, G. Ghiringhelli, L. Maritato, and P. Orgiani, (2012) **Physical Review B** 86, 115132.
17. *Growth of ultrathin epitaxial Fe/MgO spin injector on (0, 0, 1) (Ga, Mn)-As*, P. Torelli, M. Sperl, **R. Ciancio**, J. Fujii, C. Rinaldi, M. Cantoni, R. Bertacco, M. Utz, D. Bougeard, M. Soda, E. Carlino, G. Rossi, C. H. Back and G. Panaccione (2012) **Nanotechnology** 23 465202.
18. *Evidence of direct correlation between out-of-plane lattice parameter and metal-insulator transition temperature in oxygen-depleted manganite thin films*, P. Orgiani, A. Yu. Petrov, **R. Ciancio**, A. Galdi, L. Maritato, and B. A. Davidson, **Applied Physics Letters** 100, 4 042404 (2012).
19. *Electron Backscattering Diffraction and X-ray Diffraction studies of interface relationships in Sr<sub>3</sub>Ru<sub>2</sub>O<sub>7</sub>-Sr<sub>2</sub>RuO<sub>4</sub> eutectic crystals*, **R. Ciancio**, H. Pettersson, R. Fittipaldi, A. Kalabukhov, P. Orgiani, A. Vecchione, Y. Maeno, S. Pace, E. Olsson, (2011) **Micron** 42, 324-329.
20. *Multiple double-exchange mechanism by Mn<sup>2+</sup> doping in manganite compounds*, P. Orgiani, A. Galdi, C. Aruta, V. Cataudella, G. De Filippis, C. A. Perroni, V. Marigliano Ramaglia, **R. Ciancio**, N. B. Brookes, M. Moretti Sala, G. Ghiringhelli, and L. Maritato, (2010) **Physical Review B** 82, 205122.
21. *Physical properties of complex oxide thin films grown by Pulsed Laser Deposition technique*, P. Orgiani, **R. Ciancio**, A. Galdi, S. Amoruso and L. Maritato, (2010) **Applied Physics Letters** 96, 032501.
22. *Atomic structure of functional interfaces in Sr<sub>3</sub>Ru<sub>2</sub>O<sub>7</sub>-Sr<sub>2</sub>RuO<sub>4</sub> eutectic crystals*, **R. Ciancio**, H. Pettersson, J. Börjesson, S. Lopatin, R. Fittipaldi, A. Vecchione, S. Pace and E. Olsson, (2009) **Applied Physics Letters** 95, 142507.
23. *Toward intrinsic functionalities of bilayered ruthenate Sr<sub>3</sub>Ru<sub>2</sub>O<sub>7</sub>*, **R. Ciancio**, J. Börjesson, H. Pettersson, R. Fittipaldi, A. Vecchione, D. Zola, M. Polichetti, S. Pace and E. Olsson, (2009) **Physical Review B** 80, 054110.

24. *Enhanced transport properties in  $\text{La}_x\text{MnO}_{3-\delta}$  thin films epitaxially grown on  $\text{SrTiO}_3$  substrates: The profound impact of the oxygen content*, P. Orgiani, L. Aruta, **R. Ciancio**, A. Galdi, L. Maritato, (2009) *Applied Physics Letters* **95**, 013510.
25. *Superconductivity in  $\text{Sr}_2\text{RuO}_4$ - $\text{Sr}_3\text{Ru}_2\text{O}_7$  eutectic crystals*, R. Fittipaldi, A. Vecchione, **R. Ciancio**, S. Pace, M. Cuoco, D. Stornaiuolo, D. Born, F. Tafuri, E. Olsson, S. Kittaka, H. Yaguchi, Y. Maeno, (2008) *Europhysics Letters* **83**, 27007.

#### **Publications On Wide Dissemination Journals**

*Functional nanostructures and interfaces of strontium ruthenates eutectic crystals  $\text{Sr}_3\text{Ru}_2\text{O}_7$ - $\text{Sr}_2\text{RuO}_4$* , **R. Ciancio**, H. Pettersson, J. Börjesson, S. Lopatin, R. Fittipaldi, A. Vecchione, S. Pace and E. Olsson, *Microscopie* (technical-scientific journal of SISM Società Italiana di Scienze Microscopiche), March 2010 p32 (in connection with the "Carla Milanese" 2009 award). (DOI:10.4081/microscopie.2010.4968)

*Atomic structure and crystallographic shear planes in epitaxial  $\text{TiO}_2$  anatase thin films*, **R. Ciancio**, A. Vitadini, A. Selloni, C. Aruta, U. Scotti di Uccio, G. Rossi, E. Carlino, *Microscopie* (technical-scientific journal of SISM, Società Italiana di Scienze Microscopiche) September 2012. p50 (upon invitation from the Editorial Board) (DOI: 10.4081/microscopie.2012.4985).

#### **Talk at National and International Conferences**

- ✦ *Multifunctional nanoreactors for combined in-operando STEM and synchrotron spectroscopy*, Nano Innovation 2018, 11-14/9/2018, Roma (Italy)
- ✦ *Novel operando approaches for combined low voltage STEM and synchrotron spectroscopy*, MC2019 – Microscopy Congress 2019 – 1-5/9/2019 Berlin (Germany)
- ✦ *Unveiling the fine structure of catalytic  $\text{TiO}_2$  anatase thin films*, *Materials*, it 2016, December 12-16 2016, Acicastello (CT), Italy
- ✦ *Atomic structure and interface layers in thin films oxide heterostructure*, THERMEC 2016, May 29- June 3 Graz (Austria), 2016 (Invited lecture)
- ✦ *Atomic structure and interface layers in thin films oxide heterostructure*, Nanoscience & Nanotechnology 2015, INFN Frascati National Laboratory, Italy, 2015 (Invited lecture)
- ✦ *NFFA-EUROPE: An open access resource for experimental & theoretical science*, Nanoscience & Nanotechnology 2015, INFN Frascati National Laboratory, Italy, 2015 (Invited lecture)
- ✦ *Nanostructure of monodisperse CZTS nanoparticles fabricated by a novel hot injection-based approach*, MCM2015 – Multinational Conference on Microscopy, Eger (Hungary), 2015
- ✦ *TEM studies on nanocrystalline materials*, Workshop Workshop NANO – On the real structure of nanocrystalline materials: combining the power of atomistic modelling, synchrotron radiation spectroscopy and electron microscopy, University of Trento, Italy, 2014 (Invited lecture)
- ✦ *Competing Magnéli-like phases driven by substrate-induced strain in  $\text{TiO}_2$  anatase thin films* at FisMat2013, Milan (Italy), 2013
- ✦ *Anisotropic nanoscale strain in un-twinned  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$  superconducting thin films grown on (110) $\text{MgO}$  substrates*, XCIX Congresso Nazionale SIF, Trieste (Italy), 2013
- ✦ *Competing Magnéli-like phase in epitaxial  $\text{TiO}_2$  anatase thin films*, MC2013 Microscopy Congress, Regensburg (Germany), 2013
- ✦ *Atomic structure of interface layers and crystallographic shear planes in epitaxial anatase  $\text{TiO}_2$  thin films*, NANO2012-XI International Conference on Nanostructured Materials, Rodi (Grecia), 2012 (Invited lecture)
- ✦ *Nanostructure of buried interface layers in  $\text{TiO}_2$  anatase thin films grown on  $\text{LaAlO}_3$  and  $\text{SrTiO}_3$  substrates*, MCM 2011-10th Multinational Congress on Microscopy 2011, Urbino (Italia), 2011
- ✦ *Nanostructure and functionalities of the bi-layered ruthenate  $\text{Sr}_3\text{Ru}_2\text{O}_7$* , MC2009-International Microscopy Conference, Graz (Austria), 2009
- ✦ *Nanostructure and Functionalities in  $\text{Sr}_3\text{Ru}_2\text{O}_7$ - $\text{Sr}_2\text{RuO}_4$  Eutectic Crystals*, SHRI-Super and High Resolution Imaging Conference, Lipica (Slovenia), 2009

#### *Awards and Honours*

- 2011 Scholarship for young researcher to attend the MCM2011 – 11<sup>th</sup> Multinational Congress on Microscopy 2011, Urbino, Italy
- 2009 “Carla Milanesi” award from the “Società Italiana di Scienze Microscopiche, (SISM)” in connection with the oral presentation MC2009 Microscopy Conference-Graz, Austria
- 2008 Scholarship for young researchers to attend ASC08 Applied Superconductivity conference – Chicago (IL), USA
- 2006 IMC/IFSM Scholarship for young researchers to attend IMC16 International Microscopy Congress – Sapporo – Japan
- 2006 Scholarship for young researchers to attend WOE13 International Workshop on Oxide Electronics – Italy.

#### *Grants and Fellowships*

- 2008 Short-term mobility programme of CNR  
Instituto de Investigación de Nanociencia de Aragón – Zaragoza, Spain  
Research project: “In situ nano-manipulation of novel superconducting oxide materials”
- 2008 Short Visit Grant within ESF programme (THIOX)  
Instituto de Investigación de Nanociencia de Aragón – Zaragoza, Spain  
Research project: “In situ nano-manipulation of novel superconducting oxide materials: structural and physical properties”
- 2007 Short Visit Grant within ESF programme named THIOX to attend the Initiative Seminar at Chalmers University of Technology “Shaping the materials for tomorrow”
- 2007 Fondazione “Angelo Della Riccia” Grant for visit at foreign institutions – Chalmers University of Technology, Sweden  
Research project: “Nanostructures and functionalities of strontium ruthenate single and eutectic crystals”
- 2006 Swedish Institute – Stockholm – Sweden  
Grant for visit at foreign institutions – Chalmers University of Technology, Sweden  
Research project: “Nanostructures and functionalities of strontium ruthenate single and eutectic crystals”
- 2006 BLANCEFLOR Boncompagni-Lodovisi Foundation – Sweden  
Grant for visit at foreign institutions – Chalmers University of Technology, Sweden  
Research project: “Nanostructures and functionalities of strontium ruthenate single and eutectic crystals”
- 2006 “C. M. Lerici” Italian Institute – Sweden  
Grant for visit at foreign institutions – Chalmers University of Technology, Sweden  
Research project: “Nanostructures and functionalities of strontium ruthenate single and eutectic crystals”