

PROVVEDIMENTO DI NOMINA DELLA COMMISSIONE GIUDICATRICE

**PER LA PROCEDURA AI SENSI DELL' ART. 36 COMMA 2 LETTERA B) DEL D.LGS. n. 50/2016
CON MODALITÀ TELEMATICA SU PIATTAFORMA ASP CONSIP PER L'AFFIDAMENTO DI
UNA FORNITURA ED INSTALLAZIONE DI UN APPARATO DI SPETTROSCOPIA RAMAN DA
INTERFACCIARE ESTERNAMENTE A CAMERA DI DEPOSIZIONE IN ULTRA-ALTO VUOTO
ATTRAVERSO FLANGIA IN VETRO DOTATA DI TRASLAZIONE ASSIALE (RAMAN IN SITU)
CPV 33114000-2**

**CIG: 8777811EC6
CUP: B91I16000030006**

LA RESPONSABILE DI UNITÀ ORGANIZZATIVA

VISTO il provvedimento di decisione di contrattare prot. n. 0004331 del 28/05/2021, con il quale l'Istituto per la Microelettronica e Microsistemi (IMM CNR) Sede Secondaria di Agrate Brianza del Consiglio Nazionale delle Ricerche, ha disposto l'espletamento di una gara per l'affidamento di una fornitura di un "Apparato di spettroscopia Raman da interfacciare esternamente a camera di deposizione in ultra-alto vuoto attraverso flangia in vetro dotata di traslazione assiale (Raman in situ)", CPV 33114000-2, con importo a base di gara €110.000,00 IVA esclusa;

VISTO l'Art. 95 comma 6 del D.Lgs. 18 aprile 2016, n. 50 e s.m.i e dato atto che l'affidamento del singolo lotto avverrà mediante applicazione del criterio dell'offerta economicamente più vantaggiosa individuata sulla base del miglior rapporto qualità prezzo;

VISTO l'art. 77, comma 1, del D. Lgs. 50/2016 e s.m.i. e dato atto che nelle procedure di aggiudicazione di contratti di appalti o di concessioni, limitatamente ai casi di aggiudicazione con il criterio dell'offerta economicamente più vantaggiosa, la valutazione delle offerte dal punto di vista tecnico ed economico deve essere affidata ad una commissione giudicatrice, composta da esperti nello specifico settore cui afferisce l'oggetto del contratto;

VISTO il Comunicato del Presidente ANAC del 15/07/2019 di sospensione dell'operatività dell'Albo dei Commissari di gara di cui all'art. 78 del D. Lgs. 50/2016 e s.m.i., e considerato che per l'individuazione dei componenti della Commissione giudicatrice si è reso necessario valutare le professionalità rinvenibili all'interno dell'Istituto per la Microelettronica e Microsistemi (IMM CNR) Sede Secondaria di Agrate Brianza del Consiglio Nazionale delle Ricerche tra gli esperti nello specifico settore cui si riferisce l'oggetto del contratto;

CONSIDERATO che è scaduto il termine per la presentazione delle offerte, fissato alle ore 20:00 del 22/08/2021, ed è quindi possibile procedere alla nomina dei commissari nel rispetto dell'art. 77, comma 7 del D. Lgs. 50/2016 e s.m.i.;

CONSIDERATO che i commissari devono essere nominati nel rispetto delle disposizioni di cui all'art. 77, commi 4, 5 e 6, del D. Lgs. 50/2016 e s.m.i.;

PRESO ATTO della disponibilità degli interessati nel seguito indicati, dei loro curricula, nonché delle loro dichiarazioni di insussistenza di conflitto di interessi e di cause di incompatibilità, protocollo n. 0006462 del 27/08/2021, ai sensi degli artt. 42 e 77 commi 4, 5 e 6, del D. Lgs. 50/2016 e s.m.i.;

RITENUTE le competenze professionali dei soggetti individuati idonee ad effettuare la valutazione delle offerte dal punto di vista tecnico ed economico, ai sensi dell'art. 77, comma 1, del D. Lgs. 50/2016 e s.m.i.;

VALUTATA la necessità di provvedere alla nomina come indicato in oggetto;

DISPONE

- Di nominare il sottototato personale, sulla base della valutazione delle competenze ed esperienze specifiche possedute, che non ha svolto alcun'altra funzione o incarico tecnico o amministrativo relativamente al contratto del cui affidamento si tratta, in qualità di componenti della Commissione giudicatrice della gara di cui trattasi:
 - Dott. Christian Martella, Ricercatore dell'Istituto per la Microelettronica e Microsistemi (IMM CNR) Sede Secondaria di Agrate Brianza del Consiglio Nazionale delle Ricerche, in qualità di Presidente;
 - Dott. Alessio Lamperti, Tecnologo dell'Istituto per la Microelettronica e Microsistemi (IMM CNR) Sede Secondaria di Agrate Brianza del Consiglio Nazionale delle Ricerche, in qualità di Componente;
 - Dott. Carlo Grazianetti, Ricercatore dell'Istituto per la Microelettronica e Microsistemi (IMM CNR) Sede Secondaria di Agrate Brianza del Consiglio Nazionale delle Ricerche, in qualità di Componente;
- di nominare, a supporto delle attività della Commissione giudicatrice, il Segretario Dott. Davide Di Maria, dipendente del Consiglio Nazionale delle Ricerche, responsabile del procedimento della gara in oggetto, il quale possiede le competenze necessarie a svolgere tale ruolo;
- di nominare, a supporto delle attività della Commissione giudicatrice ed a supporto del Segretario della Commissione, la dipendente del Consiglio Nazionale delle Ricerche, Dott.ssa Anna Maria Luisa Grazioli (matr. 27634), la quale possiede le competenze necessarie a svolgere tale ruolo;
- di allegare, quale parte integrante del presente atto, i curricula dei 3 membri della Commissione giudicatrice, come sopra individuati, per gli adempimenti di cui all'art. 29, comma 1, del D. Lgs. 50/2016 e s.m.i.;
- di prendere atto che il presente provvedimento non comporta impegno di spesa.

**La Responsabile Unità Organizzativa
dell'Istituto per la Microelettronica e Microsistemi
Sede Secondaria di Agrate Brianza
Dott.ssa Graziella Tallarida**

CURRICULUM VITAE

Name: Christian Martella

Education

July 2009: Master Degree in Physics (Final mark 110/110) Dipartimento di Fisica, Università di Pisa, dissertation title: “Analisi a campo ottico prossimo in modulazione di polarizzazione (PM-SNOM) di campioni metallici nanostrutturati”.

2010-2013: XXV PhD course in Nanotechnology, Scuola di Dottorato “Scienze e Tecnologie per l’informazione e la conoscenza”, Dipartimento di Fisica, Università di Genova. PhD thesis: “Self-organised nanostructuring for broad-band photonic applications”.

Research Experiences

October 2010 Experiments at the ID03 beamline of the European Synchrotron Radiation Facility- ESRF di Grenoble. Experiments on Nichel nanocluster agglomeration on flat and nanostructured SiO₂ substrates

July- October 2012 Visiting Scientist at “Center of Nanometer-Scale Science and Advanced Materials (NANOSAM)” of the Jagiellonian University, Krakow (Poland). Experiments of Ion Beam nanopatterning of thin film surfaces (Au e TiO₂), Surface Enhanced Raman Scattering (SERS) and Scanning Electron Microscopy (SEM) measurements

March 2012 teaching activity “Laboratorio di Nanostrutture” University of Genova, Department of Physics. DECRETO N 1 del 04/01/2012 del direttore di Dipartimento DIFI di Genova vista la richiesta, Prot. DIFI 708 del 15/12/2011

year 2013-2015 Post-Doctoral Fellow: Università degli Studi di Genova, Dipartimento di Fisica, via Dodecaneso 33, 16146, Genova (GE), Italy. Development of self-organised nanopatterning approaches based on ion beam sputtering for photonic and plasmonic functionalization of surfaces. Morphological and optical characterization of the nanopatterned surfaces in view of photovoltaic applications.

year 2015- 2017 Post-Doctoral Fellow: Consiglio Nazionale delle Ricerche (CNR) Laboratorio MDM, IMM-CNR, via C. Olivetti 2, I-20864, Agrate Brianza (MB), Italy
Chemical Vapour Deposition growth of atomically thin transition metal dichalcogenides on patterned substrates. Morphological and optical characterization of the nanosheets. Under the project : US ARMY W911NF-14-1-0612

July 2016 experiments at the SISSI beam line of the ELETTRA Synchrotron Radiation Facility under approved proposal number 20160447. Study and Characterization of anisotropic MoS₂ nanosheets..

year 2017-2019 Post-Doctoral Fellow: Consiglio Nazionale delle Ricerche (CNR). Istituto dei Sistemi Complessi (ISC)-CNR, U.O.S. Sapienza, 00185 Roma, Laboratorio MDM, IMM-CNR, via C. Olivetti 2, I-20864, Agrate Brianza (MB), Italy. Chemical Vapour Deposition of atomically thin transition metal dichalcogenides on patterned substrates. Morphological and optical characterization of the nanosheets. Research funded by the MIUR under the PRIN 2015 Grant No 2015WTW7J3

March-October 2019: C.N.R.-IMM (Institute for Microelectronics and Microsystems, Agrate Brianza Unit) Researcher for the project “Xene Fabrication for a Two-Dimensional Nanotechnology Platform (XFab)” Ente/Istituzione finanziatrice H2020- European Research Council (ERC) Grant Agreement No. 772261

Since October 2019: C.N.R.-IMM (Institute for Microelectronics and Microsystems, Agrate Brianza Unit) Permanent Researcher

He is referee for IOP Publishing group, Royal Society of Chemistry, MDPI, Elsevier.

He was speaker in the following international conferences:

- 25th European Photovoltaic Solar Energy Conference and 6-10 September 2010, Valencia, Spain, pp. 3112 – 3116
- Nanoscale Pattern Formation at Surfaces Conference 2011, 18-22 September 2011, El Escorial, Madrid, Spain.
- Summer School on Plasmonics #2, 3-7 October 2011, Porquerolles Island, Hyeres, France.
- 27th European Photovoltaic Solar Energy Conference and Exhibition, 24-28 September 2012, Frankfurt, Germany, pp. 2706-2709,
- Nanoscale Pattern Formation at Surfaces Conference, 26-30 May 2013, Copenhagen, Danimarca.
- Plasmonica 2013, Politecnico di Milano, 01-03 July 2013, Milano.
- FisMat 2013, Politecnico di Milano, 09-13 September 2013, Milano.
- Third Mediterranean Photonics Conference, 7-9 May 2014, Trani.
- Fotonica 2014, 12-14 May 2014, Napoli.
- GraphITA 2015, 14-18 September 2015, CNR-Bologna.
- E-MRS, 2-6 May 2016, Lille, France.
- ECNF, 19-21 October 2016, Bilbao, Spain
- (Invited) ETCMOS, 28-30 May 2017, Warsaw, Poland
- MRS Fall 2017, Boston, 2 Dicembre 2017.
- Materials.it2018, Bologna, 22-26 Ottobre 2018.
- E-MRS, May 2019, Nice, France

Publications:

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- “Re-radiation Enhancement in Polarized Surface-Enhanced Resonant Raman Scattering of Randomly Oriented Molecules on Self-Organized Gold Nanowires” ACS Nano 5 (7), 5945–5956 (2011).
- Circular Dichroism in the Optical Second-Harmonic Emission of Curved Gold Metal Nanowires”, Phys. Rev. Lett., 107, 257401, (2011).
- “Nanofriction of adsorbed monolayers on superconducting Lead”, Phys. Rev. B 84, 035448 (2011).
- “Evidence of anomalous refraction of self-assembled curved gold nanowires” Appl.Phys.Lett. 100, 251109 (2012).
- “Asymmetric transmission and anomalous refraction in metal nanowires metasurface”, Journal of the European Optical Society - Rapid publications, 7 (2012).
- “Hybrid Plasmonic-Photonic Nanostructures: Gold Nanocrescents over Opals”, Advanced Optical Materials, 1: 389–396 (2013)
- “Self-organized broadband light trapping in thin film amorphous silicon solar cells”, Nanotechnology 24 (22), 225201 (2013).
- “Anomalous refraction of self-assembled gold nanowires studied by the generalized Snell's law”, Photonics Letters of Poland, 5 (2), 45-47 (2013).
- “Optical properties of biaxial nanopatterned gold plasmonic nanowired grid polarizer”, Optics Express, 21 (25), 30918 (2013).
- “SERS Enhancement and Field Confinement in Nanosensor Based on Self-Organised Gold Nanowires Produced by Ion-Beam Sputtering”, J. Phys. Chem. C, 118 (16), 8571 (2014).
- “Tailoring broadband light trapping of GaAs and Si substrates by self-organised nanopatterning”, J. Appl. Phys. 115, 194308 (2014).
- “Second Harmonic Generation Circular Dichroism from Self-Ordered Hybrid Plasmonic-Photonic Nanosurfaces”, Advanced Optical Materials, 2 (3), 207 (2014).
- “Transparent aluminum nanowire electrodes with optical and electrical anisotropic response fabricated by defocused ion beam sputtering”, Applied Surface Science, 327, 444 (2015).
- “Self-organized plasmonic metasurfaces for all-optical modulation”, Physical Review B, 91, 235440 (2015).
- “Plasmonics in Self-Organized Media”, chapter in “Encyclopedia of Nanotechnology”, Springer Netherlands publisher, Online ISBN 978-94-007-6178-0, pp 1-17 (2015)
- “Towards a uniform and large-scale deposition of MoS₂ nanosheets via sulfurization of ultra-thin Mo-based solid films”, Nanotechnology, 27 (17), 175703 (2016)

- “Engineering the Growth of MoS₂ via Atomic Layer Deposition of Molybdenum Oxide Film Precursor” *Advanced Electronic Materials* 2, 10, (2016)
- “Self-Organized Nanoscale Roughness Engineering for Broadband Light Trapping in Thin Film Solar Cells”, *Applied Sciences*, 7(4), 355 (2017)
- “Structural, chemical and optical properties of cerium dioxide film prepared by atomic layer deposition on TiN and Si substrates” *Thin Solid Films*, 636, 78 (2017)
- “Anisotropic MoS₂ Nanosheets Grown on Self-Organized Nanopatterned Substrates” *Advanced Materials*, 29, 1605785 (2017)
- ” Designer Shape Anisotropy on Transition-Metal-Dichalcogenide Nanosheets” *Advanced Materials* 2018, 1705615.
- “Electronic band structures of undoped and P-doped Si nanocrystals embedded in SiO₂” *J. Mater. Chem. C*, 2018, 6, 119-126
- “IR-Mueller matrix ellipsometry of self-assembled nanopatterned gold grid polarizer” *Applied Surface Science* 2017, 421, 728-737
- “Bonding Character and Magnetism at the Interface Between Fe and MoS₂ Nanosheets” *physica status solidi a*, 215, 1800015, 2018
- “Light scattering properties of self-organized nanostructured substrates for thin-film solar cells” *Nanotechnology* 2018, 29, 355301
- “Ultrafast Anisotropic Exciton Dynamics in Nanopatterned MoS₂ Sheets” *ACS Photonics* 2018, 5, 3363.
- “Optical Conductivity of Two-Dimensional Silicon: Evidence of Dirac Electrodynamics.” *Nano Lett.* 18, 7124–7132 (2018)
- “Embedding epitaxial (blue) phosphorene in between device-compatible functional layers.” *Nanoscale* 2019, 11, 18232–18237
- “Large-area patterning of substrate-conformal MoS₂ nano-trenches.” *Nano Res.* 2019, 12, 1851–1854.
- “High-Density Sb₂Te₃ Nanopillars Arrays by Templated, Bottom-Up MOCVD Growth.” *Small* 2019, 15, 1901743.
- “A Taxonomy of Epitaxial Single-Element 2D Materials.” *Phys. status solidi – Rapid Res. Lett.* 2020, 14, 1900439.
- “Disassembling Silicene from Native Substrate and Transferring onto an Arbitrary Target Substrate.” *Adv. Funct. Mater.* 2020, 30, 2004546.
- “Geometrical Engineering of Giant Optical Dichroism in Rippled MoS₂ Nanosheets.” *Adv. Opt. Mater.* 2020, 2001408
- “Evidence of Plasmon Enhanced Charge Transfer in Large-Area Hybrid Au–MoS₂ Metasurface.” *Adv. Opt. Mater.* 2020, 8, 2000653.
- “Thickness determination of anisotropic van der Waals crystals by raman spectroscopy: the case of black phosphorus.” *Nanotechnology* 2020, 31, 415703.
- “Changing the Electronic Polarizability of Monolayer MoS₂ by Perylene-Based Seeding Promoters.” *Adv. Mater. Interfaces* 2020, 7, 2000791.
- “Ultra-broadband photon harvesting in large-area few-layer MoS₂ nanostripe gratings.” *Nanoscale* 2020.
- “Fabrication of ordered Sb–Te and In–Ge–Te nanostructures by selective MOCVD.” *J. Phys. D: Appl. Phys.* 2020, 53, 144002.
- “Prolonged Lifetime in Nanocrystal Light-Emitting Diodes Incorporating MoS₂ -Based Conjugated Polyelectrolyte Interfacial Layer as an Alternative to PEDOT:PSS.” *ACS Appl. Electron. Mater.* 2020, 2, 1186–1192.
- “Optical Properties of Stanene-like Nanosheets on Al₂O₃ (0001): Implications for Xene Photonics.” *ACS Appl. Nano Mater.* 2021, 4, 2351–2356.
- “Stability and universal encapsulation of epitaxial Xenens.” *Faraday Discuss.* 2021, 227, 171–183.
- “Two-Dimensional Silicene–Stanene Heterostructures by Epitaxy.” *Adv. Funct. Mater.* 2021, 2102797.
- “Vapor phase epitaxy of antimonene-like nanocrystals on germanium by an MOCVD process.” *Appl. Surf. Sci.* 2021, 535, 147729.
- “Broadband and Tunable Light Harvesting in Nanorippled MoS₂ Ultrathin Films”. *ACS Appl. Mater. Interfaces* 2021, 13, 13508–13516.

- “Large-Area MOVPE Growth of Topological Insulator Bi₂Te₃ Epitaxial Layers on i-Si(111).” *Cryst. Growth Des.* 2021, 21, 4023–4029.
- “Hydrophilic Character of Single-Layer MoS₂ Grown on Ag(111).” *J. Phys. Chem. C* 2021, 125, 9479–9485.
- “Probing the Laser Ablation of Black Phosphorus by Raman Spectroscopy.” *J. Phys. Chem. C* 2021, 125, 8704–8711.
- “Tailoring the Phase in Nanoscale MoTe₂ Grown by Barrier-Assisted Chemical Vapor Deposition.” *Cryst. Growth Des.* 2021, 21, 2970–2976.
- “The Rise of the Xenos: From the Synthesis to the Integration Processes for Electronics and Photonics.” *Materials (Basel)*. 2021, 14, 4170.
- “Hybrid MoS₂/PEDOT:PSS transporting layers for interface engineering of nanoplatelet-based light-emitting diodes.” *Dalt. Trans.* 2021, 50, 9208–9214.
- “Large-area flexible nanostripe electrodes featuring plasmon hybridization engineering.” *Nano Res.* 2021, 14, 858–867.

CURRICULUM VITAE

EUROPEAN FORMAT

PERSONAL INFORMATION

Name, Surname Alessio Lamperti
Home Address
Work Address
Phone
Fax
E-mail
PEC
Personal webpage
Nationality
Birthplace and birthday

PROFESSIONAL EXPERIENCE

CNR employee: ID N. 11300

From / To December 2012 / present

Name and address of the employer National Research Council (CNR) - Institute for Microelectronics and Microsystems (IMM), Agrate Brianza Unit, Via Olivetti 2, 20864, Agrate Brianza (MB), Italy

Sector of Activity Public Body

Profile Permanent Research Engineer (*in Italian: Tecnologo*). Technological sector: support to the research. Topic: Management of scientific instrumentation and processes. (Bando n. 364/114, Prot. AMMCNT CNR n.79896 28/12/2012; Prot. AMMCNT CNR n.8704 13/02/2013; Prot. IMM CNR n.769 31/01/2013)

Main duties and responsibilities **Main research topics:**

I – Anisotropy engineering in 2D-materials (transition metal di-chalcogenides, TMDs): growth by chemical methods and characterization mainly by X-ray photoelectron spectroscopy and Raman spectroscopy; target applications in nanoelectronics, photonics, optoelectronics, catalysis.

II – structural and chemical-physics characterization of thin films and multilayers for integration as high-capacitor in Bipolar CMOS-DMOS (BCD) technology platform by X-ray scattering, X-ray photoemission spectroscopy and ion beam techniques (XRR, XRD, XPS, ToF-SIMS).

III – (1) ferromagnetic materials with perpendicular magnetic anisotropy (PMA) and (2) non-magnetic materials for integration as tunnel barrier in magnetic junctions and spin injections/filters; (3) diluted magnetic oxides (DMO). Study on the correlation between structural and chemical properties and magnetic and magneto-transport properties. Structural and chemical-physics characterization of thin films and multilayers by X-ray scattering (synchrotron light included), X-ray photoemission and ion beam techniques (XRR, XRD, XPS, ToF-SIMS, XRMS), such as: (1) ferromagnetic materials (Co, Fe, CoFe, CoFeB, Co/Ni); (2) non-magnetic materials (i.e. MgO, AlO_x); (3) diluted magnetic oxides (Fe, Ni doped ZrO₂).

IV – Study on the thermal stability in process integration for CMOS compatibility of high permittivity dielectrics or of phase change alloys, for applications as emerging non-volatile memories (TANOS, RRAM, PCM, MRAM) by X-ray scattering, X-ray photoemission and ion beam techniques (XRR, XRD, XPS, ToF-SIMS).

V – Characterization of piezoelectric materials for integration in advanced MEMS devices by X-ray scattering (mainly XRD).

The research activities are undertaken also as part of the research in the following research projects:

- Ministero Istruzione, Università e Ricerca of Italy, MIUR-PRIN aSTAR "Attosecond transient absorption and reflectivity for the study of exotic materials" (contract 2017RKWTMY) 2019-2022. – **Unit project responsible.**

- ERC CoG XFab "Xene Fabrication for a Two-Dimensional Nanotechnology Platform" (contract 772261) 2018-2023 – **Key investigator.** (Lettera incarico, Prot. IMM CNR del 30/06/2020).

- EU-H2020-ECSEL R3POWERUP "300mm Pilot Line for Smart Power and Power Discrete" (contract 737417) 2017-2021 – **Expert for WP1.**

- EU-H2020-FET-PROACTIVE SKYTOP "Skyrmion-Topological insulator and Weyl semimetal technology" (contract 824123) 2018-2022 – **Expert for WP2.**

- Research contract between CNR-IMM and ST-Microelectronics Italy 2014-present (Prot. IMM-CNR n.1192/2017 03/03/2017). – **Key person for activity on piezoelectric materials as actuators (PZT).**

- Ministero Istruzione, Università e Ricerca of Italy, MIUR-PRIN HotPlasMoS2 "Hot-electrons in self-organised plasmonic metasurfaces coupled to semiconducting MoS₂ nanosheets: Photon harvesting in 2D materials" (contract 2015WTW7J3) 2017-2020. – **Unit project responsible.**

- Regione Lombardia, Accordo Quadro Regione Lombardia-CNR, Project: "I-ZEB Verso Edifici Intelligenti a Energia Zero per la crescita della città intelligente" 2017-2019 (Decreto Reg Lombardia n.7884 del 05/08/2016). – **Responsible for activity A 2.2** (Lettera incarico, Prot. IMM CNR 2017/0006041 del 22/11/2017).

- EU-H2020-ECSEL R2POWER300 "Preparing R2 extension to 300mm for BCD Smart Power" (contract 653933) 2015-2018 – **Unit project responsible; Expert for WP1 & WP3.**

- EU-FP7 MAGWIRE "Magnetic nanowires for High Density Non Volatile Memories" (contract 257707) 2011-2014. **Expert for WP1.**

- MIUR-FIRB "Oxides at the nanoscale: multifunctionality and applications" (contract RBAP115AYN) 2012-2015. **Key investigator for growth and physical characterizations.**

- Fondazione CARIPLO, Progetto OSEA "Oxides for Spin Electronic Applications" (contract 2009-2552) 2010-2013. **Key investigator for the experimental activities.**

Main technology transfer topics

I – Characterization of piezoelectric materials for integration in advanced MEMS devices by X-ray diffraction: from research lab to fab tool measurements on 8" wafer scale. Development, establishment and continuous monitoring of a standard protocol for measure validation for process control in fab (with ST-Microelectronics, Agrate Brianza) 2014-present

II – Characterization of coatings of metal-alloys on metal electrodes for electrochemical applications by X-rays photoelectron spectroscopy (with Industrie De Nora, Milan) 2018-present

Scientific responsible

- 1 post-grad student (ref. Bando AR IMM011/2020/MB-Prot 0012814) 11-05-2020 – present. Research topic: Chemical vapour deposition growth and morphological and structural characterization of low-dimension (2D) sulfur and tellurium based dichalcogenides.

- 1 post-grad student (ref. Bando BS IMM004/2019/MB) 16-09-2019 – 10-05-2020. Research topic: Chemical vapour deposition growth and morphological and structural characterization of low-dimension (2D) sulfur and tellurium based dichalcogenides.

- 1 post-doc (ref. Bando 04_2017 ADR ISC RMSAP) 30-04-2017 – 31-03-2019. Research topic: Growth and characterization of bi-dimensional layers of MoS₂ or similar compounds grown on patterned substrates: study on anisotropy properties.

Instrumentation responsible

- Time-of-flight Secondary Ion Mass Spectrometer (ToF-SIMS) ION-TOF IV upgraded (15-12-2020 – present) [Advanced independent user] Development and definition of measurements parameters depending on the type of measurement and material under investigation. Static and dynamic mode. Spectroscopy, imaging and depth profiling.

- Ultraviolet-Visible-Near-infrared spectrophotometer (UV-VIS-NIR) Agilent Cary 5000 (01-10-2020 – present) Continuous monitoring of instrument performance; technical maintenance with support from instrument manufacturer; training to users, including PhD and Master students; scheduling of the instrument usage; writing of procedures and guidelines documents as first aid to the users.

- Facility for the synthesis by chemical vapor deposition (CVD) of transition metal dichalcogenides at low dimensionality (2D) on large scale (CVD Planartech) (01-04-2018 – present).

Definition and validation of growth processes, continuous monitoring of instrument performance; technical maintenance with support from instrument manufacturer; training to users, including PhD

and Master students; scheduling of the instrument usage; writing of procedures and guidelines documents as first aid to the users.

- Fourier transformed infrared spectrometer (FTIR) Bruker IFS 66v (01-01-2016 – present).

Continuous monitoring of instrument performance; technical maintenance with support from instrument manufacturer; training to users, including PhD and Master students; scheduling of the instrument usage; writing of procedures and guidelines documents as first aid to the users.

- X-ray photoelectron spectroscopy (XPS) PHI ESCA 5600 (01-12-2012 – present).

Continuous monitoring of instrument performance; technical maintenance with support from instrument manufacturer; training to users, including PhD and Master students (including data collection, treatment and analysis); scheduling of the instrument usage; writing of procedures and guidelines documents as first aid to the users. Performing advanced measurements and data analysis to support research (non-conductive samples, angle resolved XPS).

- Optical Laboratory (visible and UV-Raman and FTIR spectroscopies)

Co-responsibility (with 1 Senior researcher and 1 Researcher) of the lab management.

From / To	February 2020 / present
Name and address of the employer	National Research Council (CNR) - Institute for Microelectronics and Microsystems (IMM), Agrate Brianza Unit, Via Olivetti 2, 20864, Agrate Brianza (MB), Italy
Sector of Activity	Public Body
Profile	Local contact for the Lombardy Region Cluster on Sustainable and Social Communities (SCC) (https://www.clusterscclombardia.it/)
Main duties and responsibilities	Continuous monitoring of calls and actions of interest for the cluster. Participation to different working tables on the thematic of interest in the cluster.
From / To	July 2009 / present
Name and address of the employer	National Research Council (CNR) - Institute for Microelectronics and Microsystems (IMM), Agrate Brianza Unit, Via Olivetti 2, 20864, Agrate Brianza (MB), Italy
Sector of Activity	Public Body
Profile	Local community contact and questionnaire responsible for QuESTIO and Open Innovation research and innovation platform of Lombardy Region. (Identified via username and password credentials on the Open Innovation web portal: www.openinnovation.regione.lombardia.it/)
Main duties and responsibilities	Continuous monitoring of calls and actions promoted by Research and Innovation Department of Lombardy Region. Annual review and compilation of the CRTT data in the QuESTIO database.
From / To	March 2018 / present
Name and address of the employer	National Research Council (CNR) - Institute for Microelectronics and Microsystems (IMM), Agrate Brianza Unit, Via Olivetti 2, 20864, Agrate Brianza (MB), Italy
Sector of Activity	Public Body
Profile	Local contact (Referente) for the technology areas of the IMM Institute. (Lettera di incarico Direttore IMM, prot. IMM-CNR n. 1191 del 14/03/18).
Main duties and responsibilities	The main scope of the local contact network of the technological areas is the integration of the instrumentation, processes and facilities of the Institute and to coordinate the strategies of technological development. Main duties are: survey of the facility/instruments; integration of the net of instruments/facility/technique and tools of analysis; identification of the areas of technological developments (processes, apparatus, techniques of analysis,...); coordination for relevant and key acquisitions; contributing to the scientific planning of the Institute.

From / To July 2008 / December 2012

Name and address of the employer	National Research Council (CNR) - Institute for Microelectronics and Microsystems (IMM), Agrate Brianza Unit, Via Olivetti 2, 20864, Agrate Brianza (MB), Italy
Sector of Activity	Public Body
Profile	Research Scientist (fixed term contract) (Prot. AMMCNT CNR n.29776 08/05/2012; Prot. AMMCNT CNR n.45551 13/06/2011; Prot. INFM CNR n.936 29/01/2009; Prot. INFM CNR n.10993 26/06/2008)
Main duties and responsibilities	<p><u>Research project:</u> EU-FP7 MAGWIRE (contract 257707) 2011-2014: Structural and chemical-physics characterization of thin films and multilayers of ferromagnetic materials (i.e. Co, Fe, CoFe, CoFeB, Co/Ni) with perpendicular magnetic anisotropy and non-magnetic materials (i.e. MgO, AlO_x) as tunnel barriers mainly by X-ray scattering techniques (synchrotron light included) and ion beam techniques (XRR, XRD, ToF-SIMS, XRMS).</p> <p>Study on the possible correlations between structural and chemical properties and magnetic and magneto-transport properties. Study on the thermal stability in integration processes CMOS compatible.</p> <p><u>Research project:</u> Ministero Istruzione, Università e Ricerca of Italy, MIUR-FIRB (contract RBIP06YSJJ) 2008-2011. Structural and chemical-physics characterization of thin films and multilayers of oxides, binary and ternary with high permittivity, nitrides and metals for applications and integration in architectures of emerging non volatile memories (SONOS, TANOS) by X-ray scattering techniques (synchrotron light included) and ion beam techniques (XRR, XRD, ToF-SIMS).</p> <p><u>Research project:</u> EU-FP6 GOSSAMER (contract 214431) 2008-2011. Support to the activities related to the structural and chemical-physics characterization.</p> <p><u>Research project:</u> Cariplo Foundation SPAM³ (contract 2008-2363) 2009-2012. Development of a low-cost CVD-ALD apparatus for the synthesis of ferromagnetic thin films and oxides for the integration in a magnetic tunnel junction based on spin torque effect (STT-MTJ). Structural and Functional characterization of the deposited films and of the patterned structures. Support to structural and chemical-physics characterizations. Contribution to the project planning and management.</p>
From / To	June 2007 / July 2008
Name and address of the employer	National Research Council (CNR) - Institute for Microelectronics and Microsystems (IMM), Agrate Brianza Unit, Via Olivetti 2, 20864, Agrate Brianza (MB), Italy. – Prof. M. Fanciulli
Sector of Activity	Public Body
Profile	Post-Doc Fellow (<i>in Italian: Assegnista di ricerca</i>) (Prot. INFM CNR n.6699 15/04/2008)
Main duties and responsibilities	<p><u>Research Project:</u> EU-FP6 EMMA (contract 033751) 2006-2009. Structural and physical-chemical characterization on thin films and multilayers of transition metals binary oxides as emerging materials for memory architectures (i.e. resistive switch random access memory ReRAM elements) by X-ray scattering and ion beam techniques (XRR, XRD, ToF-SIMS).</p> <p><u>Research Project:</u> Cariplo Foundation SOLARIS. Hybrid atomic layer and chemical vapor deposition (ALD/CVD), structural and physical-chemical characterization on thin films and multilayers of ferromagnetic metals/oxides and binary oxides for spintronics (spin valves, magnetic tunnel junctions) by X-ray scattering and ion beam techniques (XRR, XRD, ToF-SIMS).</p>
From / To	May 2005 / June 2007
Name and address of the employer	University of Durham, Department of Physics, Condensed Matter Area, X-Ray and Magnetism Group, DH1 3LE Durham, United Kingdom – Prof. B.K. Tanner
Sector of Activity	Public Research and Educational Body
Profile	EU Marie Curie Post-Doc Fellow
Main duties and responsibilities	<u>Research Project:</u> EU Research Training Network ULTRASMOOTH (contract MRTN-CT-2003-504462). In lab and synchrotron light X-Ray scattering advanced characterization of thin films, multilayers and heterostructures for spintronics, with emphasis on AlO _x and MgO based magnetic tunnel junctions (eg. CoFeB/MgO/CoFeB).

From / To	October 2006 / January 2007
Name and address of the employer	Ruhr Universität Bochum, Experimental Physics IV – Condensed Matter Physics, D-44780 Bochum, Germany.
Sector of Activity	Public Research and Educational Body
Profile	EU Marie Curie Post-Doc Fellow
Main duties and responsibilities	<u>Research Project</u> : Secondment within the EU Research Training Network ULTRASMMOOTH (contract MRTN-CT-2003-504462). X-Ray scattering and Polarised Neutron Reflectivity (PNR) measurements on Fe/Au multilayers and Huesler alloys for spintronics. PNR measurements performed at ADAM instrument, Institut Laue Langevin, Grenoble, France.

QUALIFICATIONS

2017 – National Scientific Habilitation (*in Italian: Abilitazione Scientifica Nazionale, ASN*) for Experimental Physics of Matter (*Italian classification: SC 02/B1 Fisica sperimentale della materia, Fascia II*) – Validità: 12/04/2017 – 12/04/2023 (art.16, comma 1, Legge 240/10).

2017 – National Scientific Habilitation (*in Italian: Abilitazione Scientifica Nazionale, ASN*) for Foundation of Chemical Sciences and Inorganic Systems (*Italian classification: SC 03/B1 Fondamenti delle Scienze Chimiche e Sistemi Inorganici, Fascia II*) – Validità: 05/12/2017 – 05/12/2023 (art.16, comma 1, Legge 240/10).

2003 – Professional Practice Examination and Engineering Licence - Qualified Engineer (*in Italian: Esame di Stato per l'esercizio della professione di Ingegnere*); Politecnico di Milano (II Session 2002); mark 90/100.

EDUCATION AND TRAINING

From / To	February 2002 / March 2005
Name and type of education or training institution	Politecnico di Milano, Ph.D. (Dottorato di Ricerca) in Radiation Science e Technology. The research activity has been mainly held at the Scanning Ion Lab, The Enrico Fermi Institute, University of Chicago (Chicago, IL, USA) with short visits at the laboratory of chemical-physics analysis at the Istituto Trentino di Cultura (ITC-IRST) [now FBK] in Trento (Italy).
Main subjects and professional skills learned	Ph.D. Thesis on “FIB-SIMS, analytical technique for the study of nanoscale materials”. Analysis of nanostructures, thin films and biological tissues by nano-focused secondary ion mass spectrometry (2D surface chemical maps, compositional depth profiles). Analysis of metal-ceramic multilayers of thin films by dynamic SIMS profilometry.
Certificate o degree gained	Ph.D. (Dottorato di Ricerca) in Radiation Science e Technology. Director of the Doctorate School: Prof. M. Marseguerra – Tutor: Prof. C.E. Bottani – Scientific Supervisor: Prof. R. Levi-Setti (University of Chicago), Prof. P.M. Ossi (Politecnico di Milano).
Level of national or international classification	Ph. D., mark Excellent (cum laude) (EQF Lev.8)
List of marked exams	Methods for the Characterization of Materials - Materials of Tomorrow (held at The University of Chicago) - Energetic Beams in Surface Physics and Technology - Applications of Scattering Techniques - Radiation Sources for Medical Applications - Radiation Transport with Montecarlo methods (with Lab) - Safety Analysis of Plants with Montecarlo methods (with Lab).

From / To	September 1990 / December 2001
Name and type of education or training institution	Politecnico di Milano, Faculty of Engineering, Master Degree (Laurea) in Nuclear Engineering

Main subjects and professional skills learned	Master Thesis on “Structural and mechanical properties of Diamond Like-Carbon films synthesized by C ₂ H ₂ e CF ₄ precursors grown by plasma assisted chemical vapor deposition”.
Certificate o degree gained	Master in Nuclear Engineering (Laurea)
Level of national or international classification	Master Degree, mark: 91/100 (EQF Lev.7).
List of marked exams	Mathematical Analysis I, II, III - General Physics I, II, III - Geometry and Algebra - Technical Physics (Thermodynamics and Heat Transportation) - General Chemistry - Fundamentals of Computer Science I - Rational Mechanics - Structural Mechanics (Science of Constructions) - Theory of Systems - Electrical Engineering (Electrotechnics) - Electronics - Mechanics Applied to Machinery (Machinery and Vibrations) - Machines (Pumps, Turbines and Engines) - Business Economics and Organization - Physics of Nuclear Reactors - Nuclear Measures and Instruments - Nuclear Power Plants I - Radioactivity - Protection and Safety in Nuclear Power Plants - Atomic Physics I e II - Solid State Physics - Chemical Physics of Solid Materials (with Statistical Thermodynamics) - Technology of Nuclear Materials - Metals Science - Materials Science (with Spectroscopy Fundamentals) - Corrosion and Protection of Materials.

TRAINING HIGH-EDU SCHOOLS

2016, May 12 – PoliFab, Workshop on neuromorphic computing systems, Milan, Italy (Prot. IMM CNR n. 2084 20/04/2016)

2016, Apr 22 – PoliFab, Workshop on spintronics, Milan, Italy (Prot. IMM CNR n. 2085 20/04/2016)

2009, June 15-20 – CNR Management and Results Exploitation in Research Course, Genova, Italy - Course contents: general management, proposal management, research policy, problem solving, public awareness.

2006, July 11-15 – Ultrasmooth Summer School, Durham, United Kingdom - School contents on Spintronics and related materials. Session dedicated to Intellectual property and patenting issues within the framework of EU funded projects.

2006, February 25-March 26 – Higher European Research Course for Users of Large Experimental Systems, HERCULES 2006, Grenoble, France – 1-month school providing training for students, postdoctoral and senior scientists from European and non-European universities and laboratories, in the field of Neutron and Synchrotron Radiation for condensed matter studies (Biology, Chemistry, Physics, Materials Science, Geosciences, Industrial applications). It included lectures, practicals, tutorials, and visits of Large Facilities: ESRF, ILL in Grenoble and ELETTRA in Trieste.

Composition and strain in the near surface region of polished yttria-stabilized tetragonal polycrystalline zirconia. (Poster) - A. Lamperti, B.K. Tanner, H. Wu

2005, September 18-21 – 6th Autumn School on X-ray Scattering from Surfaces and Thin Layers, Smolenice, Slovakia – Tutorials and practicals on X-ray scattering techniques.

Interface sharpening during low temperature annealing of CoFeB TMR electrodes (Oral) - A.T.G. Pym, V. Semencova, A. Lamperti, T.P.A. Hase, B.K. Tanner, J. Wecker, T. Dimopoulos

2004, September 5-11 – Istituto Nazionale Fisica della Materia (INFN) International School on Single Molecule Biophysics, ISI Foundation, Torino, Italy – Lessons on Biophysics topics.

High Resolution Ion Microprobe Imaging of Ions in Biological Tissues. (Poster)
A. Lamperti, P. Galle, K. Gavrilov, J. Li, P.M. Ossi, C.E. Bottani, R. Levi-Setti

TRAINING ON SOFT-SKILLS

(WITH CERTIFICATION)

2021, March 2-3 – webinar (5 hours) – Unità Formazione e Welfare CNR – The european framework Cooperation in Science and technology (COST) (*Il frameowrk europeo Cooperation in Science and Technology (COST)*) – Certificate of frequency with final test (*attestato di frequenza con verifica di apprendimento, Rep. n. 002118/2021*)

2021, March 11 – webinar (1 hour) – Consortium GARR – Open Research Europe: the new platform for publishing from European Commission (*Open Research Europe: la nuova piattaforma di pubblicazione della Commissione Europea*) – Certificate of participation (*attestato di partecipazione*)

2021, February 23 – webinar (1.5 hours) – Unità Formazione e Welfare CNR – Publishing Open Access at CNR (*Pubblicare Open Access al CNR*) – Certificate of frequency with final test (*attestato di frequenza con verifica di apprendimento, Rep. n. 001940/2021*)

2020, December 01-22 – webinar series (50 hours) – Valore P.A. Edition 2019 – Scuola Nazionale dell'Amministrazione (SNA), – La comunicazione efficace. Principali temi affrontati: complessità della comunicazione nei sistemi organizzativi, strumenti di comunicazione interpersonale; la comprensione della diversità e dei modelli del mondo; tecniche dell'ascolto attivo; linguaggio non verbale; comunicazione digitale nelle sue varie piattaforme. (Level II A) – Certificate of frequency (*attestato di frequenza*)

2020, November 19, 20, 24 – webinar (2 hours) – Unità Formazione e Welfare CNR – Protect and enhance CNR research outcomes (*Tutelare e valorizzare i risultati della ricerca CNR*) Certificate of frequency with final test (*attestato di frequenza con verifica di apprendimento, Rep. n. 000690/2020*)

2020, October 15 – webinar (2 hours) – Unità Formazione e Welfare CNR – The behavior code of public employees, 3rd edition (*Il codice di comportamento dei dipendenti pubblici, terza edizione*) – Certificate of frequency with final test (*attestato di frequenza con verifica di apprendimento, Rep. n. 010301/2020*)

2020, October 5, 7, 8 – webinar series (6 hours) – Unità Formazione e Welfare CNR – Towards Horizon Europe: origin and context, missions & partnerships and deepening (*Verso Horizon Europe: genesi e contesto, missions & partnerships e approfondimenti*) – Certificate of frequency with final test (*attestato di frequenza con verifica di apprendimento, Rep. n. 009296/2020*)

2019, February – SPP-CNR and Ufficio Formazione CNR – Training on specific risks for the employers (*Formazione rischi specifici dei lavoratori*) – Certificate of frequency with final test (*attestato di frequenza con verifica di apprendimento, Rep. n. 001053/2019*)

2018, July – CALAM Centro di Formazione Professionale, Lodi (MI) – Training on STEM Teaching Lab - HANDS ON MIND: tecnologie e tecniche di didattica digitale collaborative – Certificate of frequency (*certificato di frequenza*)

2018, March June – Valore P.A. Edition 2017 – Scuola Internazionale Superiore di Studi Avanzati (SISSA) and Scuola di Formazione e Perfezionamento per la P.A. (EBIT), Milan, Italy – Conflict Management: conoscere le dinamiche di gruppo per una ottimale gestione dei conflitti attraverso la negoziazione e la cooperazione (Level II A) – Certificate of participation with final exam (*attestato di partecipazione e profitto*)

2009, June 15-20 – CNR Management and Results Exploitation in Research Course, Genova, Italy - Course contents: general management, proposal management, research policy, problem solving, public awareness – Certificate of participation (*attestato di partecipazione*)

TEACHING

Lessons at Ph.D. Courses

2018, February October – Methods of Characterization of Materials Course, Doctoral School in Materials Engineering, Milano, Italy - SIMS Fundamentals and Applications.

2014, October – Methods of Characterization of Materials Course, Doctoral School in Materials Engineering, Milano, Italy - SIMS Fundamentals and Applications.

2011, November – Structural and Compositional Analyses Course, Doctoral School in Materials Engineering, Milano, Italy - SIMS Fundamentals and Applications.

2009, October – Structural and Compositional Analyses Course, Doctoral School in Materials Engineering, Milano, Italy - DAFS: Diffraction Anomalous Fine Structure Fundamentals and Applications.

2007, December – Structural and Compositional Analyses Course, Doctoral School in Materials Engineering, Milano, Italy - Spettrometria di massa degli ioni secondary: SIMS and NanoSIMS.

2006, April – Structural and Compositional Analyses Course, Doctoral School in Materials Engineering, Milano, Italy - X-Ray Reflectivity: theory, experiments and simulations.

2005, October – Applications of Scattering Techniques Course, Doctoral School in Radiation Science and Technology, Milano, Italy - X-Ray Reflectivity: theory, experiments and simulations.

2004, November – Structural and Compositional Analyses Course, Doctoral School in Materials Engineering, Milano, Italy - Basics of Secondary Ion Mass Spectrometry (SIMS): theory and

applications.

2004, February – Chemical and Compositional Analyses Course, Doctoral School for Materials Engineering, Milano, Italy - High lateral resolved SIMS.

2002, December – Electronic Spectroscopies and Compositional Analyses Course, Doctoral School for Materials Engineering, Milano, Italy - FIB-SIMS: theory and applications.

Lessons at Master Classes

2007, Jan-Mar – “New Skills in Physics” Laboratory demonstrator to Physics Undergraduate Students at University of Durham, Durham, United Kingdom.

2006, Jan-Mar – “New Skills in Physics” Laboratory demonstrator to Physics Undergraduate Students at University of Durham, Durham, United Kingdom.

2005, Oct – “XRR Theory, experiments and simulations” lecture in the framework of the course “Plasma Physics and Technology” to final year students at Politecnico di Milano, Milan, Italy.

Teaching in Professional High Schools

From 2010: Fixed term contract Teacher (*in Italian: rapporto occasionale*) at ASLAM – Cooperativa Sociale, at Magenta (MI) & S. Macario (VA) locations, Italy, High School of Professional Education, course in Mechanical Operator, Thermohydraulic Operator, course in Technician of Energy Plants, course in Refrigerator Technician (Lombardia Plus), course in Technician of Meccatronics (IFTS).

Final Examination in Professional High Schools (*in Italian: DDIF - Prove di Accertamento finale*)

a.f. 2020-2021, Presidente della Commissione Esaminatrice presso Istituto scolastico o formativo CIOFS - CENTRO ITALIANO OPERE FEMMINILI SALESIANE, Via M. Montessori 6, Castellanza (VA), Tel. 0331503107 per i percorsi: 17473 - Tecnico commerciale delle vendite-Vendita assistita; 17476, 19702 - Tecnico dei servizi di impresa-Amministrazione e contabilità; 17480, 19425, 19426, 19650, 19845 - Tecnico dei servizi di sala bar; 19574, 19577, 17290 - Operatore ai servizi di vendita; 17236, 19540 - Operatore amministrativo-segretariale-Informatica gestionale; 17265 - Operatore della ristorazione-Servizi di sala e bar. *Prot. Reg. Lomb. E1.2021.0161285 del 10/06/2021 10:37.*

a.f. 2018-2019, Presidente della Commissione Esaminatrice presso Istituto scolastico o formativo IAL INNOVAZIONE APPRENDIMENTO LAVORO LOMBARDIA S.R.L. IMPRESA SOCIALE, Via C. Marx 1, 21047 Saronno (VA), Tel: 02/252011317, per i percorsi: 2417, 2780, 2767 - Operatore alla riparazione di veicoli a motore Riparazioni parti e sistemi meccanici ed elettromeccanici del veicolo; 307, 2800 - Tecnico riparatore dei veicoli a motore. *Prot. Reg. Lomb. E1.2019.0239937 del 28/05/2019 16:04 e Prot. Reg. Lomb. E1.2019.0239978 del 28/05/2019 16:05.*

a.f. 2016-2017, Presidente della Commissione Esaminatrice presso Istituto scolastico o formativo FONDAZIONE ENAIP LOMBARDIA, Via Uberti 44, 21100 VARESE (VA), Tel: 0332/802811, (sessione suppletiva) per i percorsi: 166566, 166631 - Operatore grafico - Stampa e allestimento. *Prot. Reg. Lomb. E1.2017.0371037 del 09/08/2017 12:15.*

a.f. 2016-2017, Presidente della Commissione Esaminatrice presso Istituto scolastico o formativo FONDAZIONE ENAIP LOMBARDIA, Via Uberti 44, 21100 VARESE (VA), Tel: 0332/802811, per i percorsi: 170822, 170828 - Operatore edile; 156763 - Operatore grafico - Stampa e allestimento. *Prot. Reg. Lomb. E1.2017.0244217 del 24/05/2017 16:33.*

Seminars

2019, July – Politecnico di Milano, Department of Energy, NanoLab Talk Series
Extended MoS₂ monolayer growth using chemical vapor deposition on flat and patterned substrates

2007, January – Experimental Physics IV, Condensed Matter Physics, Bochum, Germany
Interface stability in magnetic heterostructures with oxide interlayers.

2003, January – Istituto Trentino di Cultura – Istituto per la Ricerca Scientifica e Tecnologica, Trento, Italy

FIB-SIMS: “chemical” analysis at nano scale.

Thesis Supervision

2020, July – Master Thesis in Materials Engineering and Nanotechnology, Politecnico di Milano, Milano, Italy (*Supervisor*)

“Study on 2D MoTe₂ from mechanical exfoliation and CVD growth”

2019, July – Master Thesis in Materials Engineering and Nanotechnology, Politecnico di Milano, Milano, Italy (*Supervisor*)

“Large area growth of MoS₂ nanosheets by chemical vapor deposition”

2010, April – Master Thesis in Nuclear Engineering, Politecnico di Milano, Milano, Italy
(*Correlatore*)

“Sulla struttura di film di Zirconia stabilizzata irraggiati in regime di collisioni inelastiche”.

BOARD MEMBERSHIP

Tutoring

2006-2007, University of Durham, Durham, United Kingdom

Pastoral tutor service to undergraduate students at Grey College, University of Durham.

2000-2002, Politecnico di Milano, Milano, Italy

Supervision, coordination and support of tutor activities to undergraduate students.

1998-2000, Politecnico di Milano, Milano, Italy

Tutor in General Mathematics, Physics and Chemistry to freshman (1st year undergraduate) students.

Editorial member of scientific publications

2020, June, Member of the editorial board of MDPI Coatings.

Recruiting evaluation

2020, Member of the board of evaluators (*in Italian Commissione esaminatrice*) related to recruitment Bando N. AR IMM011/2020/MB (Prot. CNR-AMMCEN n. 0012814 15/02/2020).

2019, Member of the board of evaluators (*in Italian Commissione esaminatrice*) related to recruitment Bando N. BS IMM004/2019/MB (Prot. IMM CNR n. 4598 08/08/2019).

2019, Member of the board of evaluators (*in Italian Commissione esaminatrice*) related to recruitment Bando N. AR IMM013/2019/MB (Prot. IMM CNR n. 3336 11/06/2019).

2019, Member of the board of evaluators (*in Italian Commissione esaminatrice*) related to recruitment Bando n. 380.2 IMM RIC (Prot. IMM CNR n. 167 16/01/2019).

2018, Substitute Member of the board of evaluators (*in Italian Commissione esaminatrice*) related to recruitment Bando n. 380.1 IMM RIC (Prot. IMM CNR n. 5928 12/12/2018).

2018, Substitute member of the board of evaluators (*in Italian Commissione esaminatrice*) related to recruitment Bando n. AR IMM007/2018/MB (Prot. IMM CNR n. 5832 20/11/2018)

2017, Member of the board of evaluators (*in Italian Commissione esaminatrice*) related to recruitment Bando n. 04/2017 ADR ISC RMSAP (Prot. CNR AMMCEN n. 21001 27/03/2017).

2015, Substitute member of the board of evaluators (*in Italian Commissione esaminatrice*) related to recruitment Bando n. AR IMM002/2015/MB (Prot. IMM CNR n. 1575 09/03/2015).

2014, Member of the board of evaluators (*in Italian Commissione esaminatrice*) related to recruitment Bando n. IMM/05/2014/MB (Prot. IMM CNR n. 7133 22/09/2014).

2013, Substitute member of the board of evaluators (*in Italian Commissione esaminatrice*) related to recruitment Bando n. IMM/03/2013/MB (Prot. IMM CNR n. 7656 01/10/2013).

Technical commissions

2017, Member of the board of evaluators (*in Italian Commissione giudicatrice*) related to negotiation n. CIG 7251615DFE (Prot. IMM CNR n. 5558 30/10/2017).

REVIEWING

Project evaluation

2020 – TACR Technology Agency of Czech Republic – Programme KAPPA – Expert Opponent.

2020 – UE-FISCDI Romanian Executive Agency for Higher Education, Research, Development and Innovation Funding – Calls: PN-III-P1-1.1-TE-2019; PN-III-P1-1.1-PD-2019; PN-III-P2-2.1-PED-2019 External Expert Evaluator and Rapporteur.

2017 – NFFA-Trieste Continuous Call - External Independent Reviewer.

2016 – UE-FISCDI Romanian Executive Agency for Higher Education, Research, Development and Innovation Funding – Call: PN-III-P2- 2.1-PED 2016 External Expert Evaluator and Rapporteur.

2016 – COST Call OC-2016-1 External Independent Reviewer and Rapporteur.

2014 – Romanian RDI National Strategy 2014-2020 Domains External Expert Evaluator.

2013 – Romanian PCCA 2013 External Expert Evaluator.

Scientific Reviewer (peer-review process)

From 2003: Scientific Reviewer (peer-review process) for the following publishers/journals:

AIP: Applied Physics Letters, Journal of Applied Physics, APL Materials, Journal of Vacuum Science and Technology A & B, Physical Chemistry Chemical Physics

ACS: Chemistry of Materials, Applied Materials and Interfaces, Crystal Growth and Design, Omega, Journal of Advanced Oxidation Technologies

APS: Physical Review Letters, Physical Review B, Physical Review X, Physical Review Accelerators and Beams, Physical Review Applied

Beilstein: Beilstein Journal of Nanotechnology
ECS: Journal of the Electrochemical Society, ECS Journal of Solid State Science
Elsevier: Applied Surface Science, Surface Coatings and Technology, Thin Solid Films, Microelectronic Engineering, Journal of Alloy and Compounds, Journal of Magnetism and Magnetic Materials, Journal of Crystal Growth, Materials Science and Engineering B, Materials Science in Semiconductor Processing, Journal of Nuclear Materials, Superlattices and Microstructure, Journal of Zhejiang University Science A (Applied Physics & Engineering), International Conference on Metallurgical Coatings and Thin Films
IEEE: IEEE Transactions on Magnetics
MDPI: Applied Sciences, Coatings, Crystals, Electronic Materials, Materials, Nanomaterials, Surfaces
NPG: Asia Materials
RSC: RSC Advances, Journal of Materials Chemistry C, Nanoscale
Springer: Applied Physics B, Friction
Taylor&Francis: Philosophical Magazine
Wiley: Advanced Materials, Physica Status Solidi A, Physica Status Solidi B, Physica Status Solidi Rapid Research Letters, Surface and Interface Analysis

CONFERENCE, SYMPOSIA, WORKSHOP ORGANIZATION

2014 – AIV XXII Conference - From Evangelista Torricelli to Andre Geim: conceptual architectures for Ambient, Energy, Healthcare – Symposium: Innovative Materials for Microelectronics and Sensors. Symposium Organizer and Conference Scientific Committee member.

2007 – Workshop on Smoothing and Characterization of Magnetic Films for Advanced Devices, July 4 - 6, 2007, Faculty of Physics and Applied Computer Science, AGH - University of Science and Technology Krakow, Poland. Scientific Program Committee member.

RESEARCH PROJECT PLANNING AND MANAGEMENT

2009 - Contribution to the preparation of the project “Oxides for Spin Electronic Applications” (OSEA) submitted under the CARIPLLO Foundation call on Advanced Materials 2009 – Project duration: 30 months – Granted – Starting date 01 April 2010.

2008 - Contribution to the preparation and to the project management of the national project “Spin Polarized Advanced Materials for Magnetic Memories” (SPAM3) submitted under the CARIPLLO Foundation call on Advanced Materials 2008 – Project duration: 24 months – Granted – Starting date 01 February 2009.

ADMINISTRATIVE

2013-2015 – Responsible for Procedures (*in Italian Responsabile del Procedimento, RUP*) for the fulfillments required by the Italian Public Authority for the Public Contracts. (Prot. IMM CNR 560 23/01/2013)

10/06/2013 IMM Bologna (Italy) – Formation day on RUP role and responsibilities (Teacher Avv. Vittorio Miniero) (Prot. IMM CNR 4743 10/06/2013).

RESEARCH AT LARGE FACILITIES

Synchrotron light sources

Each of the following proposal has been subjected to peer-review, selection and ranking to be approved and assigned to beamtime.

20/02/2017-23/02/2017 HZB BESSY, UE46_PGM-1/High-Field Diffractometer beamline, Proposal number 16204394-ST/R: Magnetism in Fe doped Zirconia thin films.

09/01/2017-15/01/2017 HZB BESSY, UE46_PGM-1/High-Field Diffractometer beamline, Proposal number 16204394-ST/R: Magnetism in Fe doped Zirconia thin films.

15/10/2013-25/10/2013 ELETTRA, VUV Photoemission Beam line, Proposal number 20130063: Band structure identification in hexagonal silicon nanosheets on MoS₂.

19/09/2013-25/09/2013 ELETTRA, APE Beamline, Proposal number 20130304: Room temperature magnetism of Fe doped Zirconia thin films.

14 Mar 2014-18 Mar 2014 ESRF, Beam line BM-02, Experiment Number MA-2234: Evaluation of crystallographic ordering in atomic layer deposited Al₂O₃ layers for application in micro electro-mechanical systems.

08/06/2011-13/06/2011 ESRF, Beam line BM-28, Experiment Number SI-2237: X-ray reflectivity measurements to study the interface stability in MgO-based magnetic tunnel junctions upon in-situ annealing.

02/03/2011-07/03/2011 ESRF, Beam line BM-28, Experiment Number MA-1203: Phase identification and quantification in Er-doped HfO₂ and La-doped ZrO₂ thin films by high resolution grazing incidence X-ray diffraction

23/02/2011-28/02/2011 ESRF, Beam line ID-31, Experiment Number MA-1185: Identification of the crystallographic structure of Yttria Fully Stabilized Zirconia after irradiation with GeV Uranium ions.

23/04/2010-27/04/2010 ESRF, Beam line BM-2, Experiment Number MA-1052: Phase identification in pure and rare earths (La, Er) doped ZrO₂ and HfO₂ thin films by high resolution grazing incidence X-ray diffraction.

13/02/2007-19/02/2007 ESRF, Beam line BM-2, Experiment Number 02 02 685: Structural and chemical characterisation at the interfaces in metal/nitride multilayers by Diffraction Anomalous Fine Structure (DAFS).

25/01/2007-30/01/2007 ESRF, Beam line BM-28, Experiment Number SI 1440: Strain dependence in Fe/Cr/Fe at varying temperature and in magnetic field with Grazing Incidence X-ray Diffraction (GIXRD).

28/06/2006-04/07/2006 ESRF, Beam line ID-31, Experiment Number MA 48: Nucleation and annealing kinetics of the monoclinic phase in the near surface region of yttria-stabilized zirconia.

08/03/2006-13/03/2006 ESRF, Beam line BM-28, Experiment Number SI 1349: Variable Energy Reflectivity from magnetic tunnel junctions.

04/12/2005-11/12/2005 SRS Daresbury, Station 2.3 Experiment Number 44217: X-ray reflectivity under annealing of CoFeB/MgO based magnetic tunnel junctions.

20/09/2005-27/09/2005 SRS Daresbury, Station 2.3 Experiment Number 44215: X-ray reflectivity under annealing of CoFeB/AlOx based magnetic tunnel junctions.

06/07/2005-11/07/2005 ESRF, Beam line ID-31, Experiment Number ME 1153: Strain and the nucleation of the monoclinic phase in the near-surface region of yttria-stabilized zirconia.

Neutron sources

16/05/2011-18/05/2011 ILL, Instrument: D17, Experiment Number 5-23-622: Identification of hydrogenated phases at Fe/MgO and Fe₃O₄/MgO thin films by neutron reflectivity.

01/12/2006-11/12/2006 ILL, Instrument: ADAM, Proposal Number 7-09-158: Polarised Neutron Reflectivity of Huesler alloys at varying temperature and in remanent and saturation magnetic fields.

LANGUAGE PROFICIENCY

Understanding				Speaking				Writing	
Listening		Reading		Spoken interaction		Spoken production			
IT	C2	IT	C2	IT	C2	IT	C2	IT	C2
EN	C2	EN	C2	EN	C1	IT	C2	EN	C2
FR	B2	FR	B1	FR	B1	FR	B1	FR	B1
CZ	A1	CZ	A1	CZ	A1	CZ	A1	CZ	A1

According to the Common European Framework of Reference for Languages

Italian: mother tongue

PERSONAL SKILLS

Excellent communication skills gained at: (i) the professional activity in many international working groups and meetings in Agrate Brianza (MB), Durham (UK), Chicago (USA), Bochum (Germany); (ii) the participation at scientific symposia and conferences and research program meetings at national and international level.

Excellent management and planning skills in the preparation of presentations and in the coordinations of the activities gained at: (i) the professional activity in many international working groups and meetings in Agrate Brianza (MB), Durham (UK), Chicago (USA), Bochum (Germany); (ii) the participation at meeting of European collaborative projects; (iii) the organization and participation at scientific symposia and meetings; (iv) the organization and participation at research program meetings at national and international level.

Ability to work autonomously and responsibility in the techniques for scientific investigations in the fields and topics mentioned above, including the capability to perform instrument maintenance. Knowledge of the good skills of working in a clean room environment.

IT skills: Software programs for simulation, data fitting, data refinement; SRIM (Range of Ion Implantation) - Bede REFS (X-Ray Reflectivity) - MAUD (X-Ray Reflectivity and Diffraction) - Polar (Polarised Neutron Reflectivity) - FullProf (X-Ray Diffraction Rietveld refinement). Software programs for data analysis: Indx – Celref – Easyplot – Peakfit - Microcal Origin – Kaleidagraph. OS: DOS, MS-Windows, Linux (Ubuntu); MS-Office, Adobe Illustrator, Adobe Photoshop, Jasc; Paint Shop Pro, ImageJ, OpenShot or equivalent (es. Inkscape, Gimp2). Good knowledge of

Networking.

Other skills: Photography (analog and digital), Video editing

PERSONAL INTERESTS

Reading: in particular books on Historical Romance and Essay, Detective Story, Mystery and Fantasy

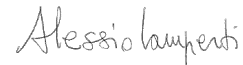
Sports: watching many sports disciplines, in particular Volleyball, Soccer, Motors, Fencing, Handball. I am active supporter of the female Volleyball team in my city.

Animals: I own a dog and I participate in educational and apprentice dog classes. I am also interested in studies on canine breed origins, character and behavior, in particular of Pyrenean Shepherd breed.

BIBLIOMETRIC IDENTIFIERS

ORCID ID: orcid.org/0000-0003-2061-2963
Scopus Author ID: 56273561100

ResearcherID: B-5637-2015
Google Scholar ID: yncGdt0AAAAJ

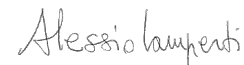


Dated 05 July 2021

Signed Alessio Lamperti

ITALIAN PRIVACY LAW & GDPR (UE REG. 2016/679)

Dichiaro che le informazioni riportate nel presente *Curriculum Vitae* sono esatte e veritiere.
Dichiaro di essere consapevole di quanto comporta l'affermazione della veridicità di quanto sopra rappresentato e di essere a conoscenza delle sanzioni penali di cui all'art.76 del Decreto del Presidente della Repubblica del 28/12/2000, n.445 "Testo unico delle disposizioni legislative e regolamentari in materia di documentazione amministrativa" ed in particolare di quanto previsto dall'art.495 del Codice Penale in caso di dichiarazioni mendaci o di false attestazioni.
Quanto sopra viene presentato sotto forma di autocertificazione (dichiarazione sostitutiva di certificazione e dichiarazione sostitutiva di atto di proprietà) ai sensi degli artt.19, 46 e 47 del Decreto del Presidente della Repubblica del 28/12/2000, n.445.
Autorizzo il trattamento dei miei dati personali, ai sensi e per gli effetti dell'art.13 del Decreto Legislativo 30 giugno 2003, n. 196 "Codice in materia di protezione dei dati personali", e dell'art. 13 del GDPR (Regolamento UE 2016/679).



Dated 05 July 2021

Signed Alessio Lamperti

CARLO GRAZIANETTI

Curriculum vitae

POSIZIONE ATTUALE

30 Settembre 2019 – in corso

Ricercatore III livello (TI) presso CNR IMM unità di Agrate Brianza.

POSIZIONI PRECEDENTI

1 Febbraio 2019 – 29 Settembre 2019

Ricercatore III livello (TD) presso CNR IMM unità di Agrate Brianza (Bando N. 380.1 IMM RIC).

27 Gennaio 2014 – 31 Gennaio 2019

Assegnista di Ricerca presso CNR IMM unità di Agrate Brianza (Bando N. AR IMM028/2013/MB Prot. 10064 - 9/12/2013)

EDUCAZIONE

- 2014 Ph.D. in Nanostructures and Nanotechnologies presso Dipartimento di Scienza dei Materiali dell'Università di Milano Bicocca (XXVI ciclo)
Titolo della tesi: “Scanning tunneling microscopy investigation of III-V compound semiconductors and novel 2D nanolattices”
Tutor: Prof. Marco Fanciulli
Co-tutor: Dr. Alessandro Molle
- 2009 Laurea Magistrale in Ingegneria Fisica presso Politecnico di Milano
Titolo della tesi: “Microscopia a scansione a effetto tunnel di film sottili di CoO cresciuti su Fe(001)”
Tutor: Prof. Alberto Brambilla
- 2007 Laurea Magistrale in Ingegneria Fisica presso Politecnico di Milano
Titolo della tesi: “Annullamento della resistività nei materiali superconduttori ed effetto del campo magnetico”
Tutor: Prof. Ermanno Pinotti

INDICI BIBLIOMETRICI

ISI WOS (2021): *h*-index=17 Cit.=2492

Scopus (2021): *h*-index=17 Cit.=2620

Google Scholar (2021): *h*-index=17 Cit.=3101

ELENCO DI 10 PUBBLICAZIONI SCELTE (* = corresponding author)

- [1] **C. Grazianetti**, E. Bonaventura, C. Martella, A. Molle, and S. Lupi, “Optical Properties of Stanene-like Nanosheets on Al₂O₃(0001): Implications for Xene Photonics”, *ACS Appl. Nano Mater.* 4, 2351 (2021), DOI: 10.1021/acsnm.0c03221;
- [2] **C. Grazianetti**, C. Martella, and A. Molle, “The Xenos Generations: A Taxonomy of Epitaxial Single-Element 2D Materials”, *Phys. Status Solidi RRL* 14, 1900439 (2020), DOI: 10.1002/pssr.201900439;
- [3] **C. Grazianetti***, G. Faraone, C. Martella, E. Bonera, and A. Molle, “Embedding epitaxial (blue) phosphorene in between device-compatible functional layers”, *Nanoscale* 11, 18232 (2019), DOI: 10.1039/C9NR06037E;
- [4] **C. Grazianetti**, S. De Rosa, C. Martella, P. Targa, D. Codegoni, P. Gori, O. Pulci, A. Molle, and S. Lupi, “Optical Conductivity of Two-Dimensional Silicon: Evidence of Dirac Electrodynamics”, *Nano Lett.* 18, 7124 (2018), DOI: 10.1021/acs.nanolett.8b03169;
- [5] A. Molle, **C. Grazianetti***, L. Tao, D. Taneja, M. H. Alam, and D. Akinwande, “Silicene, silicene derivatives, and their device applications”, *Chem. Soc. Rev.* 47, 6370 (2018), DOI: 10.1039/C8CS00338F;
- [6] **C. Grazianetti**, E. Cinquanta, L. Tao, P. De Padova, C. Quaresima, C. Ottaviani, D. Akinwande, and A. Molle, “Silicon nanosheets: crossover between multilayer silicene and diamond-like phase”, *ACS Nano* 11, 3376 (2017), DOI: 10.1021/acsnano.7b00762;
- [7] **C. Grazianetti***, E. Cinquanta, and A. Molle, “Two-dimensional silicon: the advent of silicene”, *2D Mater.* 3, 012001 (2016), DOI: 10.1088/2053-1583/3/1/012001;
- [8] L. Tao, E. Cinquanta, D. Chiappe, **C. Grazianetti**, M. Fanciulli, M. Dubey, A. Molle, and D. Akinwande, “Silicene field-effect transistors operating at room temperature”, *Nature Nanotech.* 10, 227 (2015), DOI: 10.1038/nnano.2014.325;
- [9] D. Chiappe, E. Scalise, E. Cinquanta, **C. Grazianetti**, B. van den Broek, M. Fanciulli, M. Houssa, and A. Molle, “Two-Dimensional Si Nanosheets with Local Hexagonal Structure on a MoS₂ Surface”, *Adv. Mater.* 26, 2096 (2014), DOI: 10.1002/adma.201304783;
- [10] E. Cinquanta, E. Scalise, D. Chiappe, **C. Grazianetti**, B. van den Broek, M. Houssa, M. Fanciulli, and A. Molle, “Getting through the nature of silicene: A sp²-sp³ two-dimensional silicon nanosheet”, *J. Phys. Chem. C* 117, 16719 (2013), DOI: 10.1021/jp405642g;

BREVETTI

- [1] D. Akinwande, L. Tao, **C. Grazianetti**, A. Molle, “Integration of air-sensitive two-dimensional materials on arbitrary substrates for the manufacturing of electronic devices”, US Patent US10242884B2.

ATTIVITÀ EDITORIALI

- [1] Co-editor del libro monografico “Xenes: 2D Synthetic Materials Beyond Graphene” (Elsevier) (uscita prevista nel 2022);
- [2] Guest-editor della special issue “Synthesis and Advanced Characterization of Low-dimensional and Quantum Materials” all’interno del giornale *Materials* (MDPI).

PROGETTI

[1] ERC Consolidator Grant: Xene Fabrication for a Two-Dimensional Nanotechnology Platform (XFab) in H2020 - European Research Council (ERC). Ruolo: key-investigator. Budget: 1.998.785 € (5 anni). Principal Investigator: Dr. Alessandro Molle.

[2] Silicene field effect transistors (SFET) in CNR - Ufficio Relazioni Internazionali bando "Laboratori Congiunti". Ruolo: key-investigator. Budget: 150.000 € (3 anni). Principal Investigator: Dr. Alessandro Molle.

[3] Two-Dimensional Crystals for a Quantum Spin Hall Insulator Electronics (CrystEL) in Fondazione Cariplo – Regione Lombardia. Ruolo: key-investigator. Budget: 96.804 € (2 anni). Principal Investigator: Dr. Alessandro Molle.

[4] 2D Nanolattices (Strongly anisotropic Graphite-like semiconductor/dielectric 2D nanolattices) in EU Call FP7-ICT-2009-C - FET open. Ruolo: key-investigator. Budget: 365.415 € (3 anni). Principal Investigator: Dr. Athanasios Dimoulas.

INVITI A CONFERENZE NAZIONALI ED INTERNAZIONALI

[1] C. Grazianetti, “Silicene and The X-enes: New Routes for 2D Materials-based Electronics and Photonics”, IEEE NMDC, virtuale, 26-27 Ottobre 2020;

[2] C. Grazianetti, “Silicene and the X-enes for a new nanotechnology platform”, NanoInnovation2019, Roma, Italia, 11-14 Giugno 2019;

[3] C. Grazianetti, “Molecular beam epitaxy of X-enes for a two-dimensional nanotechnology platform”, PDI Topical Workshop on 2D Materials Grown by MBE, Berlino, Germania, 8-9 Aprile 2019;

[4] C. Grazianetti e A. Molle, “The route to Xene transistors: from silicene to phosphorene”, 104° congress nazionale Società Italiana di Fisica, Cosenza, Italia, 17-21 Settembre 2018;

[5] C. Grazianetti, “Silicene: a new emerging two-dimensional material for nanoelectronics”, Functional properties of two-dimensional nanostructured materials – WOG Symposium, Leuven, Belgio, 6 Ottobre 2016.

Borgo Ticino (No), 24 Agosto 2021

Carlo Grazianetti, Ph.D.

