

Curriculum vitae di **Roberto Nisticò**

Sottosettori ERC primari (max 3): *PE5_6 New materials: oxides, alloys, composite, organic-inorganic hybrid, nanoparticles; PE5_2 Solid state materials chemistry; PE11_9 Nanomaterials engineering, e.g. nanoparticles, nanoporous materials, 1D & 2D nanomaterials.*

Eventuali sottosettori ERC secondari (max 3): *PE11_7 Engineering of metal oxides; PE11_3 Engineering of ceramics and glasses; PE4_17 Characterisation methods of materials.*

PERSONAL DETAILS

Family name, First name: Nisticò, Roberto

Birthdate: 04/04/1987

Researcher unique identifier(s): Scopus Author ID: 55224717100; WOS Researcher ID: E-5568-2016; ORCID: 0000-0001-8986-5542

URL for web site: <https://en.unimib.it/roberto-nistico>; [Roberto Nisticò \(researchgate.net\)](https://www.researchgate.net/profile/Roberto-Nisticò)

• **Education and key qualifications**

- 19/01/2015 PhD in Chemical and Materials Sciences
Department of Chemistry, University of Torino, Italy
Supervisor: Prof. Giuliana Magnacca
- 2011 Professional Certification as Chemist (sect. A)
Order of Chemists of Piemonte and Valle d'Aosta, Italy
- 2011 MSc in Industrial Chemistry
Department of Chemistry, University of Torino, Italy
- 2009 BSc in Industrial Chemistry
Department of Chemistry, University of Torino, Italy

• **Current position(s)**

- 2025 - today Associate Professor in General and Inorganic Chemistry
Department of Materials Science, University of Milano-Bicocca, Italy

• **Previous position(s)**

- 2022 - 2025 Fixed-Time Assistant Professor (RTD-b) in General and Inorganic Chemistry
Department of Materials Science, University of Milano-Bicocca, Italy
- 2020 - 2021 GMP QC Analyst
Quality Control (QC) Unit, PolyCrystalLine SpA, Italy
- 2019 - 2020 Permanent Researcher
Cosmetics, Nanomedicine, and Smart Materials (CNS) Unit, Bio-ON SpA, Italy
- 2017 - 2019 Fixed-Time Assistant Professor (RTD-a) in Materials Science and Engineering
Department of Applied Science and Technology, Polytechnic Institute of Torino, Italy
- 2015 - 2017 Post-Doctoral Researcher in Physical Chemistry
Department of Chemistry, University of Torino, Italy

RESEARCH ACHIEVEMENTS AND PEER RECOGNITION

Research achievements

- Development of magnetic nanomaterials for the environmental remediation, drug-delivery, and energy field. This research line dates back to 2015, when RN started his Academic career. In particular, initially RN was involved in the development of magnetic (in)organic hybrid systems composed by iron oxides (mainly magnetite as inorganic magnetic phase) and organic ligands (*i.e.*, chitosan, humic acids, carbons, cyclodextrins, and so on), and tested them for the remediation of contaminated (waste)water investigating both the photocatalytic abatements of organic contaminants, as well as the their sorption ability toward metallic cations, As-containing species, linear and aromatic hydrocarbons, emerging pollutants. In the recent period, RN started investigating the synthesis of magnetic ferrite

systems, focusing on the important role played by the chemical (doping) elements in terms of magnetic response and crystal structure, as well as new synthetic routes to obtain anisotropic morphologies, and new recycling protocols. Due to the results achieved within this topic, RN received 4 awards (*vide infra*). Selected publications: 10.1016/j.jallcom.2025.181926; 10.1016/j.susmat.2025.e01275; 10.1016/j.colsurfa.2024.135117; 10.1016/j.jallcom.2024.173628; 10.3390/nano12050754; 10.3390/inorganics8010006; 10.1016/j.jaap.2019.03.022; 10.1016/j.cattod.2019.01.044; 10.1016/j.chemosphere.2018.03.153; 10.1016/j.jhazmat.2017.08.034; 10.1016/j.cej.2016.10.120; 10.1021/acssuschemeng.6b02126.

- Development of porous materials. This research lines was focused on the production of highly (eventually well-ordered) porous oxide and polymeric coatings to be used as molecular sieves and in membrane science for the selective transport of chemicals. Initially, important results were obtained by using PS-*b*-PEO block copolymers either as soft-templating agents for the sol-gel synthesis of porous silica or exploiting their self-assembly ability to produce polymeric coatings with presence of self-segregated domains. Of particular interest was the collaboration with the research group of Prof. M. Antonietti (*Max-Planck Institute of Colloids and Interfaces*, Germany) focused on the development of porous oxides (mainly silica and titania, under the shape of powders and aerogels), whose porosity is induced by applying a salt-templating route from hypersaline environment. This approach is an innovative (and fully-inorganic) templating route that exploits highly concentrated aqueous solutions containing water-soluble inorganic salts as water-soluble environmental-friendly porogens. Selected publications: 10.1021/acs.langmuir.7b00142; 10.3762/bjnano.6.215; 10.1039/c4ra13573c; 10.1016/j.eurpolymj.2014.11.019; 10.1002/zaac.201300526; 10.1016/j.micromeso.2014.02.012.
- Development of advanced composite materials. This extremely varied research line relies on the development of either polymeric or cementitious composites with enhanced properties, in most cases introducing abilities completely different respect to the bare matrix. In particular, regarding the polymeric composites, several studies were carried on the development of bioplastic-like formulations mainly made by introducing humic-derived and agro-industrial biowaste-derived substances as fillers and selecting EVOH as polymer matrix. Quite recently, interesting results were obtained regarding the development of polymeric composites with enhanced heat dissipation ability (*i.e.*, improved thermal conductivity) through the introduction of engineered inorganic fillers. Moreover, regarding the cementitious composites, particular interest has been devoted toward the development of rubberized concrete by introducing properly functionalised recycled tires crumb rubber as aggregate partial replacement in mortars and concretes. Selected publications: 10.1002/pc.28326; 10.1016/j.compscitech.2023.109977; 10.1016/j.jclepro.2017.08.160; 10.1002/slct.201600335; 10.1002/APP.43009; 10.1002/ppap.202100081; 10.1038/s41598-020-69502-0; 10.3390/ma13051234.
- Development of metallic nanoparticles for sensing applications (*i.e.*, Surface Enhanced Raman Scattering). This research line started during RN stays at the *Polytechnic Institute of Torino*. In this context, interesting results were obtained regarding the development of synthesis protocols to obtain metallic nanoparticles (mainly AgNPs) under specific architectures (*e.g.*, nanoflowers, nanonets). Selected publications: 10.1002/open.201900007; 10.1016/j.colsurfa.2019.123600.
- Development of carbon-based materials for the environmental remediation, and the electrochemistry. In this context, RN started working on the valorisation of biowaste and biowaste-derived materials (*e.g.*, chitin, chitosan, alginate, humic substances, etc...) to be converted (mainly through pyrolysis process) into N-containing biochars to be exploited both as sorbing systems for the remediation of contaminated water and/or as cathode in Li-S batteries, very appealing for the energy field. Selected publications: 10.1016/j.ijbiomac.2020.08.017; 10.1016/j.jaap.2018.08.010; 10.1016/j.apsusc.2017.07.277.
- Development of inorganic electrocatalysts for the energy field. This is a quite brand-new research line, as it started with the three funding projects achieved since 2023. In this context, RN started working on the synthesis of nanostructured Fe-, Ni-, Co-, Cu-based oxide systems to be used as Pt-group-free electrocatalysts different catalytic reactions, such as hydrogen evolution reaction (HER), oxygen evolution reaction (OER), and the more challenging CO₂ reduction reaction (CO₂RR) into valuable chemicals and renewable fuels. This last process is extremely appealing and strategic, especially if we consider the possibility of recovery and storage CO₂ from our atmosphere and convert it into valuable chemicals, thus guaranteeing a double beneficial effect for the environment (*i.e.*, reduction of the consumption of traditional fossil fuels, and CO₂transformation into re-usable chemicals). Selected publications: 10.1039/D5IM00008D; 10.1016/j.coelec.2025.101696; 10.1016/j.jallcom.2025.181926.
- Selected highly cited papers:

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- *Polym. Degrad. Stab.* 2015, 112, 1-9; 10.1016/j.polymdegradstab.2014.12.006; Cited: 444 (Scopus).
- *Polym. Test.* 2020, 90, 106707; 10.1016/j.polymertesting.2020.106707; Cited: 416 (Scopus).
- *Mater. Today Chem.* 2021, 20, 100477; 10.1016/j.mtchem.2021.100477; Cited: 156 (Scopus).

Bibliometric indicators

- Scopus Database: Number of Publications: 94; Citations: 3014; H-index: 28.
- WOS Database: Number of Publications: 95; Citations: 2649; H-index: 26.

Peer recognition

AWARDS

- 2024 Winner of the “*Journal of Alloys and Compounds 2024 Best Paper*” Award, provided by the Journal of Alloys and Compounds (Elsevier, Netherlands). For the best paper/review published during the year 2024. Selected publication: R. Nisticò, R. Mantovan, M. Cantoni, C. Rinaldi, M. Malandrino, S. Mostoni, M. D’Arienzo, B. Di Credico, R. Scotti, *Hydrothermal synthesis of Cu-substituted Ni ferrites: Structural, morphological, and magnetic properties. Journal of Alloys and Compounds 981 (2024) 173628. DOI: 10.1016/j.jallcom.2024.173628.*
- 2024 Selected as “*IUPAC Young Observer (2024-2025)*”, provided by the Italian Commission for IUPAC (International Union of Pure and Applied Chemistry) represented by the CNR as National Adhering Organization (NAO), representing Italy for the two-year period 2024-2025. This assignment is intended for observers preferably under the age of 35 and in any case not over 40 years of age (maximum age, completed on the deadline of the call) operating in Italy, coming from the academic world, research institutions and industry.
- 2023 Winner of the “*Premio Gian Giacomo Drago e Fausta Rivera Drago*” provided by the Istituto Lombardo Accademia di Scienze e Lettere (Italy) – 2023 Edition. This Award is intended for a young researcher (under 40 years of age) who has distinguished himself/herself for relevant studies in the field of the environmental protection. Motivation: “*For his research aimed at the development of magnetic nanomaterials properly functionalized and silica- and titania-based porous nanomaterials for the environmental remediation of contaminated water, also exploiting photocatalytic processes*”.
- 2022 Winner of the Second Prize “*Premio Giovani Talenti*”, Young Talents Award of the University of Milano-Bicocca (Italy) with the sponsorship of the Accademia Nazionale dei Lincei (Italy) – 2022 Edition. This Award is intended for young researchers (under 36 years of age) working at the University of Milano-Bicocca. Category Chemical Sciences and Earth Sciences. Motivation: “*For his high-level works in the field of materials science and in particular of magnetic nanomaterials properly functionalized at the surface with products of biological origin*”.
- 2022 Winner of the “*Inorganics 2020 Best Paper*” Award, for the category: Review, provided by the journal Inorganics (MDPI, Switzerland). For the best paper/review published during the year 2020. Selected publication: R. Nisticò, F. Cesano, F. Garello, *Magnetic materials and systems: Domain structure visualization and other characterization techniques for the application in the materials science and biomedicine. Inorganics 8 (2020) 6, pp.1-59. DOI: 10.3390/inorganics8010006.*
- 2014 Winner of the “*Macrogiovani 2014*”, provided by the Associazione Italiana di Scienze e Tecnologie delle Macromolecole (AIM). For the best oral presentation during the XXI Convegno Nazionale AIM of Torino (Italy).

INVITED ORAL PRESENTATIONS

- 2025 Green pores: How to shape porosity in nanomaterials in a sustainable way, In: *Scientific Symposium connected to the GCS4CE PhD Winter School Green Chemical Synthesis for Circular Economy*, Padova (Italy) 21 February 2025.
- 2024 The importance of the surface functionalisation in textiles to create smart technological solutions (F02_00523), In: *EMRS 2024 Spring Meeting, F. Advanced and sustainable coatings for high performance textiles*, Strasbourg (France) 29 May 2024.
- 2017 50 shades of magnetism: Basic and new trends, In: *Mat4treaT Winter School Innovative approaches for material synthesis and characterization*, Torino (Italy) 26 January 2017.
- 2016 Chitosan and chitosan-derived carbon as magnet-sensitive materials for the removal of polycyclic aromatic hydrocarbons, In: *International Workshop on Materials for photocatalytic and water treatment applications*, Torino (Italy) 11 July 2016.
- 2016 Development of chitosan and chitosan-derived carbon as magnet-sensitive materials for environmental applications, In: *1st Mat4treaT Workshop: Innovative materials and methods for tertiary water treatment*, Alcoy (Spain) 9 February 2016.

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2014 Preparation and physico-chemical characterization of ordered large-pore silica films for membranes applications, In: *NIS Colloquium Porous Materials for Selective Separation and Controlled Transport: from Membranes to Nanoparticles*, Torino (Italy), 9 May 2014.

ORGANISATION OF SCIENTIFIC CONGRESS/SEMINARS/EVENTS

2024 Organisation of the seminar “Magnetic nanomaterials for water treatment” by Dr. Luciano Carlos (Instituto de Investigación y Desarrollo en Ingeniería de Procesos, Biotecnología y Energías Alternativas, PROBIEN (CONICET-UNCo), Universidad Nacional Del Comahue, Neuquén, Argentina) at the Department of Materials Science of the University of Milano-Bicocca (24 May 2024).

2024 Co-chairman during EMRS 2024 Spring Meeting, F. Advanced and sustainable coatings for high performance textiles, Strasburg (France). Session: F03_Technical textiles (30 May 2024).

EDITORIAL ACTIVITIES

- Inorganics (ISSN 2304-6740, MDPI): Member of the Editorial Board (since 2022), Member of the Section Board “Inorganic Materials” (since 2022), Member of the Topical Advisory Board (2021-2022), Member of the Reviewer Board (since 2021), Guest Editor *SI Featured Papers in Inorganic Materials 2025* (on-going). Guest Editor *SI New Advances into Nanostructured Oxides, 3rd edition* (on-going). Guest Editor *SI/Book Featured Papers in Inorganic Materials 2024* (2025). Guest Editor *SI/Book New Advances into Nanostructured Oxide, 2nd edition* (2025). Guest Editor *SI/Book 10th Anniversary of Inorganics: Inorganic Materials* (2024). Guest Editor *SI/Book New Advances into Nanostructured Oxides* (2023), Guest Editor *SI/Book Smart Tools for Smart Applications: New Insights into Inorganic Magnetic Systems and Materials* (2021).
- Frontiers in Environmental Engineering (ISSN 2813-5067 Frontiers): Environmental Catalysis Sect.: Community Reviewer (since 2024).
- Polymers (ISSN 2073-4360, MDPI): Member of the Reviewer Board (since 2020).
- Frontiers in Materials (ISSN 2296-8016, Frontiers): Carbon-Based Materials Sect.: Community Reviewer (since 2018).
- Frontiers in Chemistry (ISSN 2296-2646, Frontiers): Inorganic Chemistry Sect.: Community Reviewer (since 2018).
- Journal of Nanomaterials (ISSN 1687-4110, Hindawi): Guest Editor *SI Environmental Sustainability in the Synthesis and Characterization of Hybrid/Composite Nanomaterials* (2018).

NATIONAL QUALIFICATIONS

- General and Inorganic Chemistry [S.C. 03/B1]: as Full Professor (Validity: 08/06/2023 - 08/06/2035), as Associate Professor (Validity 01/02/2022 - 01/02/2034).
- Chemical Foundations of Technologies [S.C. 03/B2]: as Associate Professor (Validity 05/11/2024 - 05/11/2036).
- Materials Science and Engineering [S.C. 09/D1]: as Associate Professor (Validity 31/05/2021 - 31/05/2033).
- Environmental & Cultural Heritage Chemistry [S.C. 03/A1]: as Associate Professor (Validity 12/11/2020 - 12/11/2032).
- Industrial Chemistry [S.C. 03/C2]: as Associate Professor (Validity 13/05/2019 - 13/05/2031).
- Experimental Physics of Condensed Matter [S.C. 02/B1]: as Associate Professor (Validity 26/07/2018 - 26/07/2030).
- Applied Physics [S.C. 02/D1]: as Associate Professor (Validity 12/09/2018 - 12/09/2030).

ON-GOING FUNDED PROJECTS

- PERFECT – Photo(Electro)catalysis for Renewable FuEls production, as Principal Investigator (Total budget: 224,950 EUR) and Unit Principal Investigator (Unit budget: 78,118 EUR), 4.0 Person Months. Progetti di ricerca di Rilevante Interesse Nazionale - PRIN 2022 PNRR (D.D. n. 1409 del 14-09-2022). Fundend by Ministero dell'Università e della Ricerca (MUR). ERC field: PE5 – Synthetic Chemistry and Materials. Project code: P2022TK9B9.
- MAPEC - MAgnetic field assisted Photo(Electro) CO₂ Conversion, as co-Principal Investigator (Total budget: 203,229 EUR) and Unit Principal Investigator (Unit budget: 47,500 EUR), 4.0 Person Months. Progetti di ricerca di Rilevante Interesse Nazionale - PRIN 2022 (D.D. n. 104 del 02-02-2022). Fundend by Ministero dell'Università e della Ricerca (MUR). ERC field: PE5 – Synthetic Chemistry and Materials. Project code: 2022599NR3.
- AMBITION – Development and testing of a scalable anionic membrane electrolyze using platinum-free, non-critical, and non-toxic materials for the production of clean and green hydrogen, as Unit Member (Total budget: 3,318,660 EUR, Unit budget: 750,010 EUR), 3.0 Person Months). National recovery and resilience plan (PNRR), Mission 2 “Green revolution and ecological transition”, Component 2 “Renewable energy, hydrogen, network and sustainable mobility”, Investment 3.5

ADDITIONAL INFORMATION

Career breaks, diverse career paths and major life events

During the period from February 2019 to December 2021, RN interrupted the Academic career and moved to the Private Industry field. Initially, RN worked as Permanent Researcher for Bio-ON SpA (within the Business Unit Cosmetics, Nanomedicine and Smart Materials – CNS), a Private Company operating in the valorisation of biopolymers (polyesters) such as poly(hydroxyl-alkanoates) (PHAs) obtained from bacteria-mediated fermentation processes with the aim of exploit them for advanced applications in several technologic fields, such as the Organic Electronics. Secondly, prior to his return back to Academia, RN worked as GMP QC Analyst for PolyCrystalLine SpA, a Private Company operating in the Pharmaceutical field, mainly either studying new or characterising existing polymorph systems made by active ingredients.