

## PERSONAL INFORMATION

**Name, Surname:** Magda, Blosi

**E-mail:** magda.blosi@issmc.cnr.it

**Nationality:** Italian

## EDUCATION

2009 - Ph.D. in Industrial Chemistry, University of Bologna

2005 - M.Sc. in Industrial Chemistry (110/110 cum laude), University of Bologna

2003 - B.Sc. in Materials Science (110/110 cum laude), University of Bologna

## SPECIALIZING COURSES/TRAINING

**2017** – Medtech Business advanced program on MedTech Entrepreneurship at USI, Lugano

**2011** - Training school “Synthesis of hybrid organic-inorganic nanoparticles for innovative nanostructured composites” Naples

**2010** - International TEM school in Materials Science “Practical and theoretical course”, Bologna

**2008** - Summer School on Modern Concepts for Creating and Analyzing Surfaces and Nanoscale Materials, Barcelona

**2007** - Experiments at ESRF facilities, Grenoble

**2006** - Experiments at ESRF facilities, Grenoble

**2006** - Nanoparticles: synthesis and characterization” Turin

## CURRENT POSITION

**December 2012 - Present:** Permanent position as researcher at ISTE-CNR (Faenza, RA), Nanotechnology and Nanosafety group.

**March 2020 – Present:** Responsible of the *Laboratory of Nanomaterials* (ISTEC CNR)

## PREVIOUS POSITIONS

**2011– 2012:** Fixed term researcher at ISTE-CNR

**2006–2011:** Research fellow at ISTE-CNR

**2005–2006:** Winner of a Spinner fellowship with a project on nanoinks performed at ISTE-CNR laboratories in collaboration with Colorobbia Italia S. p. A

## RESEARCH ACTIVITY

**Sectors:** Nanomaterials, green synthesis, materials engineering, surface coatings, nano-safety, clean technology, water treatment

My scientific activity is focused on synthesis, surface engineering and characterisation of colloidal phases and their application as functional coatings or catalysts. Fields of interest are:

- Sol-gel synthesis and colloidal properties characterisation: development of green syntheses, design and characterisation of nanometals, nano-oxides, hybrid nanophases for the production of catalysts, photocatalysts, nanosorbents, nanocarriers.
- Smart surfaces: design of nanosuspensions aimed at developing advanced coatings on different substrates (glass, ceramics, textiles, metals) with properties of controlled wettability, antibacterial, self-cleaning and catalytic activity
- Granulation/Immobilization processes (spray-drying, spray-freeze drying, freeze drying): Design of immobilization strategies in order to integrate nanoactive catalysts into water treatment reactors. Development of nanostructured micro-capsules, hybrid micro granules, hybrid gels.
- Advanced oxidation processes for water treatment: development of nanomaterials for the advanced oxidation treatment of water pollutants. Photocatalytic systems integrated into lab to pilot scale plants

- Development of “safer by design” strategies as preventive tool for the nano-risk management, control of potentially dangerous human and environmental impact of nanostructures with special focus on their synthetic and system dependent characterization

**PEER REVIEWED PUBLICATIONS: 59 articles** (20 as first or corresponding author),

1852 total citations and citation **index H = 25** (*Google Scholar*) ;

1313 total citations and citation **index H= 22** (*Scopus*).

**PUBLICATIONS (10 SELECTED on synthesis/applications of nanomaterials) :**

1. Blois M., Brigliadori A, Zanoni I, Ortelli S, Albonetti S, Costa, A.L. “Chlorella vulgaris meets TiO<sub>2</sub> NPs: effective sorbent/photocatalytic hybrid materials for water treatment application”, *Journal of Environmental Management* (2021, In press)
2. Blois M, Veronesi F, Guarini G, Raimondo M “Highly durable amphiphobic coatings and surfaces: a comparative step-by-step exploration of the design variables”, *Surface and Coatings Technology* (2021, in press)
3. Blois M, Costa AL, Ortelli S, Belosi F, Ravegnani F, Varesano A, Tonetti C, Vineis C “Polyvinyl alcohol/silver electrospun nanofibers: biocidal filter media capturing virus-size particles” *Journal of applied Polymer Science* (2021, In press)
4. I Lolli, A., Blois M\*, Ortelli, S., Costa, A.L., Zanoni, I., Bonincontro, D., Carella, F., Albonetti, S, “Innovative synthesis of nanostructured composite materials by a spray-freeze drying process: Efficient catalysts and photocatalysts preparation”, *Catalysis today* 334 (2019) 193-202
5. Gardini D., Blois, M\*, Ortelli, S., Delpivo, C., Bussolati, O., Bianchi, M.G., Allegri, M., Bergamaschi, E., Costa, AL “Nanosilver: An innovative paradigm to promote its safe and active use”, *Nanoimpact* 11 (2018) 128-135
6. Blois, M., Ortelli, S., Costa, A.L., Dondi, M., Lolli, A., Andreoli, S., Benito, P., Albonetti, S, “Bimetallic nanoparticles as efficient catalysts: Facile and green microwave synthesis”, *Materials*, 9, 7 (2016) 550
7. Blois, M., Albonetti, S., Ortelli, S., Costa, A.L., Ortolani, L., Dondi, M, “Green and easily scalable microwave synthesis of noble metal nanosols (Au, Ag, Cu, Pd) usable as catalysts”, *New Journal of Chemistry*, 38 (2014) 1401-1409 – Selected as cover image
8. Blois, M., Albonetti, S., Costa, A.L., Sangiorgi, N., Sanson, A, “Easily scalable synthesis of Ni nanosols suitable for the hydrogenation of 4-nitrophenol to p-aminophenol under mild condition” *Chemical Engineering Journal*, 215-216 (2013) 616-625
9. Blois, M; Albonetti, S; Gatti, F; Baldi, G; Dondi, “Au-Ag nanoparticles as red pigment in ceramic inks for digital decoration”, *Dyes and Pigments*, 94 (2012) 355-362
10. Blois, M., Albonetti, S., Dondi, M., Martelli, C., Baldi, G. “Microwave-assisted polyol synthesis of Cu nanoparticles” *Journal of Nanoparticle Research* 13 (2011) 127–138

## PATENTS:

1. M Raimondo, M. Blosi, F Veronesi, G Boveri, Amphiphobic cellulosic materials, production thereof and uses. EP18214805, 20 december 2018. **This patent is going to be fully transferred to industrial production. EU grant pending**
2. Costa, M. Blosi, Process for the preparation of nanoparticles of noble metals in hydrogel and nanoparticles thus obtained WO2016IB50501 20160201 (2016)  
**Granted in USA (US US10525432B2), EU grant pending**
3. M. Raimondo, M. Blosi, F. Bezzi, C. Mingazzini, "Method for the treatment of metal surfaces for bestowing thereon a high hydrophobicity and oleophobicity" WO2013190587 (2012)  
**Granted in EU (EP 2 864 522 B1)**
4. M. Raimondo, M. Blosi, F. Bezzi, C. Mingazzini "Method for the treatment of ceramic surfaces for bestowing thereon a high hydrophobicity and oleophobicity " EP20120718352 20120305 (2011)  
**Granted in EU (EP 2 681 347 B1)**
5. M. Blosi, S. Albonetti, M. Dondi, G. Baldi, A. Barzanti: "Process for preparing stable suspensions of metal nanoparticles and the stable colloidal suspensions obtained thereby" PCT/EP2010/052534 WO 2010/100107 (2010). **This patent has been fully transferred to industrial production**  
**Granted in USA (US 9731263 B2)**  
**Granted in MEXICO (MX 320116)**  
**Granted in CANADA (CA 2754132 C)**  
**Granted in BRASIL (BR PI1009122 B1)**  
**Granted in INDONESIA (ID P000042416 B)**  
**Granted in RUSSIA (RU 2536144 C2)**  
**Granted in CHINA (CN 102341165 B)**  
**EU grant pending**
6. G. Donina, M. Tosti, F. Bezzi, M. Blosi, P. Fabbri, C. Zanelli, C. Mingazzini, M. Dondi electrophoretic process for making coatings in composite materials with polymeric matrix EP 10172153.8 (2010).

**INTERNATIONAL AND NATIONAL CONFERENCES:** 18 international conferences and 3 national conferences, **14 oral presentations** to international conferences (7 **as invited speaker**), more than 20 presentations at international meeting of the European Projects, 10 poster presentations. Presenter for ISTE of the ASINA/BIORIMA/PROTECT/SANOWORK results during the periodical meetings. Co-author of more than 20 oral presentations presented by colleagues

## PROJECTS AS Principal Investigator (PI)

- **PI and scientific responsible** of a research project dealing with antimicrobial (antiviral and antibacterial) coatings on cotton surfaces (Details covered by NDA).  
**FUNDS: 212K€, duration: 2021-2022**
- **PI and Task leader** of the European collaborative research project SUNSHINE, "Safe and sustainable by design strategies for high performance multi-component nanomaterials" (H2020 NMBP-16-2019 n. 952924) **ISTEC role: Task leader** Total funding: 6.52 M€  
**FUNDS: 166K€, duration: 2021-2025**
- **PI, WP1 leader** of EU Project: ASINA - Anticipating Safety Issues at the Design Stage of NAno Product Development" (H2020-NMBP-15-2019 n. 862444), **my role is of WP1 Leader on the development of safety by design strategies for the selected nanomaterials.**  
*ISTEC role: COORDINATOR (Dr AL Costa)*  
Total funding €: 6 M€  
**FUNDS: 694.5 K€ duration: 2020-2023**
- **PI and WP leader of WP2**"Materials" of the European collaborative research project: BIORIMA Biomaterial Risk Management (H2020 NMBP-12-2017, n. 760928).

WP2 counts 18 partners and my role is focused on scientific coordination and project management  
Total funding: 7.9 M€

**FUNDS: 316K€, duration: 2017-2021**

- **PI and scientific responsible** of an industrial research project with Aqseptence group (Lugo, RA), *“Nanocoatings for an improved solid/liquid separation”*  
**Duration: 2018-2020**

- **PI and scientific responsible** of the industrial project with Fila SpA (Padova). *“Development of hybrid NPs organic/inorganic usable as additives on the products for the surface coatings of FILA to bestow antibacterial and self-cleaning properties on ceramics”*  
**FUNDS: 45K€, duration: 2014-2015**

## PROJECTS AS KEY RESEARCHER

- EU Project: PLASTICSFATE “Plastics Fate and Effects in the human body” (H2020 SC1-BHC-36-2020 n 965367) **ISTEC role: WP leader. My role within WP1 is focused on the selection, distribution, and characterization of relevant micronanoplastics (MNP).**  
Total funding: 6 M€  
**FUNDS: 239.5 K€ duration: 2021-2025**
- **SOS Acqua** – Sistema per la decontaminazione e lo Sviluppo di energia dall’ACQUA Research project (PNRM) funded by Ministero della difesa (Italia) **ISTEC role: COORDINATOR – My role: support to scientific coordination, responsible for the development of the antibacterial filter unit**  
Total funding: 189K€  
**FUNDS: 150K€ duration: 2020-2021**
- EU project: PATROLS “Physiologically Anchored Tools for Realistic Nanomaterial Hazard Assessment” (H2020- NMBP-29-2017, n. 760813). **ISTEC role: WP leader.** Total funding: 12.7M€  
**FUNDS: 441K€ duration: 2018-2022**
- EU project: PROTECT (H2020-NMBP-PILOTS-2016 n. 720851) *“Pre-commercial lines for production of nanostructured antimicrobial and antibiofilm textiles, medical devices and water treatment membranes”* **ISTEC role: Task Leader.** Total funding: 7.5M€  
**FUNDS: 230K€ duration: 2017-2021**
- EU project: SUN (FP7-NMP-2013-LARGE-7 –n. 604305) *“Sustainable nanotechnologies”.* **ISTEC role: WP Leader**-Total funding: 10.2M€  
**FUNDS: 295K€ duration: 2013-2017.**
- EU project: SANOWORK (FP7-NMP-2011-SMALL-5 – NMP4-SL-2012 –n. 280716) *“Safe Nano Worker Exposure Scenarios”.* **ISTEC role: COORDINATOR** Total funding: 3.4M€  
**FUNDS: 536K€ duration: 2012-2015**
- **Industrial Research project – My role: Scientific manage and Technical contact** of a research project, *“Technological transfer of protective nanocoatings for cotton substrates”.* (Details covered by the Not Disclosure Agreement)  
**FUNDS: 305K€ duration: -2018-2020**
- **Industrial Research project** - Scientific manager and Technical contact of a research project on the *“Development of protective nanocoatings for cotton substrates”.* (Details covered by the Not Disclosure Agreement).  
**FUNDS: 286K€ duration: 2016-2018**
- Industrial research project with Novaresin SpA, *“Ceramized self-cleaning textiles”*  
**FUNDS: 50K€ duration 2010-2012**
- Ministerial Project Mi.S.E.-ICE-CRUI *“Nanomaterials for energy”* **FUNDS: 30K€ 2010-2011**  
Industrial project with Colorbbia SpA, *“Microwave assisted synthesis of NPs usable as pigments”*  
**FUNDS: 150K€ duration 2008-2010**
- Industrial research project with Colorbbia SpA, *“Microwave assisted synthesis of NPs usable as pigments”*

**FUNDS: 150K€ duration 2007-2010**

#### PROJECTS as PARTICIPANT RESEARCHER

- EU Project: SaByNa “Simple, robust and cost-effective approaches to guide industry in the development of safer nanomaterials and nano-enabled products” (H2020 NMBP-TO-IND-2019 n 862419) **ISTEC role: WP leader, developing of safety by design solutions.**  
Total funding: 6M€ duration **2020-2023**  
**FUNDS: 400K€**
- EU Project: Nanoinformatix “Development and Implementation of a Sustainable Modelling Platform for NanoInformatics” (H2020-NMBP-TO-IND-2018 n 814426) **ISTEC role: Task leader for case studies selection**  
Total funding: 7.751 M€ duration  
**FUNDS: 180K€**
- **National project (CNR):** PROBIOPOL (FdF-SP2-T4.1) “*Innovative and sustainable production of biopolymers*”, and linked projects for prototyping results: PROBIOTYPE, PROBIOTYPE II (UV/TiO<sub>2</sub> Photocatalytic Reactor). Total funding 307K€  
**FUNDS: 165K€ duration 2014-2016**
- **National project (CNR):** CHINA (FdF-SP2-T4.1) “*Customized Heat exchanger with Improved Nano-coated surface for earth moving machines*” **2014-2015**
- **National project (CNR):** NANOTWICE (FdF-SP1-T1.2) “*Composite Nanofibres for Treatment of air and Water by an Industrial Conception of Electrospinning*” National research project La Fabbrica del Futuro, and linked project for prototyping results: AUTOSPIN (Automated electrospinning plant for industrial manufacturing of functional composite nanofibers)  
**FUNDS: 80K€ duration 2013-2016**
- Scientific cooperation agreement CNR and Scientific and Technological Research Council of Turkey (TUBITAK), Turkey (PROGETTO BILATERALE) **2012-2013**
- **National project (CNR):** SNAPP (FdF-SP1-T1.2) “*Surface Nano-structured Coating for Improved Performance of Axial Piston Pumps*”. ISTEC involved as WP leader. **2013-2015**

#### PRIZES

Winner of the poster competition: “Dose-metric issues of commercial engineered nanoparticles”, QNANO 2013 – 2nd Qnano integrating conference 2013, Prague

#### MEMBER of PhD EXAMINATION COMMITTEES

**2020** – Thesis evaluation and examination, Università degli Studi di Camerino, School of Advanced Studies Life and Health Sciences – Molecular Biology and Cellular Biotechnology  
Title “Biogenic synthesis and characterization of metal nanoparticles from bacterial consortium associated with the Antarctic psychrophilic ciliate *Euplotes focardii*” (MS JOHN)

#### SUPERVISION OF UNDERGRADUATE STUDENTS

I tutored students taking care of their experimental work and reviewing the final thesis document.

Co-supervisor of 9 Master's degree students (Industrial Chemistry, Bologna University)

1. **2019** – Title: Sviluppo e ingegnerizzazione di sistemi ibridi a base di nanoparticelle inorganiche e microalghe da applicare nella depurazione acque (Candidato A Brigliadori)  
<https://amslaurea.unibo.it/19224/>
2. **2016** – Title: Ingegnerizzazione di materiali nanostrutturati fotocataliticamente attivi (Candidato M Bonoli) <https://amslaurea.unibo.it/11932/>
3. **2016** – Title: Incapsulamento di complessi organometallici e lantanoidei con silice e sviluppo come traccianti di supporti ceramici (Candidato I. Zanoni) <https://amslaurea.unibo.it/11904/>
4. **2016** – Title: Microincapsulazione di nanoparticelle di argento tramite tecnica spray-freeze-drying

- (Candidato L. Preti) [https://amslaurea.unibo.it/10019/1/Preti\\_Lorenzo\\_tesi.pdf](https://amslaurea.unibo.it/10019/1/Preti_Lorenzo_tesi.pdf)
5. **2013** – Title: Ingegnerizzazione di nanocosmetici (Candidato L. Viale) [https://amslaurea.unibo.it/6102/1/viale\\_luca\\_tesi.pdf](https://amslaurea.unibo.it/6102/1/viale_luca_tesi.pdf)
  6. **2013** – Title: Sintesi e caratterizzazione di nanoparticelle bimetalliche Pd/Au E Pd/Cu (Candidato V. Tonini) [https://amslaurea.unibo.it/4295/1/tonini\\_valentina\\_tesi.pdf](https://amslaurea.unibo.it/4295/1/tonini_valentina_tesi.pdf)
  7. **2010** – Title: Sintesi assistita al microonde di nanoparticelle Au – Cu per applicazioni catalitiche (Candidato S. Ortelli) (not available on line)
  8. **2008** – Title: Sintesi assistita al microonde di nanoparticelle metalliche (Candidato F. Gatti) (not available on line)
  9. **2007** – Title: “Sintesi di nanoparticelle di Cu mediante reazione in polioli assistita da microonde” (Candidato C. Martelli) (not available on line)

Co-supervisor of 3 Bachelor's degree students (Industrial Chemistry, Bologna University)

1. **2017** – Title: Preparazione di materiali nanostrutturati a base di MgO/CaO per applicazioni in catalisi (Candidato A. Brigliadori)
2. **2016** – Title: Sviluppo di protettivi antibatterici, a base di nano-argento, per superfici ceramiche (Candidato M. Bonoli)
3. **2016** – Title: Ingegnerizzazione di nanoparticelle di argento/silice (Candidato R. Amadori)

## TEACHING

**2018** – Invited as teacher “I° Corso di aggiornamento sulla sicurezza dei Nanomateriali (Torino)” presentation title “Safety By Design l’esperienza del progetto FP7 Sanowork”

**2018** – Invited speaker at “1<sup>st</sup> BIORIMA Training school”, Venice

“Session Design approach for biomedical materials development”, Lesson title “Antibacterial function: preparation, characterization and engineering of silver NPs

**2018 - current** – Annual lesson for PhD students on Sol gel synthesis of nanomaterials “Scuola di Dottorato in Scienze Chimiche, Università di Bologna, facoltà di Chimica Industriale”

**2006-current** - Annual lesson on “Nanomaterials preparation and characterisation” at the course “Chemistry and Materials for the environment” Faculty of Industrial Chemistry, Bologna

## PROJECT EVALUATOR

Project evaluator for the National Fund for Scientific and Technological Development (FONDECYT) of the Chilean National Commission for Scientific and Technological Research (CONICYT) (2016)

## PEER REVIEWER ACTIVITY

Referee for more than 11 international journals on nanomaterials

*Il presente Curriculum è reso sotto forma di dichiarazione sostitutiva di certificazione e di dichiarazione sostitutiva dell'atto di notorietà ai sensi degli artt. 46 e 47 del d.P.R. 445/2000. All'uopo il sottoscritto dichiara di essere consapevole della responsabilità penale prevista, dall'art. 76 del citato decreto per le ipotesi di falsità in atti e dichiarazioni mendaci ivi indicate.*

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Magda Blosi

