

Curriculum Vitae

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1. PERSONAL INFORMATION

Name Surname, Title Francesca Baldelli Bombelli, PhD
Italian
E-mail address francesca.baldelli@polimi.it;
PEC e-mail Francesca.baldellibombelli@pec.it

2. CURRENT JOB POSITION

Associate Professor in Chemistry since December 2014 at the Department of Chemistry, Materials and Chemical Engineering at the Politecnico di Milano, Milan, Italy. Member of the SupraBioNano Lab (www.suprabionano.eu).

3. EDUCATION AND TRAINING

PhD Degree PhD in Chemical Sciences, 20th April 2004 at the University of Florence, Italy. Department of Chemistry, Centre of Colloid and Surface Science (<http://www.csgi.unifi.it/~csgi/index.html>)
Title of the thesis: *Physico-chemical characterization of liponucleosidic micellar solutions. Structural and dynamic investigation in presence of molecular recognition between nucleic bases.*
(Supervisor Prof. Piero Baglioni)

Master Degree “Laurea” in Chemistry, 11th December 2000, University of Florence, Italy. (110/110 *cum laude*, equivalent 1st class with Honours)
Title of the thesis: *Equilibrium polymers formed by nucleosidic amphiphiles: dynamic and structural properties of micellar solutions in the transition from dilute to semidilute behavior.*
(Supervisor: Prof. Piero Baglioni)

4. PREVIOUS APPOINTMENTS

- **Team Leader** at the Centre of European Nanomedicine, Dipartimento di Chimica, Materiali ed Ingegneria Chimica "G. Natta", Politecnico di Milano, Milano, Italy (May 2013 - December 2015).
- **Lecturer B** in Colloid Science and Nanotechnology, at School of Pharmacy, University of East Anglia, Norwich, UK, (March 2011- December 2014)
- **Post-Doctoral Fellowship** at the Centre for BioNano Interactions (CBNI), University College Dublin, Ireland (February 2009-February 2011).
- **Post-Doctoral Fellowship**, at the Department of Chemistry and CSGI, University of Florence, Italy (June 2006-February 2009).
- **Post-Doctoral Fellow**, at Department of Chemistry and Bioscience, Chalmers University, Gothenburg, Sweden (May 2005-June 2006).
- **Post-Doctoral Fellowship**, Department of Chemistry and CSGI, University of Florence, Italy (May 2004- April 2005).

Periodic research activities at “Large Access European Facilities”

with up to 70% of the beam time available to external users. The main portion of this beam time is foreseen for short-term research proposals.

1. **Small Angle Neutron Scattering Experiments (SANS) at the Rutherford Appleton Laboratory, ISIS, Didcot, UK**
2. **Small Angle Neutron Scattering and neutron reflectometry at the Laue-Lagevin Institute in Grenoble, France.**
3. **Small Angle X-rays Experiments at synchrotron light, at ELETTRA, Trieste (Italy).**
4. **Small Angle Neutron Scattering Experiments (SANS) at Hahn Meitner Institute, Berlin Neutron Scattering Center, Berlin (Germany).**

5. TEACHING: LECTURING EXPERIENCE for UNDERGRADUATE STUDENTS

I have been doing teaching activity for undergraduate students in National and International Universities since 2010:

TEACHING ACTIVITY AT POLITECNICO DI MILANO (IT) since 2014

- **Academic year 2020-2021:**
Lecturer of the course "Structural Characterization of Nanomaterials" for PhD students enrolled in the PhD programs at Politecnico di Milano
- **Academic year 2020-2021:**
Lecturer of Fundamentals of Chemistry for the Technology (3rd year course for B.Sc. in Management Engineering: 10 CFU)
- **Academic year 2014/2015, 2015/16, 2016/17, 2017/18, 2018/19, 2019-2020:**
Lecturer of Fundamental of Chemistry (1st year course for B.Sc. in Engineering: 7 CFU)
- **Academic year 2015/16, 2016/17, 2017/18:** *Lecturer of General Chemistry* (2nd year course for B.Sc. in Engineering: 5 CFU)
- **Academic year 2018/19:** *Lecturer of Molecular Functional Materials* (1st year course for MS in Engineering of Nanotechnology and Materials: 5. CFU)

TEACHING ACTIVITY AT UNIVERSITY OF EAST ANGLIA, NORWICH (UK) 2011-2014

- **Academic year 2013/2014:**
 - *Lecturer of the Introduction to pharmaceutical formulation for University of Bergen visiting student course.*
- **Academic year 2012/2013:**
 - *Module Coordinator/Lecturer of the Physical Pharmacy course* (1st year course for M.Sc. in Pharmacy).
 - *Lecturer of the Nanomedicine-module of the Advanced Drug Delivery and Drug Discovery course* (3rd year course for M.Sc. in Pharmacy).
 - *Lecturer of the Introduction to pharmaceutical formulation for University of Bergen visiting student course.*
- **Academic year 2011/2012:**
 - *Lecturer of the Physical Biochemistry course* (1st year course for M.Sc. in Pharmacy) at the School of Pharmacy, University of East Anglia..
 - *Lecturer of the Introduction to pharmaceutical formulation course* (1st year course for M.Sc. in Pharmacy).

TEACHING ACTIVITY AT UNIVERSITY COLLEGE DUBLIN, DUBLIN (IE) in 2011

- **Academic year 2010/2011:**
 - *Lecturer of the Chemistry course* (1st year course for B.Sc. in Engineering) at the School of Chemistry and Chemical Biology, University College Dublin, Dublin, Ireland.

6. HISTORY OF MENTORING AND SUPERVISION

During my career I have been mentoring the following Research Post-doctoral Fellows funded on my research grants:

1. Dr Ilaria Tirota (2 years)
2. Dr Claudia Pigliacelli (2 years)
3. Dr Daniele Maiolo (2 years)
4. Dr Paola Moreno-Sanchez (18 months)
5. Dr Giulia Neri (2 years)
6. Dr Andrea Pizzi (18 months)
7. Cristina Chirizzi (18 months)

I have been primary supervisor of the following PhD students:

1. Beatrice Bona (PhD student at the Politecnico di Milano, 1st year). Title of the thesis: *Development of nanoformulations for the treatment of the diseased heart.*
2. Alessandro Strada (PhD student at the Politecnico di Milano, 2nd year). Title of the thesis: *Peptide gels for capturing extracellular vesicles.*
3. Nazeeha Ayaz (PhD Student at the Politecnico di Milano, 3rd year). Title of the thesis: *Development of fluorinated nanoformulations for ¹⁹F-MRI.*
4. Desire Di Silvio (awarded PhD at the University of East Anglia, 2015). Title of the thesis: *Study of Biophysical interactions between surface-modified nanoparticles and cell membranes.*
5. Carl Webster (awarded PhD at the University of East Anglia, 2016) Title of the thesis: *Multifunctional iron oxide nanoparticle as a drug delivery system for metastatic melanoma.*

I have been co-supervisor of the following PhD students:

1. Dr Marta Rosati (PhD Student at the Politecnico di Milano, final year). Title of the thesis: *Dendrimeric amphiphiles for ¹⁹F-MRI and gene delivery.*
2. Dr Kavitha Buntara Sanjeeva (awarded PhD in Politecnico di Milano in 2017) Title of the Thesis: *Halogenation promotes synthesis and self-assembly of gold nanoparticles.*
3. Dr Karamallah Al-Yousuf (awarded PhD in UEA in 2016) Title of the Thesis: *Development of New Synergistic Therapies for Malignant Melanoma Treatment.*
4. Dr Andrzej Pitek (awarded PhD in UCD in 2016) Physical interactions between nano and micro particles with mass array of target interactions.

Supervisor of undergraduated students for their final projects (awarded with a Master Degree)

At Politecnico di Milano:

Academic year 2020/2021:

1. Martina Colombo, Title of the thesis: "Formulation and characterization of polymeric theranostic nanoparticles. A comprehensive study of nanoparticles-protein corona formation in physiological environment.
2. Johnny Perez, Title of the thesis: "Development and characterization of novel Development and characterization of novel fluorocarbon nanoparticles for ¹⁹F MRI and optical imaging"

Academic year 2019/2020:

3. Enes Saygi, Title of the thesis: "Development and Characterization of Fluorescent Perfluorocarbon Nanoprobes for Multimodality Imaging Systems"
4. Beatrice Lucia Bona, Title of the thesis: "Synthesis and characterization of fluorinated amphiphilic dendrons as vectors for gene delivery in Amyotrophic Lateral Sclerosis"
5. Lodovico Gatti, Title of the thesis: "Development of fluorinated probes for cell tracking by ¹⁹F-MRI"

Academic year 2018/2019:

6. Marco Damoli, Title of the thesis: "Development and characterization of novel fluorocarbon nanoparticles for ^{19}F MRI and optical imaging"
7. Nivedha Mani, Title of the thesis: "Synthesis and characterization of fluorinated amphiphilic dendrons as vectors for gene delivery in Amyotrophic Lateral Sclerosis"

Academic year 2017/2018:

8. Clara Andolina, Title of the thesis: "Halogenation turns on elastomericity in a minimalist peptide"
9. Marina Alheli Carrer, Title of the thesis: "Development of fluorinated liposomes for ^{19}F -MRI and gene delivery"
10. Giulia Quaroni, Title of the thesis: "Self-assembly of a halogenated elastomeric short peptide and optimisation of its electrospinning process for fibre fabrication"

Academic year 2015/2016:

11. Jennifer Beretta, Title of the thesis: "Evaluation of stability of polymer/DNA carrier systems in serum and their biochemical efficacy"
12. Jessica Colombo, Title of the thesis: "Evaluation of stability of polymer/DNA carrier systems in serum and their biochemical efficacy"
13. Korinne Liosi, Title of the thesis: "Study and characterization of engineered liposomes for ^{19}F -MRI applications"
14. Jacopo Repossi, Title of the thesis: "Protein stabilized nanoformulation of a superfluorinated ^{19}F -MRI contrast agent"

Academic year 2014/2015:

15. Simone Carsana, Title of the thesis: "Development of engineered nanoparticles as cancer theranostic systems"
16. Umberto Martino, Title of the thesis: "Development of engineered nanoparticles as cancer theranostic systems"

At the University of East Anglia:**Academic year 2013/2014:**

1. Richard Clark, title of the project: "Nanoparticle behavior in the tumor microenvironment"
2. Benjamin Nicholson, title of the project: "Oral Exposure to Nanoparticles: Study of NP stability in the gastro- intestinal environment"

Academic year 2012/2013

3. Alistair Paton, title of the project: "Hyperthermic effects of Iron oxide nanoparticles"
4. Alice Townsend, title of the project: "Silica nanoparticles behavior in the tumor microenvironment"
5. Tasnima Sultana, title of the project: "Oral exposure to nanoparticles: Study of the NP stability in the gastro-intestinal environment"
6. Kieu Ly Truong, title of the project: "The stability of different surface functional nanoparticles in the biological environment"
7. Samuel Rutherford, title of the project: "*Optimisation of a nanoparticle-based delivery system for a DNA based antibiotic against antibiotic resistant infections*"

Academic year 2011/2012

8. Freda Chu, title of the project: "Evaluation of drug loading in core-shell nanocarriers as a novel therapeutic approach for the treatment of cancer cells"
9. Iris Tsim, title of the project: "Evaluation of drug release from magnetoliposomes upon alternating magnetic field"
10. Oscar Wendowski, title of the project: "Study of the protein corona of surface functionalized iron oxide nanoparticles in human plasma"
11. Aarthi Dejavaran, Title of the project: "An integrated preclinical tool for predictive analysis of nanomaterial safety"

Examiner at PhD VIVA for the following students:

- 1) Dr Qi Wang, awarded by *UEA PhD School* in 2012. Title of the thesis: *Synthesis of Poly-acrylic Acid Functionalised Silicon Nanoparticles for Biomedical Applications*.
- 2) Dr Girgis Obaid, awarded by *UEA PhD School* in 2013. Title of the thesis: *Targeted Nanoparticle Platforms for Selective Photodynamic Therapy of Cancer*.
- 3) Dr Abdulaziz Almalik, awarded by *Manchester University PhD School* in 2013. Title of the thesis: *Hyaluronic acid-coated nanoparticles as biofunctional pharmaceutical carriers*.
- 4) Dr Laile Che Rose, awarded by *UEA PhD School* in 2013. Title of the thesis: *Exploiting nanoscale materials properties for controlled drug delivery systems*.
- 5) Dr Paolo Verderio, awarded by *University of Milano-Bicocca PhD School* in 2013. Title of the thesis: *Synthesis and biofunctionalization of novel composite nanocarriers for targeted detection and treatment of malignant cells*.
- 6) Dr Angela Capocéfalo, awarded by *La Sapienza University PhD School* in 2019. Title of the thesis: *Hybrid plasmonic nanoparticle assemblies with tunable properties for biophysical applications*.
- 7) *Dr Giacomo Mandriota*, awarded by *University of Salento PhD School* in 2019. Title of the thesis: *Polydopamine-functionalized Superparamagnetic Clusters*.
- 8) Dr Calvin Cheung, awarded by *Queens University Belfast PhD School* in 2020. Title of the thesis: *Preparation of Multifunctional Nanoparticles using Microfluidics*.

7. CONFERENCE CONTRIBUTIONS AND INVITED SEMINARS

Summary: **41** Oral Communications: **7** Invited Seminars at International Universities and School, **18** Invited Talks at International Conferences, **14** contributed talks. Co-author of several talks (not speaker) and poster presentations (more than 100).

Invited Seminars

1. Laboratoire des Interactions et Réactivité Chimique et Photochimique (IMRCP), Paul-Sabatier University of Toulouse, 17 May 2021 "Fluorinated Branched Reporters as Innovative Bio-Tools in Medicine".
2. EPFL Summer Graduate student Summer School: "Shaping the Future of Medicine" (<https://sfm2019.epfl.ch>), 12-17 May 2019, Bellinzona Switzerland.
3. Center of Nano Science and Technology (CNST), Italian Institute of Technology, Milan, Italy. Title of the seminar: *Engineered Nanoparticles: the Bionano Interface in a Biological Environment (2014)*
4. Cavendish Laboratory, University of Cambridge, Cambridge, UK on the 1st of November 2013. Title of the seminar: *Engineered Nanoparticles: the Bionano Interface in a Biological Environment. (2013)*
5. University of Oslo, Dept. of Molecular Sciences, Oslo, Norway in March 2012. Title of the seminar: *Engineered Nanoparticles: the Bionano Interface in a Biological Environment. (2012)*
6. CNRS, IMRCP Lab, Toulouse, France, 5th of November 2010, Title of the seminar: *Nanomaterials for biological applications: towards a better understanding of the interactions at the bio-nano interface. (2010)*
7. Centro di Ricerca Interdipartimentale sui Biomateriali CRIB, University of Naples, Naples, Italy. 29th of September 2010. Title of the seminar: *Nanomaterials for biological applications: towards a better understanding of the interactions at the bio-nano interface. (2010)*

Invited Talks

8. Invited Speaker at FEBS2019 Advanced Course: Biological Surfaces and Interfaces: the Mechanistic View, 30 June – 5 July 2019, Sant Feliu de Guixols, Spain.
9. Keynote Speaker at the XIV Italian Conference on Supramolecular Chemistry, 6-8 June 2019, Lecce, Italy.

10. Plenary Speaker at SupraBioNano2019, 14-17 May 2019, Barcelona, Spain.
11. Invited Speaker at 22nd International Symposium on Fluorine Chemistry (ISFC), 22-27 July 2018, Oxford, UK.
12. Invited Speaker at the Workshop "Research and Nanomedicine" at the University of Pavia. 14th June 2018
13. Invited Speaker at the Conference "Molecular Basis of Sensory Biology" from the Carl von Ossietzky University Oldenburg and the Verona PhD programme in Biomolecular Medicine. "Sensory Systems in Health and Disease". 4-6 June 2018.
14. Invited Speaker at the Fluorine MRI Symposium 2017, Berlin 16 October 2017. Title of the talk: Fluorinated Smart Reporters as Innovative Bio-Tools
15. Invited Speaker at the 7th International Symposium on Fluorous Technologies (ISoFT), Boston, 9-11 August 2017.
16. Invited Speaker at Deuteration for Neutron Scattering –DEUNET Workshop, Oxford 15-17 Maggio, UK.
17. Invited Speaker at the XXVII Congresso Annuale SISN Italian Neutron Scattering Conference, 29 June-1st July 2016.
18. Keynote Speaker at the 30th European Colloid and Interface Society (ECIS) Conference, University of Rome La Sapienza, on September 4-9, 2016.
19. Invited Speaker /Nanomedicine Symposium CEN@Regione Lombardia, 21 September 2015.
20. Invited Speaker 74th IUVSTA Workshop: Surface Analysis meets blood compatibility. Frejus, France 3-7 November 2014.
21. Invited Speaker LETS 2014, Bologna, Italy, 29 September-01 October, 2014.
22. Invited Speaker Workshop "Quo Vadis Nanomedicine", Exeter University, Exeter, UK, on the 10-11 April 2014.
23. Invited Speaker Nanomedicine Series@Politecnico di Milano, Milan, on the 24th of October 2013. An article on this Symposium was written on "la Chimica e l'industria Web" in March 2014 by F. Baldelli Bombelli et al.
24. Invited Speaker at the Workshop "Theranostics Imaging and Therapy" at King's College, London, UK, 28th– 30th Oct 2012.
25. Keynote Speaker at PITTCON 2010, ACS Division of the Analytical Chemistry, Orlando, Florida, February 28-March 5, 2010. Symposium Analytical Chemistry for the study of Nanotoxicity. An article on Chemical&Engineering news 2010, vol. 88, p. 32-34 was published on the seminar.
26. Invited Speaker at the Nanobiotechnology International Workshop, EC Joint Research Centre, Ispra, Italy, 2-4 December 2009.
27. Invited Speaker at the SISN (Italian Society of Neutron Spectroscopy) annual Meeting, Sirolo, July 8-9.

Contributed Talks (speaker)

28. Symposium "From Nanomedicine to Precision Medicine" at Politecnico di Milano, 18 June 2021, Webinar.
29. 6th International Conference of Multifunctional, Hybrid Nanomaterials, 11-15 March 2019, Sitges, Spain.
30. 21st International Symposium on Fluorine Chemistry & 6th International Symposium on Fluorous Technologies, 23-28 August 2015 Como, Italy.
31. 5th EuCheMS Chemistry Congress, 31 August-4 September 2014, Istanbul, Turkey.
32. European Colloid&Interface Society, Limassol 7-11 September 2014.
33. Nanoparticles and Nanotechnologies in Medicine, Bresso (Mi) 19-21 June.
34. NanoMED 2012, London 7-9 November, 2012.
35. Fall Meeting Material Research Society, Boston, USA, November 29-December 3, 2010.
36. 23rd Conference of the European Colloid and Interface. Antalya (Turkey), September 6-11, 2009
37. 4th European Conference on Neutron Scattering. Lund (Sweden), June 25-29.

- 38.** 20th Conference of the European Colloid and Interface Society and 18th European Chemistry and Interface Conference. Budapest (Hungary), September 17-22.
- 39.** Italian Chemical Society Meeting – Physical Chemistry Division XXXIII National Meeting, Napoli (Italy), 21-25 June.
- 40.** European Student Colloid Meeting. Bristol, United Kingdom, July 16-19.
- 41.** CSGI meeting, Pavia (Italy), June 11-13.

8. FUNDING

As **Principal Investigator** at Politecnico di Milano:

- 1) Research grant funded by Regione Lombardia “Innovative Methods and Materials for personalized medicine (NEWMED)” Total: € 3.015.786,43 (started January 2020)
- 2) A Peptide Hydrogel Platform for Extracellular Vesicles Isolation and Multimodal Analysis (HYDROGEX) funded by Fondazione Cariplo e Regione Lombardia. (Rif. 2018-1720). Total: € 598.177 (started January 2019)
- 3) Young Researchers - grant funded by Health Italian Council “Role of the purinergic receptor P2RY12 in oligodendrocytes and immune cells in a combined neurodegenerative autoimmune model of Multiple Sclerosis” Total: € 445.682,00 (started December 2018)
- 4) Research Contract with Solvay Specialty Polymers “Development of polymer-based theranostic system” Total: € 100.000 (2017-2018).
- 5) Research Award (€ 80000) received by the Italian National Research Centre and ILL (Institute Laue Langevin, Grenoble, France) for a 3-year studentship. (2015-2018)
- 6) Research grant funded by Regione Lombardia/Ministero dello Sviluppo (FAS) and Politecnico di Milano for the project *Fluorine-functionalized Theranostics in anticancer treatment* € 873000. (2013-2015)

As **Participant** at Politecnico di Milano:

- 7) Research grant funded by Italian Research Council (PRIN-2017) “New-Generation Nanostructured Fluorinated Materials for ¹⁹F-MRI and their Biophysicochemical Interactions (NiFTy)” Total: € 686000 (started October 2019)
- 8) ERC-PoC Research grant funded by EU, “A Minimalist Peptide Elastomer” (MINIRES). € 180000 (2018-2019)
- 9) Research grant funded by Fondazione Regionale per la Ricerca Biomedica TRANS-ALS (Translating molecular mechanisms into ALS risk and patient’s well-being) Total: € 3.855.478 (February 2017-February 2021)
- 10) Research grant for a *proof of concept study* funded by FISM “Set-up of Neural Stem cells Imaging by ¹⁹F-MRI: labeling optimization, detection limits and biocompatibility tests”. Total: € 30000 (started 2019).
- 11) Research grant funded by Switch 2 Product (funded by Politecnico di Milano, Deloitte and Polihub), “A Minimalist Peptide Elastomer” (MINIRES). € 30000 (2018-2019)
- 12) Research grant funded by Cariplo Foundation “Understanding the role of β -amyloid Peptide Halogenation in AlzhEimer’s Disease” (PHAEDRA). Total: € 325000 (2015-2017)

As **Principal Investigator** at University of East Anglia:

- 13) IAPP FP7 European Grant DNA-TRAP *Delivery of Nucleic Acid-Based Therapeutics for the Treatment of Antibiotic-Resistant Pathogens* (48 months). UEA budget: € 400000 (2012-2016)
- 14) Research Grant Scheme from Royal Society *Development of SPION based theranostic drug nanocarriers for the treatment of multi-drug resistance cancer cells* £15000 (2012)
- 15) Research grant from the “British Skin Foundation” for a pilot study on *Development of multifunctional targeted drug nanocarriers for the treatment of metastatic melanoma*. £15000 (2012)
- 16) Personal Start – up grant funded by School of Pharmacy UEA £30000 (2011 – 2012)

9. AWARDS

1. CSGI Prize for the best paper presented by a young researcher within the CSGI (<http://www.csgi.unifi.it/>) in June 2003. (Publication 30)
2. Best Poster Prize (Living Polymers formed by the Spontaneous Aggregation of Di-lauroyl-phosphonucleosides) Baldelli Bombelli F., Berti D., Keiderling U., Baglioni P.) at the SISN (<http://www.sisn.it/>) conference in Genova (Italy) in 26-27 June 2003.

10. PUBLICATIONS AND TECHNOLOGICAL TRANSFER

Summary: co-author of **65** articles published in international peer-reviewed multi-disciplinary scientific journals, **3** chapters in international books and **> 100** conference abstracts.

Co-inventor of:

- 1 published patent hdl:11311/1043880 in 2017 “An elastomeric peptide”,
- 2 European Patent Applications: SSPI 2018/016-EP-EPA: Fluorinated hyperbranched polyglycerol polymers and corresponding nanoparticles and encapsulants (WO/2019/243478); SSPI 2018/014-EP-EPA: Fluorinated poly(lactic-co-glycolic acid) polymers and corresponding nanoparticles and drug encapsulated nanoparticles (WO2019243477, PCT).

Bibliometry: *h*-index=24, tot citations: 6303, source: ISIS Web of Science

Book Chapters

1. *Nanoscope agents in a physiological environment: the importance of understanding their behaviour.* Sherwood, V., Di Silvio, D., **Baldelli Bombelli, F.**, Topics in Medicinal Chemistry: Personalized Medicine with a Nanochemistry Twist. Springer Berlin Heidelberg 2014. DOI: 10.1007/7355_2013_36
2. *Micellar Aggregates Formed by Dilauroylphosphatidyl nucleosides* Berti D., **Baldelli Bombelli F.**, Almgren M., Baglioni P. In Self-Assembly 2003, B.H. Robinson Ed., IOS Press.
3. *Combining Cytotoxicity Assessment and Xenopus laevis Phenotypic Abnormality Assay as a Predictor of Nanomaterial Safety.* Al-Yousuf, K.; Webster, C.A; Wheeler, G. N; **Baldelli Bombelli F.**, Sherwood V., Current protocols in toxicology 2017, 73, 20.13.1-20.13.33

Peer- reviewed published articles (17 as corresponding author * and 12 as last author)**2021**

1. Chirizzi C., Morasso C., Caldaroni A., Tommassini M., Corsi F., Chaabane L., Vanna R., **Baldelli Bombelli F.***, Metrangolo P. *J. Am. Chem. Soc.* 2021, *J. Am. Chem. Soc.* 2021, 143, 31, 12253–12260.
2. Dichiarante V., Pigliacelli C., Metrangolo P., **Baldelli Bombelli F.** *Confined space design by nanoparticle self-assembly.* *Chem. Sci.*, 2021, Advance Article, *Chem. Sci.*, 2021,12, 1632-1646.

2020

3. Koshkina O., White P. B., Staal A. H.J., Schweins R., Swider E., Tirota I., Tinnemans P., Fokkink R., Veltien A., Koen van Riessen N., E. van Eck R.H., Heerschap A., Metrangolo P., **Baldelli Bombelli F.***, Srinivas M. *Nanoparticles for “two color” ¹⁹F magnetic resonance imaging: Towards combined imaging of biodistribution and degradation.* *Journal of Colloid and Interface Science* 2020, 565, 278-287.
4. Maiolo D., Pizzi A., Gori A., Gazzera L., Dimitri N., Genoni A., Baggi F., Moda F., Terraneo G., **Baldelli Bombelli F.**, Metrangolo P., Resnati G. *Halogenation of the N-Terminus Tyrosine 10 Promotes Supramolecular Stabilization of the Amyloid- β Sequence 7–12.* *ChemistryOpen* 2020, 9, 253-260.
5. Maiolo D., Pizzi A., Gori A., Bergamaschi G., Pigliacelli C., Gazzera L., Consonni A., Baggi F., Moda F., **Baldelli Bombelli F.**, Metrangolo P., Resnati G. *Enhanced self-assembly of the 7–12 sequence of amyloid- β peptide by tyrosine bromination.* *Supramolecular Chemistry* 2020, 32, 247-255.
6. Celentano, W., Neri, G., Distanti, F., Lin M., Messa, P., Chirizzi, C., Chaabane, L., De Campo, F., Metrangolo, P., **Baldelli Bombelli, F.**, Cellesi, F. *Design of fluorinated hyperbranched polyether copolymers for ¹⁹F-MRI nanotheranostics.* *Polymer Chemistry* 2020, 11, 3951-3963.

7. Neri, G., Mion, G., Pizzi, A., Celentano, W., Chaabane L., Chierotti, M., Gobetto, R., Min, L., Messa, P., De Campo, F., Cellesi, F., Metrangolo, P. **Baldelli Bombelli F.*** *Fluorinated PLGA Nanoparticles for Enhanced Drug Encapsulation and ¹⁹F-NMR Detection*. Chemistry- A European Journal 2020, 26, 10057-63.

2019

8. Buntara Sanjeeva K., Pigliacelli C., Gazzera L., Dichiarante V., **Baldelli Bombelli F.***, Metrangolo P. *Halogen bond-assisted self-assembly of gold nanoparticles in solution and on planar surface*. Nanoscale 2019, 11, 18407-18415.
9. Martinez Espinoza M.I., Sori L., Pizzi A., Terraneo G., Moggio I, Arias E., Pozzi G., Orlandi S., Dichiarante V., Metrangolo P., Cavazzini M., **Baldelli Bombelli F.*** *BODIPY Dyes Bearing Multibranched Fluorinated Chains: Synthesis, Structural, and Spectroscopic Studies*. Chemistry- A European Journal 2019, 25, 9078-87.
10. Berardi A. & **Baldelli Bombelli F.** *Oral delivery of nanoparticles - let's not forget about the protein corona*. Expert Opinion in Drug Delivery 2019, 16, 563–566.
11. Lolicato F., Joly L., Martinez-Seara H., Fragneto G., Scoppola E., **Baldelli Bombelli F.**, Vattulainen I., Akola J., Maccarini M. *The Role of Temperature and Lipid Charge on Intake/Uptake of Cationic Gold Nanoparticles into Lipid Bilayers*. Small 2019, 15, 1805046, 1-15.
12. Koshkina O., Lajoinie G., **Baldelli Bombelli F.**, Swider E., Cruz L. J., White P. B., Schweins R., Dolen Y., van Dinther E., van Riessen N. K., Rogers S. E., Fokkink R., Voets I. K., van Eck E. R. H., Heerschap A., Versluis M., de Korte C. L., Figdor C., M. de Vries I. J., Srinivas M. *Multicore Liquid Perfluorocarbon Loaded Multimodal Nanoparticles for Stable Ultrasound and ¹⁹F MRI Applied to In Vivo Cell Tracking*. Adv. Funct. Mater 2019, 29,1806485, 1-14.
13. Chirizzi C., De Battista D., Tirota I., Metrangolo P., Comi G., **Baldelli Bombelli F.**, Chaabane L. *Multispectral MRI with Dual Fluorinated Probes to Track Mononuclear Cell Activity in Mice*. Radiology 2019, 2, 351–357.
14. Berardi A., **Baldelli Bombelli F.**, Thuenemann E., Lomonosoff G.P. *Viral nanoparticles can elude protein barriers: exploiting rather than imitating nature*. Nanoscale 2019 11, 2306- 2316.
15. Pigliacelli C., Buntara Sanjeeva K., Nonappa, Pizzi A., Gori A., **Baldelli Bombelli F.**, P. Metrangolo. *In Situ Generation of Chiroptically-Active Gold-Peptide Superstructures Promoted by Iodination*. ACS Nano 2019, 13, 2159.

2018

16. Maiolo D., Colombo J., Beretta J., Malloggi C., Candiani G., **Baldelli Bombelli F.** *The polyplex, protein corona, cell interplay: Tips and drawbacks*. Colloids and surfaces. B, Biointerfaces 2018, 168, 60-67.
17. Berardi A., Evans D. J., **Baldelli Bombelli F.**, Lomonosoff G.P. *Stability of plant virus-based nanocarriers in gastrointestinal fluids*. Nanoscale 2018 10, 1667-1679.

2017

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11. OTHER SERVICES

Organization National and International Conferences

- 2019 Chair of the XIV International Symposium on Macrocyclic and Supramolecular Chemistry (ISMSC2019), Lecce (Italy) 2-6 June 2019 (www.ismsc2019.eu)
- 2019 Member of the Organizing Committee for the XIV Italian Conference on Supramolecular Chemistry (SUPRAMOL2019), Lecce (Italy) 6-8 June 2019
- 2015 Member of the Organizing Committee for the 21st International Symposium on Fluorine Chemistry (21stISFC) and 6th International Symposium on Fluorous Technologies (ISoFT'15), Como (Italy) 23-28 August 2015.
- 2014 Member of the Organizing Committee for the 1st International Symposium on Halogen Bonding (ISXB-1), Porto Cesareo (Italy), 18-22 June 2014.

Member of panels, societies and activity as reviewer

- 2021 External Reviewer for the European Science Foundation (ESF)
- 2021-2023 Member of Expert Panel in the Review College of Research Foundation Flanders (FWO)
- 2017-now Member of the Scientific Panel of the Dep. Chemistry, Materials and Chemical Eng. G. Natta /Italy
- 2008–now Peer-Reviewer for ISI journals in the field of colloid science, chemistry, physical-chemistry, nanotechnology and nanomedicine.
- 2012–2014 Member Quality Nano (Q-Nano) Biological Interactions Expert-Group (European Union-funded infrastructure for Quality in nanomaterials safety testing)
- 2015 External Grant Reviewer, Swiss National Science Foundation/Switzerland
- 2015 External Reviewer for Tenure Track Associate Professor Position, KU Leuven/ Belgium
- 2012-2013 External Grant Reviewer, IACR (now World Cancer Research Fund International)
- 2012 External Grant Reviewer, Leverhulme Trust/UK
- 2003-now Member of the Italian Society Neutron Spectroscopy (SISN)
- 2006-now Member of the Italian Chemical Society (SCI)
- 2011-2021 Member of the Royal Chemistry Society (RCS)
- 2020-now Member of the European Society for Molecular Imaging (ESMI)

12. ACHIEVEMENTS TRACK RECORD AND COLLABORATION NETWORK

Since receiving my PhD in Chemistry from the **University of Florence** in April **2004**, I have worked in different European Universities and Research Institutes as Post-Doc researcher until 2011 (see CV). My last Post-Doc at the Centre of BioNanoInteractions at the University College Dublin (**UCD**) in Ireland allowed me to start working in the exciting field of the protein corona and put the seeds for my future career as independent PI. During this Post-Doc I co-lead the pioneering research activity on the mechanism of formation of PC-NPs in biological fluids as shown by my publications.

Then, in **2011** I was appointed Lecturer in Colloid Science and Nanotechnology at the School of Pharmacy of the University of East Anglia (**UEA**) in the UK and I started to build my own research group. The University provided me with a small start-up funding as well as access to the equipment available at the department. Since that moment I have been applying to different relevant funding agencies to support my research and become an independent principal investigator.

In **2013**, I obtained a personal 3-years fellowship funded by the European Centre of Nanomedicine (**CEN foundation** <http://nanomedicen.eu/>) and **Politecnico di Milano** to move back to Italy and build up a Nanomedicine group at Politecnico di Milano (3 Post-Docs plus myself) working on the development of fluorinated nanomaterials as ^{19}F -MRI contrast agents and drug delivery systems in collaboration with Prof. Pierangelo Metrangolo and Prof. Giuseppe Resnati, leaders in the use of fluorinated materials and halogen bonding. This was an important moment in my career as it meant to change again and begin from zero after only 2 years since I had started my group at UEA, but I thought it was a challenging opportunity to lead an innovative and exciting project and set up a new laboratory. I kept working 0.2 f.te at the UEA until the end of **2014**, when I became associate Professor at Politecnico di Milano and I thereby decided to definitely leave UEA.

During last seven years at Politecnico di Milano my research interest has been focused on the application of nanotechnology in the biomedical field and particularly on the study of the development of fluorinated nanomaterials as theranostic tools: i.e. active in ^{19}F -MRI (diagnostic) and also able to work as efficient drug delivery vectors (therapy). The interaction of these fluorinated nanomaterials with proteins in the body (i.e. human plasma, cell membrane, digestive fluids etc.) and its role in their biological responses has also been investigated. Nanomedicine is a multidisciplinary research field and for obtaining important achievements, it is necessary to work with biologists and clinicians. For this reason, I have been activating major collaborations with Hospitals and Medical Research Institutes in Milan, in particular with:

- Dr Linda Chaabane and Dr Anna Mondino at San Raffaele Hospital (Milan) in the area of T-cell therapy, my contribution is on the development of customized biodegradable nanoparticles containing ^{19}F -MRI markers targeting T-cells and enabling *in-vivo* T-cell tracking. (Funding – Project n° 10 and publications 5,6,12)
- Dr Stefania Marcuzzo, Dr Fulvio Baggi and Dr Alessandra Consonni at Neurological Institute Carlo Besta (Milan) in the area of neurological diseases, my contribution has been developing gene delivery vectors for siRNA and miRNA delivery in neuronal cells for the treatment of different neurological diseases such as multiple sclerosis (MS) and amyotrophic lateral sclerosis (ALS). (Funding – Projects n° 3 and n°9; publications 3,4,32)
- Dr Roberto Rusconi and Dr Roberto Papait at Humanitas (Milano) in the area of cardiological diseases, my contribution has been developing customized nanoformulations for the delivery of epigenetic drugs to the heart and studying them with microfluidic devices to study their interaction with a biological environment reproducing the physiological conditions in terms of composition, pressure and confinement. (Project – n°1)

I have also been collaborating with international scientists as demonstrated by my publication track record. In particular, I have recently been collaborating with:

- Dr Mangala Srinivas at Multiscale Imaging Lab, Radboud UMC, Nijmegen (NL) for developing multimodal PLGA nanoparticles for cell tracking. (Publications 2,11)
- Dr George Lomonossoff at John Innes Centre (UK) and Dr Alberto Berardi at Applied Science Private University (Jordan) for studying the behavior of plant viral NPs in biological fluids as possible vectors for drug oral delivery. (Publications 9,13,16)
- Dr Giovanna Fragneto at ILL, Grenoble and Dr Marco Maccarini at Laboratoire TIMC-IMAG at the University Grenoble Alpes (FR), for studying the interaction of NPs with model cell membranes. (Publications 10,22)
- Prof. Wolfgang Parak - University Hamburg, Germany- we collaborate in the field of protein corona and NP-cell interactions. (Publication 27)
- Prof. Morteza Mahmoudi, Assistant Professor of Radiology and Precision Health Program at Michigan State University (MSU)- we collaborate on the study of the interaction of NPs with proteins in biological fluids. (Publication 24)

More recently, I have started new collaborations on innovative applications of these fluorinated probes to use them as bimodal multiscale imaging probes (MRI and Raman) and to as tracers to track extra-cellular vesicles in vivo:

- Prof. Jesus Santamaria at University of Zaragoza (ES) on image-guided therapy by ¹⁹F-MRI through the use of labeled extracellular vesicles. (Manuscript under review in JEV).
- Dr Renzo Vanna at CNR-IFN and Dr Carlo Morasso at Istituti Clinici Scientifici Maugeri IRCCS for the development of ultrabright bioorthogonal probes for combined Raman and ¹⁹F-Magnetic Resonance Imaging. (manuscript just accepted in JACS).

I certified that the information in this curriculum vitae is true and accurate. The same functions as self-certification according to DPR n°445 of 28/12/2000.

Milano, 10-09-21

La dichiarante
Francesca Baldelli Bombelli

I authorized the use of personal data including sensitive ones for the purpose and effect of law 31-12-96 n°675.

Milano, 10-09-21

La dichiarante
Francesca Baldelli Bombelli