UNIVERSITÀ DEGLI STUDI DI MILANO

DEPARTMENT OF CHEMISTRY

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## Curriculum vitae

Dr. Manfredi graduated in Chemistry on 1982 at the University of Milan, where she was appointed Researcher of the National Research Council on 1986 and Assistant Professor of Industrial Chemistry on 1992 at the Department of Organic and Industrial Chemistry (now merged into the Department of Chemistry).

## Research Activity

Dr. Manfredi is expert in the synthesis of organic and macromolecular compounds, and their NMR characterization. Her research activity has been focused, among others, on the asymmetric synthesis in biomimetic conditions (employing proteins, enzymes and cyclodextrins as chiral auxiliaries) or through the use of organometallic ligands; on the synthesis and characterization of chiral porphyrins to be used as catalysts in oxidation reactions; on the design, synthesis and characterization of macrocyclic and macropolycyclic receptors, and of new perfluorinated catalysts.
Her present research interests are focused on the synthesis and characterization of a) biocompatible and degradable polymers for medical applications, to be used as: soluble or nanoparticulate carriers of antitumor, antiviral drugs or for gene therapy; b) biodegradable hydrogels as scaffolds for tissue engineering, c) multifunctional cross-linked resins for the adsorption of heavy metal ions and d) thermally stable polymers for flame retardant application.

She is co-author of 70 scientific publications in peer-reviewed International Scientific Journals (h-index 23) and 4 patents, and of several congress communications, including poster and oral communications.

## Teaching Activity

She has been responsible lecturer of the courses of Organic Fine and Macromolecular Chemistry for the Bachelor degree in Applied and Environmental Chemistry (2002-2011) and of Safety in the Work and Chemical Instrumentations for the Bachelor degree in Industrial Chemistry (2000-2009). She was given the teaching of the course "Process Development" for the Master's Degree courses in Industrial Chemistry and Chemical Sciences (Aggregate Professor, from the academic year 2011/2012). She works as Laboratory Assistant in many Organic and Macromolecular Chemistry Courses.

In the period 2010-2012 she was a member of the teaching board of the PhD School in Biological and Molecular Science of the University of Pisa. Currently, she is member of the teaching board of the PhD course in Industrial Chemistry.

**Recent Publications**


1. P. Urbán, J.J. Valle-Delgado, N. Mauro, J. Marques, A. Manfredi, M. Rottmann, E. Ranucci, P. Ferruti, X. Fernàndez-Busquets - Use of Poly(amidoamine) Drug Conjugates for the Delivery of Antimalarials to *Plasmodium*. *J. Control. Release*, **2014**, *177*, 84-95.
2. E. Ranucci, G. Capuano, A. Manfredi, P. Ferruti - One-step synthesis of poly(lactic-*co*-glycolic acid)-*g*-poly-1-vinylpyrrolidin-2-one copolymers. *J. Polym. Sci. Part A: Polymer Chemistry,* **2016**, *54*, 1919-1928. DOI: 10.1002/pola.28049.
3. C. Gualandi, N. Bloise, N. Mauro, P. Ferruti, A. Manfredi, M. Sampaolesi, A. Liguori, R. Laurita, M. Gherardi, V. Colombo, L. Visai, M. L. Focarete, E. Ranucci - Poly-L-Lactic Acid Nanofiber–Polyamidoamine Hydrogel Composites: Preparation, Properties and Preliminary Evaluation as Scaffolds for Human Pluripotent Stem Cell Culturing. *Macromol. Biosci.*, **2016**, *16*, 1533−1544. DOI: 10.1002/mabi.201600061.
4. N. Mauro, P. Ferruti, E. Ranucci, A. Manfredi, A. Berzi, M. Clerici, V. Cagno, D. Lembo, A. Palmioli, S. Sattin - Linear biocompatible glyco-polyamidoamines as dual action mode virus infection inhibitors with potential as broad-spectrum microbicides for sexually transmitted diseases. *Sci. Rep*., **2016**, *6*, 33393. DOI: 10.1038/srep33393.
5. N. Mauro, F. Chiellini, C. Bartoli, M. Gazzarri, M. Laus, D. Antonioli, P. Griffiths, A. Manfredi, E. Ranucci, P. Ferruti - RGD Mimic Polyamidoamine-Montmorillonite Composites with Tunable Stiffness as Scaffolds for Bone Tissue Engineering Applications. *J. Tissue Eng. Regen. Med.* **2017**, *11*, 2164-2175. DOI: 10.1002/term.2115.
6. M. Argenziano, C. Dianzani, B. Ferrara, S. Swaminathan, A. Manfredi, E. Ranucci, R. Cavalli, P. Ferruti - Cyclodextrin-Based Nanohydrogels Containing Polyamidoamine Units: A New Dexamethasone Delivery System for Inflammatory Diseases. *Gels*, **2017**, *3*, 22. DOI:10.3390/gels3020022.
7. R. Cavalli, L. Primo, R. Sessa, G. Chiaverina, L. di Blasio, J. Alongi, A. Manfredi, E. Ranucci, P. Ferruti - The AGMA1 polyamidoamine mediates the efficient delivery of siRNA. *J. Drug. Targ*., **2017**, *25* (9-10), 891-898. DOI: 10.1080/1061186X.2017.1363215.
8. A. Manfredi, N. Mauro, A. Terenzi, J. Alongi, F. Lazzari, F. Ganazzoli, G. Raffaini, E. Ranucci, P. Ferruti - Self-Ordering Secondary Structure of D- and L-Arginine-Derived Polyamidoamino Acids. *ACS Macro Lett*. **2017**, *6*, 987−991. DOI: 10.1021/acsmacrolett.7b00492.
9. E. Caruso, S. Ferrara, P. Ferruti, A. Manfredi, E. Ranucci, V. T. Orlandi - Enhanced photoinduced antibacterial activity of a BODIPY photosensitizer in the presence of polyamidoamines. *Lasers Med. Sci.*, **2018**, *33*, 1401-1407.
10. A. Manfredi, F. Carosio, P. Ferruti, E. Ranucci, J. Alongi - Linear Polyamidoamines as Novel Biocompatible Phosphorus-Free Surface-Confined Intumescent Flame Retardants for Cotton Fabrics. *Polym. Degrad. Stab.*, **2018**, *151*, 52-64.
11. A. Manfredi, F. Carosio, P. Ferruti, J. Alongi, E. Ranucci - Disulfide-containing polyamidoamines with remarkable flame retardant activity for cotton fabrics. *Polym. Degrad. Stab.*, **2018**, *156*, 1-13.
12. F. Lazzari, A. Manfredi, J. Alongi, R. Mendichi, F. Ganazzoli, G. Raffaini, P. Ferruti, E. Ranucci - Self-Structuring in Water of Polyamidoamino Acids with Hydrophobic Side Chains Deriving from Natural $\alpha$-Amino Acids. *Polymers*, **2018**, *10*, 1261. DOI: 10.3390/polym10111261.
13. E. Martí Coma-Cros, A. Biosca, J. Marques, L. Carol, P. Urbán, D. Berenguer, M. C. Riera, M. Delves, R. E. Sinden, J. J. Valle-Delgado, L. Spanos, I. Siden-Kiamos, P. Pérez, K. Paaijmans, M. Rottmann, A. Manfredi, P. Ferruti, E. Ranucci, X. Fernàndez-Busquets - Polyamidoamine Nanoparticles for the Oral Administration of Antimalarial Drugs. *Pharmaceutics*, **2018**, *10*, 225. DOI: 10.3390/pharmaceutics10040225.
14. E. Ranucci, A. Manfredi - Polyamidoamines: versatile bioactive polymers with potential for biotechnological applications. *Chemistry Africa*, **2019**, DOI: https://doi.org/10.1007/s42250-019-00046-1.
15. F. Lazzari, A. Manfredi, J. Alongi, D. Marinotto, P. Ferruti, E. Ranucci - D-, L- and D,L-Tryptophan-Based Polyamidoamino Acids: pH-Dependent Structuring and Fluorescent Properties. *Polymers*, **2019**, *11*, 543. DOI:10.3390/polym11030543.