

PERSONAL INFORMATION

First name and Family name **Francesca CUNSOLO**
Business Address Via Paolo Gaifami, 18. 95126 Catania - Italy
Telephone **+39 0957338333 - 3478071418**
E-mail francesca.cunsolo@icb.cnr.it
URL web site <https://www.icb.cnr.it/personale/dipendenti/catania/catania-ricercatori/cunsolo-francesca/>
Current Position Senior Reseacher at Institute of Biomolecular Chemistry - National Research Council
Date of birth 07/04/1959

EDUCATION AND PROFESSIONAL EXPERIENCE

April 1983 Master degree cum laude in Organic Chemistry.
Professional qualification.
September 1986- November 1988 Grant of National Research Council at Istituto per lo studio delle Sostanze Naturali di Interesse Alimentare e Chimico Farmaceutico (ISSN)
December 1988 Researcher at ISSN-CNR
January 2001 Senior Reseacher at Institute of Biomolecular Chemistry - National Research Council
20 August-9September 2001 Visiting Researcher at Yale University , New Haven, Connecticut, USA, under the supervision of Prof. Andrew Hamilton
1 Marzo-30 Aprile 2002 Grant CNR-NATO Senior at Yale University , New Haven, Connecticut, USA, under the supervision of Prof. Andrew Hamilton

SCIENTIFIC ACTIVITY

Co-author of 50 scientific publications in peer reviewed international journals and of several presentations at national and international conferences
A chapter in a multi-author book
Cover page (Organic & Biomolecular Chemistry)
Co-inventor of three patents
Bibliometric indicators: 1304 citations, H-index = 22 (fonte Google Scholar)
URL: <https://scholar.google.it/citations?user=JsSAGPkAAAAJ&hl=it>

RESEARCH ACTIVITY

The first part of the research activity concerned the chemistry of natural substances, with the isolation and structural characterization of secondary metabolites from brown algae. This activity allowed to gain experience of the most common chromatographic (HPLC, GC, etc.) and spectroscopic (IR, UV, MS, NMR, CD, Fluorescence Spectroscopy) techniques.

After she worked on supramolecular chemistry with particular attention to the chemistry and three-dimensional pre-organization of calixarene macrocyclics, in order to modulate and improve the molecular recognition and receptor properties typical of this family of macrocycles. This work continued with the design and synthesis of calixarene-based molecules with potential applications in the bioorganic and biomedical fields. In this context, calix [8] arene amino acid polyelectrolytes have been studied which have shown activity as inhibitors of enzymes involved in inflammatory processes responsible for chronic diseases. The same molecules revealed an exceptional recognition and neutralization activity against heparin, a sulfonated polysaccharide involved in blood coagulation processes. In this regard, polymeric materials with adequate porosity have been developed which could be used in the design and manufacture of filtering devices useful in hemodialysis practices. The synthesis of calix [8] arene amino acid derivatives, forming hydrogels pH sensitive, and their potentialities as carrier in drug delivery to improve the solubility and bioavailability of pharmacologically active molecules, has been reported.

Currently the main interests are aimed at the design and synthesis of macroporous polymeric cryogels for applications in the biomedical and environmental fields.

Lately published papers and patents

- 1) T. Mecca et al. N-methyl-D-glucamine based cryogels as reusable sponges to enhance heavy metals removal from water; *Chemical Engineering Journal* 399, 125753 (2020)
- 2) M. Ussia et al. ZnO-pHEMA Nanocomposites: An Ecofriendly and Reusable Material for Water Remediation; *ACS Appl. Mater. Interfaces*, 10, 46, 40100 (2018)
- 3) G. Granata et al. Potential Eye Drop Based on a Calix[4]arene Nanoassembly for Curcumin Delivery: Enhanced Drug Solubility, Stability, and Anti-Inflammatory Effect; *Mol. Pharmaceutics*, 14, 1610 (2017)
- 4) R. La Spina et al. Chemically modified poly(2-hydroxyethyl methacrylate) cryogel for the adsorption of heparin; *J. Biomed. Mater. Res. Part B*, 102, 1207 (2014)
- 5) T. Mecca et al. Novel pH responsive calix[8]arene hydrogelators: self-organization processes at a nanometric scale; *Chem. Commun.*, 49, 2530 (2013)

Cryogel for the removal of heparins and heparinoids from aqueous solutions, physiological solution and biological fluids, preparation process and uses thereof; **PCT/IB2017/050712** (2017)

N-alkyl-D-glucamine based macroporous polymeric cryogel for sequestering and/or removing toxic contaminants; **PCT/EP2020/069695** (2020)

RESEARCH PROJECT SCIENTIFIC RESPONSIBILITY TEACHING ACTIVITY

Involved to the development of several national research projects.

Scientific responsible of researchers with temporary position

Scientific responsible of 2 master fellows

Co-supervisor of experimental theses for the degree courses in Chemistry and Biological Sciences at the University of Catania

Teaching activities in national training projects

Teaching activity at the University of Catania (academic year 2010-2011) for the chair of "Principles of Organic Chemistry" at the Faculty of Pharmacy - Herbal Sciences Course.