

Michele Maggini

Born: Padova (IT) 1959
Full Professor of Organic Chemistry, University of Padova
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**Education**

1984 – Master Degree (*Laurea*) in Chemistry, Department of Organic Chemistry, University of Padova, Italy.

Fellowships

1984-1985 - Guest Researcher, Department of Organic Chemistry, University of Padova
1986-1988 - Research Associate, Searle Chemistry Labs., The University of Chicago, USA

Professional appointments

1988-1989 - Senior Research Chemist - Lepetit Research Center, Dow Chemical, Gerenzano, Italy
1989-1998 - Research Chemist, National Council of Research, U. of Padova, Italy
1998-2000 - Associate Professor of Organic Chemistry, Organic Chemistry Dept., U. of Padova, Italy
2000- Full Professor of Organic Chemistry, Chemical Sciences Dept., U. of Padova, Italy

Research interests

Michele Maggini's main research interests are the design, synthesis, characterization and applications of π -conjugated molecular architectures for solar energy conversion and the development of flow chemistry platforms for the synthesis of pharmaceutical products, the controlled functionalization of carbon nanostructures and the production of micro/nanosystems to encapsulate, carry and deliver active chemical ingredients.

Scientific achievements

Michele Maggini obtained his Laurea degree in Chemistry in 1984 in the group of Gianfranco Scorrano, working on the reactivity of aromatic nitroderivatives in alkaline-alcoholic media. In 1986, as a research associate with Philip Eaton at the U. of Chicago, he isolated the cycloaddition product of 1,2-dehydrocubane (cubene), one of the most pyramidalized olefin yet known (*Encyclopædia Britannica*, *Yearbook of Science and the Future*, 1990, page 308, *JACS* 1988, 110, 7230; *JACS* 1988, 110, 7232). With M. Prato, in 1989 Maggini tackled the total synthesis of bioactive indolizidine alkaloids and in 1992 began to investigate the chemical reactivity of the fullerenes, specifically through the cycloaddition of azomethine ylides (*JACS* 1993, 115, 9798 - **1089 citations**, *Acc. Chem. Res.* 1998, 31, 519 - **763 citations**). Within an international network of excellent collaborators, a wide variety of fullerene derivatives were produced and studied. For instance, those containing a covalently linked TEMPO moiety were investigated to elucidate and understand the peculiar characteristics of fullerene anions or triplet excited states (*JACS* 1997, 119, 789; *JACS* 2006, 128, 4734). These species are connected with relevant fullerene features, such as non-linear optical properties, electron or energy transfer in donor-acceptor systems (*Angew. Chem., Int. Ed.* 2000, 39, 3905) and singlet oxygen sensitization. In 1998, Maggini joined the Department of Chemical Sciences as associate professor and, since then, his research interests have focused mainly on the synthesis of molecular organic materials for solar energy conversion (*Adv. Mater.* 2001, 13, 1871, *Adv. Mater.* 2002, 14, 1735, *Energy & Environ. Sci.* 2011, 4, 725) and on the development of flow chemistry platforms and methods for the synthesis of active pharmaceutical ingredients of industrial interest (*J. Flow. Chem.* 2015, 5, 17) or the batch-to-flow transpositions of distressing or unsafe

chemical syntheses (*OPRD* 2012, 16, 1146). Fast prototyping techniques are used for the quick fabrication of polymer microfluidic devices based on soft photolithography (*Adv. Synthesis & Catalysis* 2008, 17, 2815) and the study of surface modification of microchannels by wet chemistry methods (*Lab Chip*, 2012,12, 4041). By using original prototypes, or commercial flow reactors, Maggini studies the synthesis and functionalisation of nanosystems, such as metal nanoparticles (*Chem. Commun.* 2013, 49, 84) or carbon nanostructures (*Chem. Commun.* 2011, 47, 9092, *J. Flow Chem.* 2014, 4, 79). Often the microfluidics toolbox is used to study reaction (*Eur. J. Org. Chem.* 2011, 28, 5571) or surface-absorption kinetics (*Chem. Commun.* 2011, 47, 11656). The scientific production of Michele Maggini counts 157 publications on peer-reviewed journals and 3 patents.

Bibliometric indicators

Number of papers on peer-reviewed journals and book chapters: 172; Source: Google Scholar (<https://scholar.google.it/citations?user=LybifkUAAAAAJ&hl=it>); Number of citations 9998; h-index=51; h-index=45 (WoS, 7995 citations); h-index=46 (Scopus, 8002 citations); i10-index=140; h-index (since 2013)=22; i10-index (since 2013)=54.

Supervision of graduate students and postdoctoral fellows

1999-2017 – 5 postdocs, 11 PhD students, 25 Master students, Department of Chemical Sciences – University of Padova

Teaching activities

1998-2017 – Institutional teaching activity as associate professor and then, since 2000, as full professor at the University of Padova - Italy: Organic Chemistry 1 (for Chemistry, Industrial Chemistry, Materials Science, Natural Sciences, Biotechnology courses at BS level); Advanced Organic Synthesis (for Chemistry, Industrial Chemistry courses at MS level); Functional Organic Materials (for Materials Science at MS level); Carbon Nanostructures Chemistry (for the PhD program in Molecular Sciences)

Organisation of scientific meetings

San Diego (1998), Seattle (1999), Toronto (2000), Washington (2001) - *Fullerenes: Chemistry, Physics and New Directions*, international symposium on the Organic Functionalization of the Fullerenes, The Electrochemical Society, chairman

2004 - *nano.org: organic chemistry meets nanotechnology*, co-chairman, Venezia

2006, 2007, 2008 - *Summer School "A. Corbella" Seminars in Organic Synthesis*, co-chairman, Gargnano, Italy

2011 - *3rd symposium on Continuous Flow Reactor Technology for Industrial Applications*, chairman, Como, Italy

2015, 2016, 2017 – *European Winter School on Physical Organic Chemistry*, chairman, Bressanone, IT

2016 – *EuCheMS Chemistry Congress*, topic E4, *Carbon-based Nanochemistry* Section, convenor, Seville, Spain.

Institutional responsibilities

2004-2012 Member of the Commission for Scientific Research of the U. of Padova

2014-2016 Coordinator of the Undergraduate Programme in Materials Science, U. of Padova

2014-2016 Coordinator of the Natural Sciences Class of the Galilean School of higher education, U. of Padova

2016-2017 member of the national Chemistry Panel for university research evaluation (GEV3-ANVUR) VQR 2011-2014.

Since 2010 steering committee member of the PhD program in Science and Engineering of Materials and Nanostructures, Chemical Science Dept., U. of Padova

Since 2016 Deputy director of the Galilean School of Higher Education, U. of Padova

Since 2016 Director of the Department of Chemical Sciences, U. of Padova

Collaborative projects

(a) NATO-CRG960099 on fullerene chemistry, coordinator (1996-1999); (b) Steering Committee member of EC project Brite EuRam III MOLALC, on *Molecular Optical Limiting and Light Control* (1997-2000); steering Committee member of EC projects Joule III on *Molecular Plastic Solar Cells* (1999-2001); (c) CNR-C00C4BD, *Functional Fullerene Derivatives*, local PI (2000); (d) U. of Padova, starting grant on *Multiphoton Absorbing Organic Chromophores* (2001); (e) Ministry of University and Research, PRIN 2004-035502, *Functional Fullerenes for Materials Science Applications*, local PI; PRIN 2006-034372, *Oxidation of Carbon Nanotubes*, local coordinator; PRIN 2008- 5M27SS, *Carbon Nanostructures in Microfluidic Reactors*, local coordinator; PRIN 2010-N3T9M4 *Photosynthetic Artificial Nanostructures*, local PI; (f) MISCHA (*Fabrication, Characterization and Modelling of Microfluidic Devices*) collaborative project sponsored by *Fondazione CaRiPaRO*, coordinator (2008-2011); (g) HELIOS (*Highly Efficient Light Interactions with Organized Molecular Systems*) collaborative project sponsored by the U. of Padova, coordinator (2009-2013); (h) Ministry of University and Research, FIRB-RBAP11C58Y, *NANOSOLAR*, local PI (2012-2016); (i) InnoGel (*Innovative hydrogels for conservation agriculture*) collaborative project sponsored by *Fondazione CaRiPaRO*, coordinator (2018-2020).

Commissions of trust

Since 2002 editorial board member of the journal: *Fullerenes, Nanotubes, and Carbon Nanostructures*

2008-2012 scientific advisory board member for microreactor technology, Corning Inc., USA

2009 projects evaluator for F.R.S.-FNRS, Belgium

2011 projects evaluator for Fondazione CARITN, Trento, Italy

2012 projects evaluator for Fondazione Bruno Kessler, Trento, Italy

2012 project evaluator for Fondation FRC, Strasbourg, FR

2012-2013 evaluation panel member for Veneto Region

2004-2014 scientific advisor for *Fabbrica Italiana Sintetici SpA* (pharma group), Italy

2015-2016 scientific advisor for *A.M.S.A. SpA* (pharma group), Italy

2014-2016 project evaluator (ERC ST-grants) for EU

2016-2017 member of the National Chemistry Panel for University research evaluation (GEV3-ANVUR)

Regular reviewer activity for scientific chemistry journals published by Wiley, Royal Society of Chemistry, American Chemical Society.

Memberships of scientific societies

Italian Chemical Society; American Chemical Society

Major collaborations

M. Prato (carbon nanostructures chemistry, U. of Trieste), A. Hirsch (carbon nanostructures π -conjugated molecular structures chemistry, U. of Erlangen, DE), F. Paolucci (electrochemistry of functional materials, U. of Bologna), S. Campagna (photophysical studies, U. of Messina), M. Muccini (organic solar cells development, ISMN-CNR, Bologna), P. Ceroni (photophysical characterization of π -conjugated molecules, U. of Bologna), D. Guldi (photophysics of carbon nanostructures, U. of Erlangen, DE), C. Bignozzi (hybrid organic-inorganic solar cells, U. of Ferrara), E. Galoppini (synthesis of organic photosensitizers, Rutgers U., Newark - USA), M. Benaglia (microreactor technology, U. of Milano).

Granted patents

A. Castellin, M. Maggini, P. Donnola - *Process for the synthesis of 4H-imidazo [1,5-a] [1,4] benzodiazepines, in particular midazolam and salts thereof*, 2013 - US8557981 B2

M. Maggini, E. Menna, T. Carofiglio, E. Rossi, A. Pace, P. Salice - *Method for synthesis of functionalised carbon nanotubes by cycloaddition under continuous flow conditions and apparatus for the method*, 2013 - WO2012156297 A3

Invited presentations to peer-reviewed internationally established conferences and/or international advanced schools

1988 Symposium on pyramidalized olefins, ACS meeting, Los Angeles
1994 185 meeting of the Electrochemical Society (ECS), San Francisco
1995 187 meeting of ECS, Reno
1995 COST Action D2 Workshop on Selective Synthesis, Budapest
1996 189 meeting of ECS, Los Angeles
1996 13 IUPAC meeting ICPOC-13, Inchon (Korea)
1997 191 meeting of ECS, Montreal
1998 II Italian-Israeli meeting on Physical Organic Chemistry, Jerusalem
1999 ESOC 11, Göteborg
1999 195 meeting of ECS, Seattle
2000 III Spanish-Italian Symposium on Organic Chemistry, Malaga
2001 199 meeting of ECS, Washington
2002 201 meeting of ECS, Philadelphia
2004 Laboratory for plastic solar cells, Linz
2006 VI Spanish-Italian Symposium on Organic Chemistry, Taormina
2009 216 meeting of ECS, Vienna
2012 Scientific Update, Baveno (IT)
2013 223rd meeting of ECS, Toronto
2014 1st China-Italy Bilateral Symposium on Graphene, Dalian (China)
2014 PCC - Anders Ringbom Workshop, Åbo Akademi University, Turku (Fin)
2015 227 meeting of ECS, Chicago
2017 Liebig Kolleg, University of Giessen, DE
2018 Electron Donor-Acceptor Interactions Gordon Research Conference, Newport

Lectures at universities or research centers

- (1) Merrel Dow Pharmaceuticals Inc., Cincinnati, 1988
- (2) ISM-CNR, Bologna, 1994 (host: C. Taliani)
- (3) CNR Research Area, Padova, 1995 (host: P. Traldi)
- (4) Toyama University, 1996 (host: Y. Higuchi)
- (5) Kyoto University, 1996 (host: K. Komatsu)
- (6) Osaka University, 1996 (host: Y. Tobe)
- (7) Leopold-Franzens-Universität Innsbruck, 1996 (host: B. Kraeutler)
- (8) University of Notre Dame (USA) 1997 (host: D. Guldi)
- (9) ISOF-CNR, Bologna, 2001 (host: N. Camaioni)
- (10) University of Pavia, 2004 (host: P. Righetti)
- (11) BASF Ludwigshafen, 2005 (host: T. Gessner)
- (12) University L. Pasteur Strasbourg, 2006 (host: A. Bianco)
- (13) University of Muenster, 2007 (host: L. De Cola)
- (14) ENI-Donegani, 2009 (host: R. Po)
- (15) University of Erlangen, 2010 (host: D. Guldi)
- (16) University Milano Bicocca, 2010 (host: A. Abbotto)
- (17) University FUNDP, Namur (B), 2011 (host: D. Bonifazi)
- (18) University of Erlangen, 2012 (host: D. Guldi)
- (19) University of Graz, 2012 (host: O. Kappe)
- (20) University of Bari, 2014 (host: G. Farinola)
- (21) ISIS- Strasbourg, 2014 (host: L. De Cola)
- (22) University of Duisburg, 2018 (host: S. Barcikowski)

Prizes, Awards, Academy memberships

2015 - Angelo Mangini Medal - Organic Chemistry Division of the Italian Chemical Society
2016 - Member of *Istituto Veneto di Scienze, Lettere ed Arti*, Venezia.