

Prof.ssa Francesca Marini
Associate Professor



Current Research Topics

1) Green chemistry and catalysis:

- a) Asymmetric catalysis and organocatalysis
- b) New domino processes for the synthesis of heterocyclic compounds and drug-like molecular scaffolds
- c) New selenorganic compounds for reactions in non conventional media
- d) Bio-inspired oxidation reactions
- e) New selenorganic catalysts for homogeneous and heterogeneous catalysis and applications in flow chemistry.

2) Design and Synthesis of new biologically active compounds with selenium chemistry:

Coordination

Member of the Executive Board and of the Scientific Committee of Consorzio Interuniversitario Nazionale Metodologie e Processi Innovativi di Sintesi (CINMPIS).

collaborations

Dr. Josè Aleman (Univ. Autonoma de Madrid, E)
Prof. A. L. Braga (Univ. Federal de Santa Caterina BS)
Prof. J. L. Garcia Ruano (Univ. Autonoma de Madrid, E)
Prof. M. Iwaoka (Univ. Tokai, JP)
Prof. E. Lenardao (Universidade Federal de Pelotas BS)
Prof. I. Scianowski (Univ Torun PL)

in the context of the multidiplinary “SeS Redox and Catalysis” network (Univ. Perugia):
Prof. F. Costantino, Prof. F. Galli, Prof. A. Gioiello, Prof. S. Giovagnoli., Prof. M. Moretti, Prof. M. Nocchetti, Prof. M. Pica, Prof. D. Pietrella, Prof. R. Sardella, Prof. O. Tabarrini, Prof. R. Vivani.

publications (2009-2013)

1. F. Marini,* S. Sternativo, F. Del Verme, L. Testaferri, M. Tiecco.
Organocatalytic Michael Addition of α -Substituted Cyanoacetates to α,β -Unsaturated Selenones *Adv. Synth. Catal.* **2009**, *351*, 103-105.
2. F. Marini,* S. Sternativo, F. Del Verme, L. Testaferri, M. Tiecco.
Stereoselective Synthesis of Cyclopropanes Containing Quaternary Stereocentres via Organocatalytic Michael Addition to Vinyl Selenones.
Adv. Synth. Catal. **2009**, *351* 1801-1806.
3. O. A. Attanasi,* L. De Crescentini, F. Mantellini, F. Marini, S. Nicolini, S. Sternativo, M. Tiecco.*
Synthesis of Selenium-Substituted Pyrroles and Pyrazol-3-ones
Synlett. **2009**, 1118-1122.
4. S. Sternativo, F. Marini,* F. Del Verme, A. Calandriello, L. Testaferri, M. Tiecco.
One-pot synthesis of aziridines from vinyl selenones and variously functionalized primary amines
Tetrahedron **2010**, *66*, 6851-6857.
5. V. Marcos, J. Aleman,* J. L. Garcia Ruano, F. Marini,* M. Tiecco
Asymmetric Synthesis of α -Alkyl α -Seleno Carbonyl Compounds Catalyzed by Bifunctional Organocatalysts.
Org. Lett. **2011**, *13*, 3052-3055.
6. S. Sternativo, A. Calandriello, F. Costantino, L. Testaferri, M. Tiecco, F. Marini*
A Highly Enantioselective One-pot Synthesis of Spirolactones by an Organocatalyzed Michael Addition/Cyclization Sequence.
Angewandte Chemie, **2011**, *12*, 9554-9557, *Angew. Chem. Int. Ed.* **2011**, *50*, 9382-9385.
[Paper cited in *Synfacts* "Highlights in Current Synthetic Organic Chemistry" 2011, 12, 1349.](#)
7. F. Marini,* S. Sternativo, O. Walczak, L. Testaferri, M. Tiecco
Phenyl Vinyl Selenone as a Useful Reagent for the Stereoselective Formation of Cyclic β -aminoesters.
Proceedings of the 15th Int. Electron. Conf. Synth. Org. Chem., ECSOC-15, **2011**, Eds.: J. A. Seijas & M. P. Vázquez Tato, CD-ROM edition, ISBN: 3-906980-25-1, MDPI, Basel, Switzerland (electronic).
8. S. Sternativo, O. Walczak, B. Battistelli, L. Testaferri, F. Marini*
Organocatalytic Michael addition of indanone carboxylates to vinyl selenone for the asymmetric synthesis of polycyclic pyrrolidines
Tetrahedron **2012**, *68*, 10536-10541. (su invito: Special issue: Progress in Organoselenium and Organotellurium Chemistry).
9. L. Incipini, E. Rongoni, L. Bagnoli, F. Marini and C. Santi* "New chiral electrophilic selenium reagents: synthesis and structural investigation" *Proceedings of the 16th International Electronic Conference of Synthetic Organic Chemistry (ECSOC-16)*, **2012**, Eds.: J. A. Seijas & M. P. Vázquez Tato, CD-ROM edition, ISBN: 3-906980-26-X, MDPI, Basel, Switzerland (electronic)
10. C. Tidei, V. Saccomandi, L. Bagnoli, F. Marini and C. Santi* "Green Oxidations of Aldehydes to Carboxylic Acids and Esters" *Proceedings of the 16th International Electronic Conference of Synthetic Organic Chemistry (ECSOC-16)*, **2012**, Eds.: J. A. Seijas & M. P. Vázquez Tato, CD-ROM edition, ISBN: 3-906980-26-X, MDPI, Basel, Switzerland (electronic).
11. F. Marini,* S. Sternativo
Organocatalytic Asymmetric Synthesis and Use of Organoselenium Compounds
Synlett. **2013**, *24*, 11-19 (su invito).
12. L. Bagnoli,* S. Casini, F. Marini, C. Santi, L. Testaferri

Vinyl selenones: annulation agents for the synthesis of six-membered benzo-1,4-heterocyclic compounds.

Tetrahedron **2013**, *69*, 481-486.

13. S. Propersi, C. Tidei, L. Sancineto, L. Bagnoli, F. Marini and C. Santi*
PhSZn-halides: New Green Thiolates
Proceedings of the 17th Electronic Conference of Synthetic Organic Chemistry (ECSOC-17), **2013**, Eds.: J. A. Seijas & M. P. Vázquez Tato, CD-ROM edition, ISBN 978-3-906980-43-0, MDPI, Basel, Switzerland (electronic).
14. V. Frullini, S. Sternativo, C. Santi, L. Bagnoli, F. Marini*
Stereoselective synthesis of cyclopropanes from vinyl selenones via a Michael-initiated ring closure reaction
Proceedings of the 17th Electronic Conference of Synthetic Organic Chemistry (ECSOC-17), **2013**, Eds.: J. A. Seijas & M. P. Vázquez Tato, CD-ROM edition, ISBN 978-3-906980-43-0, MDPI, Basel, Switzerland (electronic).
15. K. Berettoni, F. Marini, C. Santi, L. Bagnoli*
An efficient cascade reaction for the synthesis of oxazino[4,3-a]indoles and pyrano[3,4-b]indoles from vinyl selenones
Proceedings of the 17th Electronic Conference of Synthetic Organic Chemistry (ECSOC-17), **2013**, Eds.: J. A. Seijas & M. P. Vázquez Tato, CD-ROM edition, ISBN 978-3-906980-43-0, MDPI, Basel, Switzerland (electronic).
16. S. Propersi, C. Tidei, L. Bagnoli, F. Marini, L. Testaferri, C. Santi*
On water thiolysis of epoxides promoted by PhSZnBr
Journal of Sulfur Chemistry, **2013**, *34*, 671-676.
17. S. Sternativo, B. Battistelli, L. Bagnoli, C. Santi, L. Testaferri, F. Marini*
Synthesis of γ -Lactams via a Domino Michael Addition/Cyclization
Reaction of Vinyl Selenone with Substituted Amides
Tetrahedron Lett. **2013**, *54*, 6755-6757.

Communications and invited lectures (2009-2013)

1. F. Del Verme, F. Marini, S. Sternativo, L. Testaferri, M. Tiecco
Sintesi Enantioselettive di Composti Contenenti Stereocentri Quaternari per Addizione Coniugata Organocatalizzata a Vinil Selenoni
XXXIV "A. CORBELLA" SUMMER SCHOOL Gargnano (BS), June 22-26, 2009.
2. F. Marini, S. Sternativo, F. Del Verme, L. Testaferri, M. Tiecco
Organocatalytic Synthesis of Enantioenriched Selenones, Versatile Precursors of Synthetically Useful Polyfunctional Compounds
Tenth Tetrahedron Symposium, Parigi, June 23-26, 2009.
3. F. Marini, S. Sternativo, F. Del Verme, A. Calandriello, L. Testaferri, M. Tiecco
Vinyl Selenones for the Enantioselective Construction of Quaternary Stereocenters
XXXIII CONVEGNO NAZIONALE DIVISIONE CHIMICA ORGANICA, S. Benedetto del Tronto (AP), 12-16 Settembre 2010.
4. V. Marcos, J. Aleman, J. L. Garcia Ruano, F. Marini, M. Tiecco
Bis(arylsulfonyl)methane Derivatives as Versatile Reagents for the Synthesis of Enantiomerically Enriched 3-Methyl-Alkanols and Selenium Containing Compounds.
8th Spanish-Italian Symposium on Organic Chemistry (SISOC-VIII), July 3rd-6th 2010, Padova, Italy.
5. F. Marini, S. Sternativo, F. Del Verme, A. Calandriello, L. Testaferri, M. Tiecco
Organocatalyzed Asymmetric Construction of Quaternary Carbon Stereocenters by Selenium Chemistry
1th Electronic Symposium on Selenium Chemistry, eSeS-1,

- 10 December 2010 - 10 February 2011, <http://eses1.chimfarm.unipg.it>.
6. S. Sternativo, O. Walczak, L. Testaferri, M. Tiecco, F. Marini
Addizioni Coniugate Organocatalizzate a Vinil Selenoni per la Sintesi Enantioselettiva di Spirocomposti e β -Amminoacidi Biciclici.
XXX Convegno Interregionale delle Sezioni Toscana Umbria Marche Abruzzo della Societa' Chimica Italiana, Perugia, 30 giugno-1 luglio 2011.
 7. S. Sternativo, L. Testaferri, M. Tiecco, F. Marini
Nuove Procedure Organocatalitiche Basate sulla Chimica dei Composti Selenorganici per la Sintesi Stereoselettiva di Composti Polifunzionali.
11^a Giornata Scientifica Borsisti del Consorzio Interuniversitario Nazionale di Metodologie Innovative di Sintesi (C.I.N.M.P.I.S), Bari, 25 Novembre 2011
 8. B. Battistelli, S. Sternativo, L. Bagnoli, C. Santi, L. Testaferri, F. Marini
Synthesis of Spirocyclic Compounds via Organocatalytic Michael Addition to Vinyl Selenones
XXXIV Convegno Nazionale della Divisione di Chimica Organica, Pavia, 10-14 Settembre 2012.
 9. C. Santi, C. Tidei, C. Scalera, L. Incipini, F. Marini, L. Bagnoli, L. Testaferri
Bioinspired Catalytic Oxidation Reactions in Water: Not Simply Green Chemistry
XXXIV Convegno Nazionale della Divisione di Chimica Organica, Pavia, 10-14 Settembre 2012.
 10. F. Marini
Nuovi Processi Asimmetrici Organocatalizzati: l'Organocatalisi Incontra la Chimica del Selenio
invited talk, Università dell'Insubria, Como, 13 Dicembre 2012.
 11. K. Berettoni, F. Mangiavacchi, F. Marini, C. Santi, L. Bagnoli*
Synthesis of oxazino [4,3-a]indoles and pyrano[3,4-b]indoles by cascade addition-cyclization reactions of (1H-indol-2-yl) methanols and vinyl selenones
12th International Conference on the Chemistry of Selenium and Tellurium, ICCST-12, July 22-26, 2013. Cardiff, Wales, United Kingdom.
 12. L. Sancineto, A. Mariotti, C. Tidei, L. Bagnoli, F. Marini, O. Tabarrini, C. Santi
Design and synthesis of new biologically active diselenides
12th International Conference on the Chemistry of Selenium and Tellurium, ICCST-12, July 22-26, 2013, Cardiff, Wales, United Kingdom.
 13. Tidei, C.; Pitotti, I.; Bagnoli, L.; Marini, F.; Testaferri, L.; Santi, C.
Eco-friendly Synthesis of vinyl selenides "ICCST12– International Conference on the Chemistry of Selenium and Tellurium - July 22-26, 2013, Cardiff, Wales, United Kingdom.
 14. Propersi S.; Ricciardella, L.; Tidei C.; Bagnoli, L.; Marini, F.; Testaferri, L.; Santi, C.
"Synthesis of Seleno- and Thio- esters in water and in solvent free conditions" ICCST12– International Conference on the Chemistry of Selenium and Tellurium - July 22-26, 2013, Cardiff, Wales, United Kingdom

Teaching Activities A.A. 2013-2014

- **Organic Chemistry I** (9 CFU) for the Master's degree course in Chemistry and Pharmaceutical Technology
- **Biorganic Chemistry** (6 CFU) for the Master's degree course in Pharmaceutical Biotechnologies