



## Roberto Fiammengo, Ph.D.

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### **EDUCATION**

#### **27.09.2002 Ph.D. in Chemistry**

University of Twente, Enschede, The Netherlands

Thesis: *Supramolecular mimics of heme-protein binding sites*

Advisor: Prof. David N. Reinhoudt

#### **09.06.1997 "Laurea" in Chemistry (equivalent to M.Sc.)**

University of Padova, Padova, Italy

Grade: 110/110

### **NATIONAL SCIENTIFIC QUALIFICATION**

**14/11/2014** National scientific qualification as associate professor in Organic Chemistry. ("Abilitazione Scientifica Nazionale", II fascia 03/C1)

**06/12/2017** National scientific qualification as full professor in Organic Chemistry ("Abilitazione Scientifica Nazionale", I fascia 03/C1).

### **CURRENT POSITION and RESEARCH INTERESTS**

*Since September 2020: Professor of Organic Chemistry*

**Department of Biotechnologies, Università di Verona**

Verona, Italy

- Biofunctionalization of nanoparticles and planar surfaces
- Development of functional coatings and of biofunctionalization strategies
- Glycopeptide-conjugated nanoparticles as potential anticancer vaccines and as diagnostic tools
- Targeted gold nanoparticles for the imaging of tumoral vasculature and angiogenesis
- Development of nanoparticles able to cross the blood-brain-barrier via receptor-mediated transcytosis

## **EMPLOYMENT RECORD**

*March 2012 – August 2020: Team Leader - Researcher*

**Center for Biomolecular Nanotechnologies, Fondazione Istituto Italiano di Tecnologia (IIT)**  
Arnesano (Lecce), Italy

*November 2006 – February 2012: Group leader*

**Department of New Materials and Biosystems, Max Planck Institute for Intelligent Systems**  
(formerly MPI for Metals Research)  
Stuttgart, Germany

*March 2003 – November 2006: Postdoctoral research associate* (Prof. Andres Jäschke)

**Institute of Pharmacy and Molecular Biotechnology, University of Heidelberg**  
Heidelberg, Germany

*July 2002 – March 2003: Postdoctoral research associate* (Prof. Paolo Scrimin)

**Department of Organic Chemistry, University of Padua**  
Padua, Italy

*September 1998 – June 2002: PhD candidate* (Prof. David N. Reinhoudt)

**Laboratory of Supramolecular Chemistry and Technology and MESA+ Research Institute, University of Twente**  
Enschede, The Netherlands

*June 1996 – August 1998: Research assistant* in the groups of Prof. Giorgio Modena and Prof. Fulvio Di Furia under the supervision of Dr. Giulia Licini and Dr. Lucia Pasquato,

**Department of Organic Chemistry**  
**University of Padova**

## **PROFESSIONAL MEMBERSHIPS AND ACTIVITIES**

*Member of the American Chemical Society since 2009.*

*Member of the Italian Chemical Society since 2017.*

*Reviewer for international journals*

- Journal of the American Chemical Society, ACS Nano, Nano Letters, Analytical Chemistry, Langmuir, Biomacromolecules, ACS Applied Materials & Interfaces, Angewandte Chemie Int. Ed., Chemistry - A European Journal, ChemistryOpen, ChemNanoMat, Small, Nature Communications, Journal of Material Science, Materials Science and Engineering C, Journal of Nanoparticle Research, Acta Biomaterialia, Expert Opinion for Drug Delivery.

**Publons profile:** <https://publons.com/researcher/2622723/roberto-fiammengo/>

*Proposal evaluator*

- Regular reviewer for the Transnational Access proposals submitted to QualityNano (<http://www.qualitynano.eu/>), the European Union-funded infrastructure for quality in nanomaterial safety testing (2012 – 2015).
- Refereed upon invitation of 1 grant proposal for the Polish National Science Center (2014).

*Laboratory safety manager and instructor*

- 2016 – 2020: Italian Institute of Technology, NanoBioInteractions laboratory, Center for Biomolecular Nanotechnologies.
- 2007 – 2012: MPI for Intelligent Systems, Department of New Materials and Biosystems: I was responsible for the safety in the chemistry laboratories including the organization of the yearly safety briefing and the instruction of new group members

**TEACHING and RESEARCH SUPERVISION**

**Italian Institute of Technology**

1 post-doc (4 years).

4 PhD students, 2 master degree internship students, 1 exchange PhD student from the University of Hradec Kralove (Czech Republic, 4 months), 1 post-doc (3 months' exchange program with Imperial College London).

Faculty member of the doctoral school "Material, Structure and Nanotechnology Engineering" at the University of Salento since 2016.

**Max Planck Institute for Intelligent Systems**

2 PhD students and 1 master student.

Teaching seminars for graduate students on "Bioconjugation techniques" and "Surface functionalization" (2 lectures, repeated twice).

**University of Heidelberg**

1 PhD student, 1 master student, several apprentice chemistry technicians, and 1 pharmacy intern.

Instructor of Organic Chemistry for bachelor students of the Molecular Biotechnology program (2003, 2004, and 2005). Teaching seminars in the lecture series "Methods in Pharmacy & Molecular Biotechnology" for graduate students.

**University of Twente**

2 master students.

Instructor of Organic Chemistry for master students of the Chemical Engineering program (1999-2000).

**FUNDING (last 5 years)**

2020-2022 University of Verona, Department of Biotechnology starting grant;

2020-2024 H2020 MSCA-ITN-ETN "Directing the immune response through designed nanomaterials — DIRNANO", g.a. 956544, partner PI (48 months 261.5 k€);

2016 PRIN project "Nanoplatforms for enhanced immune responses" 2015RNWJAM financed by the Italian Ministry of Education, Universities and Research, partner PI (36 months, 22 k€);

**CURRENT SCIENTIFIC COLLABORATIONS**

**Dr. Alexandra E. Porter** and **Dr. Iain E. Dunlop**, Faculty of Engineering, Department of Materials, Imperial College London, UK;

**Prof. David T. Dexter**, Faculty of Medicine, Department of Medicine, Imperial College London, UK;

**Dr. Francisco Corzana**, Department of Chemistry, Universidad de La Rioja, Logroño, Spain;  
**Prof. Andrea Sartori**, Dipartimento di Farmacia, Università di Parma;  
**Dr. Francesca Bianchini**, Dipartimento di Patologia e Oncologia Sperimentali, Università di Firenze;  
**Prof. Cristina Nativi**, Dipartimento di Chimica “Ugo Schiff”, Università di Firenze;  
**Prof. Emanuele Papini**, Dipartimento di Scienze Biomediche, Università di Padova;  
**Prof. Fabio Benfenati**, Center for Synaptic Neuroscience and Technology, Istituto Italiano di Tecnologia, Genova;

## **CONFERENCE CONTRIBUTIONS (last ten years)**

### Oral presentations:

XXXIX Convegno Nazionale della Divisione di Chimica Organica della SCI – CDCO 2019: Site-selective immobilization of leptin on gold nanoparticles, **University of Turin**, 8 – 12/9/2019.

258th ACS National Meeting & Exposition: Design and implementation of gold-nanoparticle formulations as MUC1-directed cancer vaccines, **San Diego**, CA, USA, 25 – 29/8/2019.

XXXVIII Convegno Nazionale della Divisione di Chimica Organica della SCI – CDCO 2018: *Selective targeting of  $\alpha_V\beta_3$  integrins with gold nanoparticles carrying RGD-semipeptides*, **University of Milan**, 9 – 13/9/2018.

7th EuCheMS Chemistry Congress: *Cyclic aminoproline-RGD functionalized gold nanoparticles for effective targeting of  $\alpha_V\beta_3$  integrins and selective tumor cell internalization*, **Liverpool**, UK, 26 – 30/8/2018.

XXVI Congresso Nazionale della Società Chimica Italiana 2017: *Eliciting specific humoral and cellular immune response by self-adjuvanting gold nanoparticles carrying tumor-associated MUC1 glycopeptides*, **Paestum**, Italy, September 10 – 14, 2017.

XXXVI Convegno Nazionale della Divisione di Chimica Organica – CDCO 2015: *Glycopeptide-functionalized gold nanoparticles for antibody induction against the tumor associated Mucin-1 glycoprotein*, **University of Bologna**, Bologna, Italy, September 13 – 17, 2015.

Trends in Nanotechnology – TNT2015: *Towards a Gold Nanoparticle-based Vaccine Directed against the Tumor Associated Mucin-1 Glycoprotein*, **Toulouse**, France, September 7 – 11, 2015.

Nanomedicine Viterbo 2014: *Sensitive MicroRNA Quantification Using DNA-Gold Nanoparticle Probes*, **University of Tuscia**, Viterbo, Italy, September 17 – 19, 2014.

E-MRS (European Material Research Society) Spring Meeting 2011 – Symposium on Bio-nanomaterials for imaging, sensing and actuating: *Conjugation of biologically active molecules to the passivation layer of gold nanoparticles for cellular targeting*, **Nice**, France, May 9 –13, 2011.

9th Stadler Minerva student workshop – Soft matter: where physics, chemistry, and biology meet: *Conjugation of biologically active peptides to the passivation layer of gold nanoparticles for cellular targeting*, **Beer Sheva & Ein-Gedi**, Israel, March 28 – 30, 2011.

19<sup>th</sup> Nachwuchswissenschaftler-Symposium bioorganische Chemie (19<sup>th</sup> Young researcher symposium in bioorganic chemistry): *Gold nanoparticles with orthogonally functionalizable groups*, **University of Göttingen**, Germany, September 27 – 29, 2010.

Poster presentations:

PLASMONICA 2019: *A label free optic SPR biosensor for mechanotransduction and force generation*, **Napoli**, Italy, June 19 – 21, 2019.

TERAMETANANO-4, the International Conference on Terahertz Emission, Metamaterials and Nanophotonics: *Gold nanorods SPR-based biosensor for mechanotransduction analysis*, **Lecce**, Italy, May 27 – 31, 2019.

29<sup>th</sup> International Carbohydrate Symposium (ICS 2018): *A synthetically defined glycoconjugate vaccine against cancer*, **Universidade de Lisboa**, Lisbon, Portugal, July 15 – 19, 2018.

E-MRS Spring Meeting 2018: *Nanovaccines for the treatment of cancer: multivalent presentation of TA-MUC1 glycopeptides on gold*, **Strasbourg**, France, June 18 – 22, 2018.

28<sup>th</sup> Anniversary World Congress on Biosensors 2018: *Two-photon polymerization for fabrication of pH responsive high molecular weight PEG-DA based hydrogel*, **Miami**, USA, June 12 – 15, 2018.

Medical Biotechnology – VIB Conference Series 2018: *Next generation gold-nanoparticle formulations for improving efficacy of TA-MUC1-directed cancer vaccines*, **Ghent**, Belgium, May 24 – 25, 2018.

School of Nanomedicine Bari 2017 (3 posters): *Gold nanoparticles for biological applications and nanomedicine, Improved size-tunable synthesis of gold nanorods and surface functionalization strategies for biomedical applications, and Cyclic-aminoproline-RGD gold nanoparticles for targeting integrin tumor angiogenesis*, **Bari**, Italy, October 11 – 13, 2017.

XXVI Congresso Nazionale della Società Chimica Italiana 2017: *Improved size-tunable synthesis of gold nanorods and surface functionalization strategies for biomedical applications*, **Paestum**, Italy, September 10 – 14, 2017.

E-MRS Spring Meeting 2013 (2 posters): *Quantification of oligonucleotides via efficient processing of DNA-gold nanoparticles by a nuclease, and DNA-AuNP probes for the sensitive quantification of miRNA*, **Strasbourg**, France, May 26 – 31, 2013.

ACS 239<sup>th</sup> National Meeting: *Gold nanoparticles for the study of N-methyl-D-aspartate receptors*, **San Francisco**, CA, USA, March 21 – 25, 2010.

### **INVITED TALKS (last ten years)**

*Bio-functionalized gold nanoparticles: from design to application*, **Dipartimento di Biotecnologie, Università di Verona**, 13/9/2019.

*Bio-functionalized gold nanoparticles: from design to application*, **NanoEngineering/ Chemical Engineering Department, University of California San Diego, CA, USA**, 30/8/2019.

*Bio-functionalized gold nanoparticles: molecular design and applications*, **University of Siena**, 22/7/2019.

*Bio-functionalized gold nanoparticles: design of cancer vaccine candidates and targeting of cell membrane receptors*, **GSK Vaccines S.r.l., Siena**, 23/7/2019.

*Designer gold nanoparticles for improved targeting of cell surface receptors*, **Center for Synaptic Neuroscience and Technology, Istituto Italiano di Tecnologia, Genova**, 11/1/2019.

*Improving the performances of bio-functionalized gold nanoparticles through a sensible molecular design*, **Departamento de Química, Universidad de La Rioja, Spagna**, 29/11/2018.

*PEGylated gold nanoparticles functionalized with biologically active molecules: improved performances through a sensible molecular design*, **Dip. di Scienze Biomediche Sperimentali e Cliniche, Università di Firenze**, 30/10/2018.

*Tailored PEGylated gold nanoparticles functionalized with biologically active molecules: from targeting to sensing applications*, **University of Padova, Italy**, April 07, 2014.

*Conjugation of biologically active molecules to the passivation layer of gold nanoparticles for cellular targeting*, **Leibniz Institute for Analytical Sciences – ISAS – e.V., Dortmund, Germany**, June 09, 2011

and

Clemens-Schöpf Institute for Organic Chemistry and Biochemistry, **Technical University Darmstadt, Germany**, March 22, 2011.

Graduate school mini symposium 2010 – Young investigators in biological research: *Peptide functionalized gold nanoparticles for the study of N-methyl-D-aspartate receptors*, **University of Osnabrück, Germany**, August 05, 2010.

### **PUBLICATIONS**

**H-index: 23** (Web of Knowledge<sup>SM</sup> and Scopus – Elsevier accessed September 30<sup>th</sup>, 2020).

Total citations: 1633 (Web of Knowledge<sup>SM</sup>) / 1650 (Scopus – Elsevier).

Average citations per item: 45.8 (Scopus – Elsevier).

Total impact factor (JCR 2019): **268.59** (last 10 years: **127.65**; average IF/publication last 10 years: **7.09**).

Orcid ID: [orcid.org/0000-0002-6087-6851](https://orcid.org/0000-0002-6087-6851);

\* : corresponding author

*Team Leader - Researcher (Italian Institute of Technology):*

36. Valente, P.; Kiryushko, D.; Sacchetti, S.; Machado, P.; Cobley, C. M.; Mangini, V.; Porter, A. E.; Spatz, J. P.; Fleck, R. A.; Benfenati, F.; [Fiammengo, R.\\*](#) Conopeptide-Functionalized Nanoparticles Selectively Antagonize Extrasynaptic N-Methyl- d -aspartate Receptors and Protect Hippocampal Neurons from Excitotoxicity in Vitro. *ACS Nano* **2020**, *14* (6), 6866-6877.
35. Scarpa, E.; Mastronardi, V. M.; Guido, F.; Algieri, L.; Qualtieri, A.; [Fiammengo, R.](#); Rizzi, F.; De Vittorio, M. Wearable piezoelectric mass sensor based on pH sensitive hydrogels for sweat pH monitoring. *Sci. Rep.* **2020**, *10*, 10854.
34. Salbini, M.; Stomeo, T.; Ciraci, C.; [Fiammengo, R.](#); Mangini, V.; Toma, A.; Pisano, F.; Pisanello, F.; Verri, T.; Smith, D.; De Vittorio, M. Label-free biomechanical nanosensor based on LSPR for biological applications. *Opt. Mater. Express.* **2020**, *10* (5), 1264-1272.
33. Mangini, V.; Maggi, V.; Trianni, A.; Melle, F.; De Luca, E.; Pennetta, A.; Del Sole, R.; Ventura, G.; Cataldi, T. R. I.; [Fiammengo, R.\\*](#) Directional immobilization of proteins on gold nanoparticles is essential for their biological activity: leptin as a case study. *Bioconjugate Chem.* **2020**, *31* (1), 74-81.
32. Compañón, I.; Guerreiro, A.; Mangini, V.; Castro-López, J.; Escudero-Casao, M.; Avenoz, A.; Busto, J. H.; Castillón, S.; Jiménez-Barbero, J.; Asensio, J. L.; Jiménez-Osés, G.; Boutureira, O.; Peregrina, J. M.; Hurtado-Guerrero, R.; [Fiammengo, R.\\*](#); Bernardes, G. J. L.\*; Corzana, F.\* Structure-based design of potent tumor-associated antigens: modulation of peptide presentation by single atom O/S or O/Se substitutions at the glycosidic linkage. *J. Am. Chem. Soc.* **2019**, *141* (9), 4063-4072.
31. Scarpa, E.; Lemma, E. D.; [Fiammengo, R.](#); Cipolla, M. P.; Pisanello, F.; Rizzi, F.; De Vittorio, M. Microfabrication of pH-responsive 3D hydrogel structures via two-photon polymerization of highmolecular-weight poly(ethylene glycol) diacrylates. *Sens. Actuators, B* **2019**, *279*, 418-426.
30. Maggi, V.; Bianchini, F.; Portioli, E.; Peppicelli, S.; Lulli, M.; Bani, D.; Del Sole, R.; Zanardi, F.; Sartori, A.; [Fiammengo, R.\\*](#) Effective targeting of  $\alpha_v\beta_3$  integrins and selective tumor cell internalization of RGD-functionalized gold nanoparticles. *Chem. Eur. J.* **2018**, *24* (46), 12093-12100.
29. [Fiammengo, R.\\*](#) Can nanotechnology improve cancer diagnosis through miRNA detection? *Biomarkers Med.* **2017**, *11*(1), 69-86.
28. Perinot, A.; Kshirsagar, P.; Malvindi, M. A.; Pompa, P. P.; [Fiammengo, R.\\*](#); Caironi, M.\* Direct-written polymer field-effect transistors operating at 20 MHz *Sci. Rep.* **2016**, *6*, 38941.
27. Gonzalez-Carter, D.; Goode, A. E.; [Fiammengo, R.](#); Dunlop, I. E.; Dexter, D. T.; Porter, A. E. Inhibition of leptin–ObR interaction does not prevent leptin translocation across a human blood-brain barrier model *J. Neuroendocrinol.* **2016**, *28*, doi: 10.1111/jne.12392.
26. Cai, H.; Degliangeli, F.; Palitzsch, B.; Gerlitzki, B.; Kunz, H.; Schmitt, E.\*; [Fiammengo, R.\\*](#); Westerlind, U.\* Preparation and Immunological Evaluation of PEGylated Glycopeptide-functionalized gold nanoparticles for antibody induction against the tumor associated Mucin-1 glycoprotein *Bioorg. Med. Chem.* **2016**, *24* (5), 1132–1135.
25. Degliangeli, F.; Pompa, P. P.; [Fiammengo, R.\\*](#) Nanotechnology-based strategies for the detection and quantification of microRNA *Chem. Eur. J.* **2014**, *20* (31), 9476–9492.
24. Degliangeli, F.; Kshirsagar, P.; Brunetti, V.; Pompa, P. P.; [Fiammengo, R.\\*](#) Absolute and Direct MicroRNA Quantification Using DNA–Gold Nanoparticle Probes *J. Am. Chem. Soc.* **2014**, *136* (6), 2264-2267.

23. Valentini, P.; Fiammengo, R.; Sabella, S.; Gariboldi, M.; Maiorano, G.; Cingolani, R.; Pompa, P. P. Gold-nanoparticle-based colorimetric discrimination of cancer-related point mutations with picomolar sensitivity *ACS Nano* **2013**, *7* (6), 5530-5538.
22. Brunetti, V.; Chibli, H.; Fiammengo, R.; Galeone, A.; Malvindi, M.A.; Vecchio, G.; Cingolani, R.; Nadeau, J.L.; Pompa, P.P. InP/ZnS as a safer alternative to CdSe/ZnS core/shell quantum dots: in vitro and in vivo toxicity assessment. *Nanoscale* **2013**, *5* (1), 307-317.

*Research group leader (Max Planck Institute for Intelligent Systems):*

21. Lee-Thedieck, C.; Rauch, N.; Fiammengo, R.; Klein, G.; Spatz, J.P. Impact of substrate elasticity on human hematopoietic stem and progenitor cell adhesion and motility. *J. Cell Sci.* **2012**, *125* (16), 3765-3775.
20. Maus, L.; Dick, O.; Bading, H.; Spatz, J. P.; Fiammengo, R.\* Conjugation of Peptides to the Passivation Shell of Gold Nanoparticles for Targeting of Cell-Surface Receptors. *ACS Nano* **2010**, *4* (11), 6617-6628.
19. Aydin, D.; Louban, I.; Perschmann, N.; Blummel, J.; Lohmueller, T.; Cavalcanti-Adam, E. A.; Haas, T. L.; Walczak, H.; Kessler, H.; Fiammengo, R.\*, Spatz, J. P.\* Polymeric Substrates with Tunable Elasticity and Nanoscopically Controlled Biomolecule Presentation. *Langmuir* **2010**, *26* (19), 15472-15480.
18. Maus, L.; Spatz, J. P.; Fiammengo, R.\* Quantification and reactivity of functional groups in the ligand shell of PEGylated gold nanoparticles via a fluorescence-based assay. *Langmuir* **2009**, *25* (14), 7910-7917.

*Post-doc (University of Heidelberg and University of Padua):*

17. Fournier, P.; Fiammengo, R.; Jaeschke, A. Allylic Amination by a DNA-Diene-Ir(III) Hybrid Catalyst. *Angew. Chem. Int. Ed.* **2009**, *48* (24), 4426-4429.
16. Caprioara, M.; Fiammengo, R.; Engeser, M.; Jaeschke, A. DNA-based phosphane ligands. *Chem. Eur. J.* **2007**, *13* (7), 2089-2095.
15. Pfander, S.; Fiammengo, R.; Kirin, S. I.; Metzler-Nolte, N.; Jaeschke, A. Reversible site-specific tagging of enzymatically synthesized RNAs using aldehyde-hydrazine chemistry and protease-cleavable linkers. *Nucleic Acids Res.* **2007**, *35* (4), e25/1-e25/8.
14. Helm, M.; Petermeier, M.; Ge, B.; Fiammengo, R.; Jaeschke, A. Allosterically Activated Diels-Alder Catalysis by a Ribozyme. *J. Am. Chem. Soc.* **2005**, *127* (30), 10492-10493.
13. Fiammengo, R.; Jaeschke, A. Nucleic acid enzymes. *Curr. Opin. Biotechnol.* **2005**, *16* (6), 614-621.
12. Fiammengo, R.; Musilek, K.; Jaeschke, A. Efficient Preparation of Organic Substrate-RNA Conjugates via in Vitro Transcription. *J. Am. Chem. Soc.* **2005**, *127* (25), 9271-9276.
11. Martin, M.; Manea, F.; Fiammengo, R.; Prins, L. J.; Pasquato, L.; Scrimin, P. Metallodendrimers as Transphosphorylation Catalysts. *J. Am. Chem. Soc.* **2007**, *129* (22), 6982-6983.

*PhD (University of Twente):*

10. Fiammengo, R.; Crego-Calama, M.; Timmerman, P.; Reinhoudt, D. N. Recognition of caffeine in aqueous solutions. *Chem. Eur. J.* **2003**, *9* (3), 784-792.
9. Fiammengo, R.; Wojciechowski, K.; Crego-Calama, M.; Timmerman, P.; Figoli, A.; Wessling, M.; Reinhoudt, D. N. Heme-Protein Active Site Models via Self-Assembly in Water. *Org. Lett.* **2003**, *5* (19), 3367-3370.
8. Fiammengo, R.; Bruinink, C. M.; Crego-Calama, M.; Reinhoudt, D. N. Noncovalent Secondary Interactions in Co(II)Salen Complexes: O<sub>2</sub> Binding and Catalytic Activity in Cyclohexene Oxygenation. *J. Org. Chem.* **2002**, *67* (24), 8552-8557.



7. Corbellini, F.; Fiammengo, R.; Timmerman, P.; Crego-Calama, M.; Versluis, K.; Heck, A. J. R.; Luyten, I.; Reinhoudt, D. N. Guest Encapsulation and Self-Assembly of Molecular Capsules in Polar Solvents via Multiple Ionic Interactions. *J. Am. Chem. Soc.* **2002**, 124 (23), 6569-6575.
6. Fiammengo, R.; Timmerman, P.; Huskens, J.; Versluis, K.; Heck, A. J. R.; Reinhoudt, D. N. Non-covalent synthesis of calix[4]arene-capped porphyrins in polar solvents via ionic interactions. *Tetrahedron* **2002**, 58 (4), 757-764.
5. Fiammengo, R.; Crego-Calama, M.; Reinhoudt, D. N. Synthetic self-assembled models with biomimetic functions. *Curr. Opin. Chem. Biol.* **2001**, 5 (6), 660-673.
4. Michels, J. J.; Fiammengo, R.; Timmerman, P.; Huskens, J.; Reinhoudt, D. N. Complexation of porphyrin-appended guests by calix[4]arene-appended cyclodextrins. *J. Incl. Phenom. Macro.* **2001**, 41 (1-4), 163-172.
3. Fiammengo, R.; Timmerman, P.; de Jong, F.; Reinhoudt, D. N. Highly stable cage-like complexes by self-assembly of tetracationic Zn(II) porphyrinates and tetrasulfonatocalix[4]arenes in polar solvents. *Chem. Commun.* **2000**, (23), 2313-2314.

*Undergraduate research (University of Padua):*

2. Fiammengo, R.; Licini, G.; Nicotra, A.; Modena, G.; Pasquato, L.; Scrimin, P.; Broxterman, Q. B.; Kaptein, B. Duality of Mechanism in the Tetramethylfluoroformamidinium Hexafluorophosphate-Mediated Synthesis of *N*-Benzyloxycarbonylamino Acid Fluorides. *J. Org. Chem.* **2001**, 66 (17), 5905-5910.
1. Peggion, C.; Fiammengo, R.; Mossel, E.; Broxterman, Q. B.; Kaptein, B.; Kamphuis, J.; Formaggio, F.; Crisma, M.; Toniolo, C. Mag: a C $\alpha$ -methylated, side-chain unsaturated  $\alpha$ -amino acid. Introduction into model peptides and conformational preference. *Tetrahedron* **2000**, 56 (22), 3589-3601.

## **PATENT APPLICATIONS**

Spatz, J. P.; Perschmann, N.; Schmieder, A.-K.; Fiammengo, R. Sorting biological samples on nanostructured surfaces functionalized with ligands. International patent application (WO 2010075934).

Spatz, J. P.; Perschmann, N.; Schmieder, A.-K.; Fiammengo, R. Substrates for the selection and specific interaction of cell function. International patent application (WO 2010075933).