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

CURRENT POSITION and RESEARCH INTERESTS

Since September 2020: **Professor of Organic Chemistry**
Department of Biotechnology, University of di 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

- Refereed upon invitation of 1 grant proposal for the Israel Science Foundation (2021).
- Refereed upon invitation of 1 grant proposal for the Polish National Science Center (2014).
- Regular reviewer for the Transnational Access proposals submitted to QualityNano, the European Union-funded infrastructure for quality in nanomaterial safety testing (2012 – 2015).

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

University of Verona
1 PhD student (from February 2021), 1 master degree internship students (from March 2021), 1 exchange PhD student from the University of La Rioja (Spain, 3 months).

Current teaching (Master's degree in "biotechnology for bioresources and sustainable development"): (i) *Catalysis and green chemistry*, (ii) *Synthesis of bioactive molecules*.

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);

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

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;

BIBLIOMETRIC DATA

Total published articles in peer-reviewed journals: **37**
Total impact factor (JCR 2020)**: 301.07** (last 5 years: **77.31**, average IF/publ. **6.44**)
H-index: 24 Web of Knowledge^{SM} and **24** Scopus – Elsevier accessed August 25th, 2021)
Total citations: 1789 (Web of Knowledge^{SM}) / 1817 (Scopus – Elsevier).
Average citations per item: 49.1 (Scopus – Elsevier).

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.

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.

29th 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.

28th 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.

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.

PUBLICATIONS (in reversed chronological order)

Orcid ID: orcid.org/0000-0002-6087-6851;

* : corresponding author

Team Leader - Researcher (Italian Institute of Technology):

37. Macías-León, J.; Bermejo, I.A.; Asín, A.; García-García, A.; Compañón, I.; Jiménez-Moreno, E.; Coelho, H.; Mangini, V.; Albuquerque, I.S.; Marcelo, F.; Asensio, J.L.; Bernardes, G.J.L.; Joshi, H.J.; Fiammengo, R.; Blixt, O.; Hurtado-Guerrero, R.; Corzana F. Structural characterization of an unprecedented lectin-like antitumoral anti-MUC1 antibody. *Chem. Commun.* **2020**, *56 (96)*, 15137-15140.

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.; Ciracì, 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.; Avenoza, 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(I) 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_2 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.; Flammengo, R.; Mossel, E.; Broxterman, Q. B.; Kaptein, B.; Kamphuis, J.; Formaggio, F.; Crisma, M.; Toniolo, C. Mag: a Cα-methylated, side-chain unsaturated α-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).