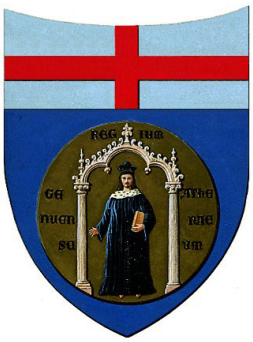
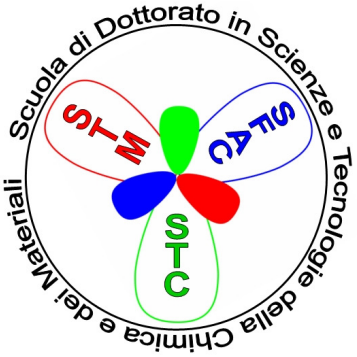




UNIVERSITY OF GENOVA

Doctorate School of Sciences and Technologies of Chemistry and Materials

XXIII CYCLE YEARBOOK

The Doctorate School in Sciences and Technologies of Chemistry and Materials was born in the spring of 2005, when the Ministry of Education and Research has urged all the universities to better rationalise and organize the doctorate courses. Although the guidelines given by the Ministry were not very precise, in my personal opinion the Doctorate Schools should be dedicated to the organization and supervision of different doctorate courses in areas affine from the scientific point of view. They should establish general rules common to all students and organize the coursework as a whole (whereas in the past the course work has been organized and regulated independently by each doctorate course).

For this reason, this newborn School, instead of trying to gather together teachers belonging to the same Faculty, preferred to assemble scientists who can share similar scientific interests, irrespective to the Faculty or Department they belong to. The School spans all the subjects related to chemistry (including medicinal chemistry, food and cosmetic chemistry, environmental chemistry, industrial and polymer chemistry, but excluding biochemistry) plus material science (with contributions from chemists, physics and engineers). Accordingly, the school has activated three discrete doctorate courses:

- Chemical Sciences and Technologies
- Pharmaceutical, Food and Cosmetic Science
- Material Science and Technology

The School begun its activity on january 1, 2006 and thus the XXIII cycle was the third one to be organized by it.

At the end of december 2010, 16 out of the 17 students of the XIII cycle of the School have finished their program, whereas one of them (Chiara Rotolo), having taken two 6 month leaves, is expected to finish her program only at the end of 2011. Nobody resigned during the doctorate. Two students who had regularly ended the three year programme (Paola Zito and Massimo Bandini) will undergo the final defense only the next year.

The remaining 14 students have passed the final defense on february 17 or 18, acquiring the degree of "Research Doctor". Furthermore, on february, 17, a student from an older cycle (XX)(Davide Nardelli) acquired the degree to.

During an official ceremony held on February, 18, I had the honour and the pleasure to deliver to all these 15 students a final certificate, reporting all their activities during the doctorate. As already done in the last years, I have now put together all these certificates, adding some general informations about the School.

I hope that this "yearbook" could remain for the new Doctors as a memory of these three years dedicated to the advancement of science, and, I am sure of that, also to the improvement of their own scientific skills and human merits.

To all of them I would like to present my best wishes for a successful and gratifying carreer!

Luca Banfi
Director of the School

MANAGEMENT COUNCILS OF THE SCHOOL

The school is governed by a **Board of Professors**, formed by 12 members, who elect a Director. For the XXIII cycle the board of professors was formed by:

- Luca Banfi (director), DCCI, Organic Chemistry.
- Alessandro Balbi, DISCIFAR, Medicinal Chemistry
- Gabriella Borzone, DCCI, Inorganic Chemistry
- Guido Busca, DIChEP, Industrial and Technological Chemistry
- Stefano Delfino, DCCI, Inorganic Chemistry
- Silvia Lanteri, DICTFA, Analytical Chemistry
- Lorenzo Mattera, DIFI, Physics of Matter
- Franco Merlo, DCCI, Physical Chemistry
- Angelo Ranise, DISCIFAR, Medicinal Chemistry
- Saverio Russo, DCCI, Industrial Chemistry
- Antonio Turturro, DCCI, Industrial Chemistry
- Carla Villa, DISCIFAR, Pharmaceutical techmologies

Each doctorate course has a coordinator and a specific **Board of Professor**. For the XXIII cycle the boards of professors were formed by:

Chemical Sciences and Technologies

- Luca Banfi (coordinator), DCCI, Organic Chemistry.
- Stefano Delfino, DCCI, Inorganic Chemistry
- Enrico Franceschi, DCCI, Physical Chemistry
- Emanuele Magi, DCCI, Analytical Chemistry
- Enrico Marsano, DCCI, Industrial Chemistry
- Franco Merlo, DCCI, Physical Chemistry
- Maria Rosa Pinasco, DCCI, Metallurgy
- Saverio Russo, DCCI, Industrial Chemistry
- Sergio Thea, DCCI, Organic Chemistry

Medicinal, Food, and Cosmetic Sciences

- Alessandro Balbi (coordinator), DISCIFAR, Medicinal Chemistry
- Annamaria Bassi, DIMES, General Pathology
- Vincenzo Bertini, DICTFA, Organic Chemistry
- Raffaella Boggia, DICTFA, Food Chemistry
- Silvia Lanteri, DICTFA, Analytical Chemistry
- Emilia Mariani, DISCIFAR, Pharmaceutical Technologies
- Angelo Ranise, DISCIFAR, Medicinal Chemistry
- Bruno Tasso, DISCIFAR, Medicinal Chemistry
- Carla Villa, DISCIFAR, Pharmaceutical Technologies

Material Science and Technology

- Gabriella Borzone (coordinator), DCCI, Inorganic Chemistry.
- Guido Busca, DIChEP, Industrial and Technological Chemistry
- Giacomo Cerisola, DIChEP, Chemistry Foundations of Technologies
- Maurizio Ferretti, DCCI, Physical Chemistry
- Alessandra Gliozzi, DIFI, Applied Physics

- Lorenzo Mattera, DIFI, Physics of Matter
- Marina Putti, DIFI, Experimental Physics
- Gianguido Ramis, DIChEP, Chemistry Foundations of Technologies
- Antonio Turturro, DCCI, Industrial Chemistry

The **Scientific Committee**, formed by experts outside the university of Genova, has the function of evaluating the activity of the school and to propose recommendations for its improvement. It must issue a report at the start of each cycle, containing possible suggestions, and an evaluation report at the end of each cycle. For the XXIII cycle it was formed by:

- Jean-Pierre Bros, université Aix-Marseille 1 (France)
- Anita Caccialupi, Ansaldo Energia, Genova
- Fabio Comin, ESRF, Grenoble (France)
- Giuseppe Giardina, NiKem Research, Bollate (MI)
- Stephen Hanessian, Université de Montréal (Canada), and University of California, Irvine (USA).
- Andrè Loupy, CNRS, Paris (France)
- Alberto Modelli, ST Microelectronics, Agrate Brianza (MI)
- Massimo Morbidelli, ETH, Zurich (Switzerland)
- Stefano Rossini, ENI Tecnologies, S. Donato Milanese (MI)
- Domenico Sanfilippo, Snamprogetti, S. Donato Milanese (MI)
- Bernard Testa, Universitè Lausanne (Switzerland)
- Antonio Triolo, Menarini Ricerche (Firenze)

RESEARCH ACTIVITY

The total number of credits achieved in 3 years is 180. The research activity is the most important part of the doctorate course. Therefore the School has decided that this activity must correspond to a minimum of 150 credits and a maximum of 160 credits.

The research and course activities of the School are held in the followings Departments: Dep. of Chemistry and Industrial Chemistry (DCCI), Dep. of Pharmaceutical Sciences (DISCIFAR), Dep. of Chemistry and Pharmaceutical and Food Technologies (DICTFA), Department of Chemical and Process Engineering "G.B. Bonino" (DICheP), Department of Physics (DIFI).

At the end of each year, the students presented a written report and an oral presentation on their activity, which were evaluated by the Board of Professor of the specific doctorate.

COURSEWARE

The remaining 20 to 30 credits are divided into these categories:

- Type A credits: short courses (4-6 hours) given by experts external to the university of Genova. Each course will have a value of 1 credit.
- Type B credits: courses given by the faculty of the School. 1 credit will correspond to 7 hours of lessons. The courses will be either of 2 or 3 credits.
- Type C credits: attendance to seminars held at the Departments involved (or in special cases also elsewhere). 1 credit corresponds to 8 seminars.
- Type D credits: participation to national or international schools for Ph.D. students. Typically a week school will count as 2 credits.
- Type E credits: the student will prepare (also through a bibliographic search) and present a seminar on a particular subject (different from its own research work). A seminar of this kind will correspond to 2 credits.
- Type F credits: only in particular cases, when the student must fill an important gap in disciplines necessary for his/her research work, the student can be invited by the Board of Professors to attend courses activated inside one of the "master" laureas related to the subjects of the school.

Each student has chosen the distribution of these credits according the specific rules independently established by each doctorate course.

During the three-year period spanned by the XXIII cycle, the School has activated **23 type A Courses** and **24 type B courses specific for the doctorate (for a total of 55 credits),** plus other 7 courses in common with the master degrees. The School has informed of about 86 seminars given at the University of Genova and related to the subjects of the School. The courses, schools, workshops and seminars followed by each student are listed in the following certificates.

STUDENTS OF XXIII CYCLE

Students who completed in due time the Doctorate Programme

- Laura Buffa (SFAC)
- Dario Cavallo (STC)
- Valentina Cerulli (STC)
- Daniele Chiappe (STM)
- Dajian Li (STM)
- Fabio De Moliner (STC)
- Silvia Mannino (SFAC)
- Giuliana Ottonello (STC)
- Anna Maria Piątek (STC)
- Alessio Rindi (STC)
- Monika Skrobańska (STC)
- Katarzyna Sufryd (STM)
- Matteo Tropeano (STM)
- Gerolamo Vettoretti (SFAC)

Students who postponed the final exam to 2011

- Massimo Bandini (STM)
- Chiara Rotolo (SFAC)
- Paola Zito (STC)

Students from previous cycle who underwent the defense in 2011

- Davide Nardelli (STM)

PICTURES OF THE FINAL PROCLAMATION

UNIVERSITÀ DEGLI STUDI DI GENOVA

DOCTORATE SCHOOL IN SCIENCES AND TECHNOLOGIES OF CHEMISTRY AND MATERIALS

PH.D. CERTIFICATE
OF
LAURA BUFFA

Doctorate Course:
Pharmaceutical, Food and Cosmetic Sciences
Start of the Doctorate Program:
January 1st, 2008
End of the Doctorate Program:
December 31st, 2010
Advisors:
Prof. Luisa Mosti
Dr. Eduard Rudolf Felder
Thesis Title:
Synthesis in solution and on solid phase of potential biologically active 3,5-disubstituted and 3,4,5-trisubstituted-4H-1,2,4-triazoles
Defense Date:
February 17th, 2011

On February 17th, 2011, at the Department of Pharmaceutical Sciences, Laura Buffa has orally presented her doctorate research work in front of the Commission, formed by

- Prof. Roberta Fruttero, University of Torino
- Prof. Livio Brasili, University of Modena
- Prof. Alessandro Balbi, University of Genova

The written Dissertation had been previously sent to the Commission members. After careful examination of the Dissertation, of the student's oral presentation, of the overall activity of the student during the three years of doctorate studies, the Commission

HAS APPROVED THE THESIS OF LAURA BUFFA,
CONFERRING ON HER THE TITLE OF

RESEARCH DOCTOR IN
PHARMACEUTICAL, FOOD AND COSMETIC SCIENCES

The commission has evaluated the thesis and the overall activity of Dr. Laura Buffa as
EXCELLENT

Genova, February 18th, 2011

The Director of the Doctorate School
(Prof. Luca Banfi)

The Coordinator of the Doctorate Course
(Prof. Alessandro Balbi)

ACTIVITY REPORT

Research Activity

The research activity was carried in part at the Department of Pharmaceutical Sciences (University of Genova) and in part, from 1/1/2008 to 31/7/2009, at the research laboratories of Nerviano Medical Sciences, Nerviano (Italy).

Scientific Publications

Original publications on ISI Journals:

1) Chelucci, G.; Baldino, S.; Pinna, G. A.; Benaglia, M.; Buffa, L.; Guizzetti, S., Chiral pyridine N-oxides derived from monoterpenes as organocatalysts for stereoselective reactions with allyltrichlorosilane and tetrachlorosilane, *Tetrahedron*, **2008,** 64, 7574-7582. IMPACT FACTOR (2009): 3.219.
2) Cichero, E.; Buffa, L.; Fossa, P., 3,4,5-trisubstituted-1,2,4-4H-triazoles as WT and Y188L mutant HIV-1 non-nucleoside reverse transcriptase inhibitors: Docking-based CoMFA and CoMSIA analyses", *Journal of Molecular Modeling,* in press*,* doi: 10.1007/s00894-010-0857-7. IMPACT FACTOR (2009): 2.336.

Communications at Conferences

Oral communications:

1) Buffa, L.; Mosti, L.; Cesarini, S.; Colombo, N.; Felder E. F.; Casuscelli, F., "New synthetic route towards 3,5-disubstituted triazoles", Nuove prospettive in chimica farmaceutica – III meeting, Il Ciocco, Castelvecchio Pascoli (Italy), 13-14/2/2009.

Posters:

2) Buffa, L.; Mosti, L.; Cesarini, S.; Colombo, N.; Felder E. F.; Casuscelli, F., "New synthetic route towards 3,5-disubstituted triazoles", Nuove prospettive in chimica farmaceutica – III meeting – Il Ciocco, Castelvecchio Pascoli 13-14/2/2009.
3) Buffa, L., "Solid phase synthesis of potential anticancer 3,5-disubstituted-1,2,4-triazoles", ESMEC-European School of Medicinal Chemistry, Urbino (Italy) 4-9/7/2010.
4) Buffa, L.; Cichero, E.; Fossa, P., "Rational Design of New HIV-1 Non-Nucleoside Reverse Transcriptase Inhibitors", 10° Sigma Aldrich Young Chemists Symposium, Pesaro (Italy) 18-20/10/2010.

Congresses Attended

1) XIX National Meeting on Medicinal Chemistry, Verona, 14/18/9/2008.
2) European Network of Doctoral Studies in Pharmaceutical Sciences - 5th Annual Meeting, Milano 17-19/11/2008.
3) Nuove prospettive in chimica farmaceutica – III meeting – Il Ciocco, Castelvecchio Pascoli (Italy) 13-14/2/2009.
4) 10° Sigma Aldrich Young Chemists Symposium, Pesaro (Italy), 18-20/10/2010.

Courseware

During her doctorate, Laura Buffa has acquired 32.0 credits of Courseware.

Courses attended and passed (18 credits)

Courses Given by Teachers of the University of Genova:

1) Pharmaceutical biotechnologies (3 credits)(2008).
2) Bioorganic Chemistry (2 credits)(2009)
3) Stereoselective synthesis (2 credits)(2009)
4) Diversity oriented synthesis (2 credits)(2009)

Courses Given by invited experts:

1) Self-assembly and hierarchical microstructures: The principles of Nature for the design of materials (Josè Perez Rigueiro) (1 credit)(2008)
2) Solid State Magnetic Resonance Techniques (Roberto De Renzi) (1 credit)(2008)
3) Biotechnological drugs (Barbara Gatto) (1 credit)(2008)
4) Control of food quality (Consuelo Pizarro) (1 credit)(2008)
5) "Organic synthesis in microreactors" and "Surfaces and microchannel with controlled wettability for new materials and devices (Michele Maggini and Tommaso Carofiglio) (1 credit)(2008).
6) Radiodrugs in anti-cancer therapy: preparation and pharmacokinetics (Marco Chinol) (1 credit)(2009)
7) Ionic liquids (Cinzia Chiappe) (1 credit)(2009)
8) Fragment-based drug design (Eduard Felder) (1 credit)(2009).
9) Bioplastics (Antonio Casale) (1 credit)(2009)

National and International Schools or Workshops (10 credits)

1) *Finanziamenti della Comunità Europea per la Ricerca*, Nerviano, 9/1/2008 (0.5 credits).
2) *Malattie rare e problematiche connesse*, Nerviano, 10/1/2008 (0.5 credits).
3) *Principi di farmacovigilanza*, Nerviano, 11/1/2008 (0.5 credits).

4) *Strategie dell'industria farmaceutica a livello mondiale*, Nerviano, 14/1/2008 (0.5 credits).
5) *Analisi del mercato farmaceutico*, Nerviano, 15/1/2008 (0.5 credits).
6) *Tecniche innovative. La progettazione di nuovi farmaci. Tecniche di bioinformatica e cheminformatica*, Nerviano, 17/1/2008 (0.5 credits).
7) *Brevetti e proprietà industriale*, Nerviano, 18/1/2008 (0.5 credits)
8) *Procedure di registrazione del farmaco*, Nerviano, 21/1/2008 (0.5 credits)
9) *ESMEC-European School of Medicinal Chemistry*, Urbino, 6-11/7/2008 (2 credits)
10) *ESMEC-European School of Medicinal Chemistry*, Urbino, 13-18/9/2009 (2 credits)
11) *ESMEC-European School of Medicinal Chemistry*, Urbino 4-9/7/2010 (2 credits).

Seminars Given (2 credits)

1) 22/11/2010, Dept. of Pharmaceutical Sciences, Genova, "Combinatorial Chemistry".

Seminars Attended (2 credits)

1) 15/5/2009, Dept. of Pharmaceutical Sciences, Genova, "Farmaci recentemente approvati: uno sguardo critico al passato e un trend per il futuro, Dr. Paolo Pevarello, Preclinical Research Director, Newron Pharmaceuticals S.p.A.
2) 6-10-2009, Dept. of Chemistry and Industrial Chemistry, Genova, "Chimica della fotografia, dai sali d'argento ai pixel", F. Wrubl.
3) 6/11/2009, Faculty of Medicine, "Targeting beta-amyloid in Alzheimer's Disease: chemical, biochemical and modeling studies", A. Carotti, Università di Bari
4) 20-11-2009, Dept. of Chemistry and Industrial Chemistry, Genova, "Materials for solar energy", L. Francis.
5) 20-11-2009,Dept. of Chemistry and Industrial Chemistry, Genova, "Role of dendrimers in Drug Delivery", A. Ullah.
6) 27/11/2009, Dept. of Pharmaceutical Sciences, Genova, "Spettroscopia atomica di assorbimento ed emissione: basi teoriche e strumentazione", C. Macciò.
7) 27/11/2009, Dept. of Pharmaceutical Sciences, Genova, "Spettroscopia atomica di assorbimento ed emissione: aspetti pratici e applicazioni", M. Carrozza.
8) 27/11/2009, Dept. of Pharmaceutical Sciences, Genova, "Flow chemistry, a new efficient technique for today's chemists", M. Caviglia.
9) 12/2/2010, Dept. of Internal Medicine, Genova, "Quando le staminali sono maligne", Prof. E. Boncinelli, Istituto Scientifico San Raffaele, Milano.
10) 16/2/2010, Dept. of Physics, Genova, "Inquinamento atmosferico, cambiamenti climatici e fisica nucleare", Prof. Paolo Prati, INFN, Genova.
11) 17/2/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Chimica e Colore", Prof. Paolo Piaggio, Università di Genova.
12) 12/3/2010, Dept. of Pharmaceutical Sciences, Genova, "Nuovi approcci terapeutici nel trattamento della neurodegenerazione", Prof. Gabriele Costantino, Università di Parma (3 ore).
13) 30/4/2010, Dept. of Pharmaceutical Sciences, Genova, "L'etnofarmacologia tra empirismo e scienza", Prof. A. Guerci, Università di Genova.
14) 8/6/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "L'opzione nucleare in Italia", Dr. Stefano Maggiolo, Agenzia Regionale per la Protezione dell'Ambiente Ligure (A.R.P.A.L.).
15) 16/7/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Formation of Multiple Stereocenters via Organocatalysis", Dr. Marco Bella, Dip. Chimica, Università "La Sapienza" Roma.
16) 17/9/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Activated Peptides: for Ligation and Large Cyclic Transition States", Prof. A.R. Katritsky, University of Florida, Gainesville.
17) 21/10/2010, Faculty of Medicine, " Ligandi multisito e multitarget quali potenziali agenti terapeutici nelle malattie neurodegenerative", Angelo Carotti, Università di Bari.
18) 22/11/2010, Dept. of Pharmaceutical Sciences, Genova, "Le Micotossine nelle colture e nei prodotti alimentari", Silvia Mannino.
19) 22/11/2010, Dept. of Pharmaceutical Sciences, Genova, "Molecular Dynamics Simulation: an updated overview on Prion Protein ", Gerolamo Vettoretti.

Teaching Assistance

Laura Buffa has assisted the courses of "Laboratory of Drug Synthesis" (2009/2010)(30 hours), "Laboratory of extractive preparations of plant active principles" (2009/2010)(30 hours), "Laboratory of Drug Analysis I" (2010/2011)(60 hours).

UNIVERSITÀ DEGLI STUDI DI GENOVA

DOCTORATE SCHOOL IN SCIENCES AND TECHNOLOGIES OF CHEMISTRY AND MATERIALS

PH.D. CERTIFICATE
OF
DARIO CAVALLO

Doctorate Course:
Chemical Sciences and Technologies
Start of the Doctorate Program:
January 1st, 2008
End of the Doctorate Program:
December 31st, 2010
Advisor:
Prof. Giovanni Carlo Alfonso
Thesis Title:
Polymer Structuring Under Processing-Relevant Conditions
Defense Date:
February 18th, 2011

On February 18th, 2011, at the Department of Chemistry and Industrial Chemistry, Dario Cavallo has orally presented his doctorate research work in front of the Commission, formed by

- Prof. Giovanni Appendino, University of Eastern Piedmont
- Prof. Guido Ennas, University of Cagliari
- Dr. Davide Comoretto, University of Genova

The written Dissertation had been previously sent to the Commission members. After careful examination of the Dissertation, of the student's oral presentation, of the overall activity of the student during the three years of doctorate studies, the Commission

HAS APPROVED THE THESIS OF DARIO CAVALLO,
CONFERRING ON HIM THE TITLE OF

RESEARCH DOCTOR IN
CHEMICAL SCIENCES AND TECHNOLOGIES

The commission has evaluated the thesis and the overall activity of Dr. Dario Cavallo as
EXCELLENT

Genova, February 18th, 2011

The Director of the Doctorate School
(Prof. Luca Banfi)

The Coordinator of the Doctorate Course
(Prof. Luca Banfi)

ACTIVITY REPORT

Research Activity

The research activity was mainly carried out at the Department of Chemistry and Industrial Chemistry (University of Genova). However, Dario Cavallo **has also spent a research period of 12 months abroad**, in the Polymer Technology group (Prof. G.W.M. Peters) at the Eindhoven University of Technology (The Netherlands) from 2/10/2008 to 2/10/2009. Moreover Dario Cavallo went 11 times to Grenoble (France), at the ESFR, in order to carry out beantime experiments, **for an overall time of 56 days**. He also went 3 times to Hamburg (Germany), at the DESY, in order to carry out beantime experiments, **for 17 days overall.** Finally he went twice to the Lyondell-Basell Laboratories in Frankfurt a.M. (Germany) for **7 days overall.** Thus, he did research abroad for about 15 months.

Scientific Publications

Original publications on ISI Journals:

1) Cavallo, D.; Azzurri, F.; Floris, R.; Alfonso, G. C.; Balzano, L. Peters, G.W.M., Continuous Cooling Curves Diagrams of Propene/Ethylene Random Copolymers. The Role of Ethylene Counits in Mesophase Development, *Macromolecules*, **2010**, *43*, 2890–2896. IMPACT FACTOR (2009): 4.539.
2) Cavallo, D.; Azzurri, F.; Balzano, L.; Funari, S.; Alfonso, G.C., Flow Memory and Stability of Shear-Induced Nucleation Precursors in Isotactic Polypropylene, *Macromolecules*, **2010**, *43*, 9394–9400. IMPACT FACTOR (2009): 4.539.
3) Cavallo, D.; Portale, G.; Balzano, L.; Azzurri, F.; Bras, W.; Peters, G.W.M.; Alfonso, G.C., Real-time WAXD Detection of Mesophase Development During Quenching of Propene/Ethylene Copolymers D. Cavallo, *Macromolecules*, **2010**, *43,* 10208–10212. IMPACT FACTOR (2009): 4.539.
4) Azzurri, F.; Stagnaro, P.; Conzatti, L.; Cavallo, D.; Repetto, L.; Scatto, M.; Andreotti, L.; Cioai, S., Flow induced crystallization of LDPE nanocomposites. A rheological and morphological characterization, *e-Polymers*, **2010**, in press. IMPACT FACTOR (2009): 0.644

Original publications on non ISI Journals:

1) Cavallo, D.; Azzurri, F.; Alfonso, G. C.; Funari, S. S., Influence of flow condition on the nature and stability of shear induced nucleation precursors, **2009**, *DESY Annual Report.*
2) Cavallo, D.; Floris, R.; Azzurri, F.; Alfonso, G.C.; Funari, S.S., Polymorphic behaviour of quenched propene/ethylene random copolymers. A simple Continuous Cooling Transformation approach, **2009**, *DESY Annual Report.*
3) Boragno, L.; Stagnaro, P.; Alfonso, G. C.; Cavallo, D.; Azzurri, F., The Trigonal Form of Isotactic Polypropylene in Random Propene/1-Pentene Copolymers, **2009**, *DESY Annual Report.*
4) Balzano, L.; Cavallo, S.; van Erp, T.B.; Ma, Z.; Housmans, J.W.; Fernandez-Ballester, L.; Peters, G.W.M., Dynamics of fibrillar precursors of shishes as a function of stress, *IOP Conf. Ser.: Mater. Sci. Eng.*, **2010,** *14*, (012005), 1-7.

Books:

7) Cavallo, D.; Comoretto, D.; Self assembly of polyelectrolytes for photonic crystal applications in *Ionic Interactionsin Natural and Synthetic Macromolecules*, Ed. A. Ciferri, Wiley, **2011,** in press.

Communications at Conferences

Oral communications:

1) Cavallo, D., "On-line and off-line detection of polymer structuring under actual procesing conditions", "2° Forum Nazionale dei Giovani Ricercatori su Materiali Polimerici e Biomateriali", Genova, 4-5/7/2008
2) Cavallo, D., "Effect of comonomer content on mesophase development in quenched propene/ethylene random copolymers", Workshop "Flow induced crystallization meeting", Technische Universiteit Eindhoven, 21/01/09.
3) Cavallo, D.; Alessi, M.; Azzurri, F.; Alfonso, G.C.; Balzano, L.; Peters, G.W.M., "Polymorphic behaviour of quenched propene/ethylene random copolymers", "Dutch Polymer Days 2009", Leunteren (NL), 3/2/09.
4) Cavallo, D.; Alfonso, G.C.; Azzurri, F.; Balzano; L., "Influence of flow conditions on the nature and stability of shear induced precursors", MaTe Polymer technology, FIC Group Meeting, Eindhoven (NL) 31/3/2009.
5) Cavallo, D.; Azzurri, F.; Alfonso, G. C.; Balzano, L.; Peters, G. W. M., "Flow memory in polymer crystallization: probing stability of shear induced structures with Small-Angle X-ray Scattering", Synchrotron Radiation in Polymer Science (SRPS 4), 8-11/9/2009, Kerkrade (NL).
6) Cavallo, D.; Azzurri, F.; Alfonso, G. C., "Polymer Crystallization under Processing Conditions, Giornate Italo-Francesi di Chimica-GIFC 2010, 26-27/4/2010, Genova.
7) Cavallo, D.; Azzurri, F.; Balzano, L.; Portale, G.; Alfonso, G. C.; Peters, G. W. M., "Real-time detection of structure development in PP homo- and co-polymers during fast cooling", European Workshop on Polymer Crystallization Under Conditions Relevant to Processing, 27-28/5/2010, Genova.
8) Cavallo, D.; Azzurri, F.; Balzano, L.; Portale, G.; Peters, G. W. M.; Alfonso, G. C., "Real time monitoring of polymer structure development under processing-like cooling conditions", Polymer Processing Society 26th Regional Meeting, 20-23/10/2010, Istanbul (Turkey).

Posters:

9) Cavallo, D.; Alessi, M.; Azzurri, F.; Alfonso, G.C., Balzano, L.; Peters, G.W.M., "Continuous Cooling Transformation diagrams of P/E random copolymers", HSC9 specialized course, ESRF Grenoble, 16-22/11/2008
10) "Structure development during fast cooling of propene/ethylene random copolymers", Cavallo, D.; Azzurri, F.; Alfonso, G.C.; Balzano, L.; Peters, G.W.M., "Deformation, Yield and Fracture of Polymers (DYFP2009)", 6-9/4/2009, Kerkrade, the Netherlands.
11) Cavallo, D.; Azzurri, F.; Alfonso, G.C., "Polymer Structuring in processing conditions", Scuola PCAM "Chemistry and Physics of Materials for Energetics", Milano, 14-19/9/2009

Congresses Attended

1) "2° Forum Nazionale dei Giovani Ricercatori su Materiali Polimerici e Biomateriali", 4-5/7/2008, Genova.
2) "Dutch Polymer Days 2009", 3/2/09, Leunteren (NL).
3) "Deformation, Yield and Fracture of Polymers (DYFP2009)", 6-9/4/2009, Kerkrade (NL)
4) "Synchrotron Radiation in Polymer Science (SRPS 4)", 8-11/9/2009, Kerkrade (NL).
5) "Giornate Italo-Francesi di Chimica-GIFC 2010", 26-27/4/2010, Genova.
6) "European Workshop on Polymer Crystallization Under Conditions Relevant to Processing", 27-28/5/2010, Genova.
7) "Polymer Processing Society, 26th Regional meeting", Istanbul (Turkey), 20-23/10/2010.

Courseware

During his doctorate, Dario Cavallo has acquired 33.5 credits of Courseware.

Courses attended and passed (22 credits)

Courses Given by Teachers of the University of Genova:

1) Fundamentals of scanning and transmission electronic microscopy (3 credits)(2008).
2) Fundamentals of soft matter (3 credits)(2008)
3) Optical properties of materials (3 credits)(2008)
4) Organic materials for electronics, optoelectronics and photonics (2 credits)(2010)

Courses Given by invited experts:

1) Martensitic Transformations (Peter Rogl) (1 credit)(2008)
2) Solid State Magnetic Resonance Techniques (Roberto De Renzi) (1 credit)(2008)
3) Bioplastics (Antonio Casale) (1 credit)(2009)
4) Clathrates: Formation, Crystal Chemistry, Phase Relations and Properties (Peter Rogl) (1 credit)(2010)
5) Soft Tissue Mechanics (Gerrit W.M. Peters) (1 credit)(2010)

Other courses:

1) Graduate Course on "Rheology & Polymer Processing", organized by the National Dutch Graduate School of Polymer Science and Technology (6 credits)(2009).

National and International Schools or Workshops (7 credits)

1) *Seminar of the Materials Technology Group* held at the Academic Society in Eindhoven, The Netherlands, 14/10/2008 (0.25 credits)
2) *Scattering and Imaging Studies of Soft Matter Systems using Synchrotron Radiation and Neutrons*, Grenoble (Francia), 16-22 novembre 2008 (2 credits).
3) *Seminar of the Materials Technology Group* held at the Academic Society in Eindhoven, The Netherlands, 20/1/2009 (0.25 credits)
4) *Flow induced crystallization meeting*, Technische Universiteit Eindhoven, 21/01/09 (0,25 credits)
5) *Seminar of the Materials Technology Group* held at the Academic Society in Eindhoven, The Netherlands, 30/6/2009 (0.25 credits)
6) *Chemistry and Physics of Materials for Energetics*, Milano, 14-19/9/2009 (2 credits)
7) *10th European School on "Scattering Methods Applied to Soft Condensed Matter"*, RelaiSoleil Les Bruyères, Bombannes, Gironde, France, 13-19/6/2010 (2 credits).

Seminars Given (3 credits)

1) 17/10/2008, Eindhoven University of Technology (The Netherlands), "Polymer crystallization in near-processing conditions",
2) 12/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Self-assembly and crystallization in block copolymers"

Seminars Attended (1.5 credits)

1) 12/2/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Supramolecular chirality and photomodulation of properties of amorphous and liquid crystal polymers obtained by ATRP", Dr. Loris Giorgini, Università di Bologna.

2) 6/10-2009, Dept. of Chemistry and Industrial Chemistry, Genova, "Chimica della fotografia, dai sali d'argento ai pixel", F. Wrubl.
3) 6/10/2009, Dept. of Chemistry and Industrial Chemistry, Genova, "Acciai inossidabili: aspetti metallurgici della saldatura", M. Fabbreschi.
4) 8/10/09, Dept. of Chemistry and Industrial Chemistry, Genova, "Point-contact spectroscopy: a method for the study of the electron-quasiparticle interaction function", Prof. Marian Reiffers, Institute of Experimental Physics, Kosice (Slovakia).
5) 20/11/2009, Dept. of Chemistry and Industrial Chemistry, Genova, "Materials for solar energy", L. Francis.
6) 20/11/2009, Dept. of Chemistry and Industrial Chemistry, Genova, "Role of dendrimers in Drug Delivery", A. Ullah.
7) 20/11/2009, Dept. of Chemistry and Industrial Chemistry, Genova, "Polimeri per uso nel fotovoltaico", E. Casazza.
8) 10/2/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Invisibility. Camouflage techniques.", Prof. Maria Gazda, Faculty of Applied Physics & Mathematics, Gdansk University of Technology, Danzig, Poland.
9) 18/5/2010, Department of Physics, Genova, "Comprendere un catalizzatore eterogeneo tramite misure di diffrazione di raggi-x in situ", Roberto Felici, European Synchrotron Radiation Facility, Grenoble, France.
10) 8/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Formation mechanism of silver nanoparticle 1D microstructures and their hierarchical assembly into 3D superstructures", Lorenza Suber, C.N.R., Roma.
11) 12/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Organic Synthesis "on water"", Valentina Cerulli
12) 12/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Splitting fotocatalitico dell'acqua", Alessio Rindi
13) 14/10/2010, Department of Physics, Genova, "Growing semiconductor nanostructures with an AFM tip", Marco Rolandi, University of Washington, Seattle, WA (USA).
14) 2/11/2010, Department of Physics, Genova, "Dynamics of reactions at surfaces", Gerhard Ertl, Max Planck Gesellschaft, Berlin.

Teaching Assistance

Dario Cavallo has assisted the course of "Laboratory of Polymeric Materials" (master degree in Science and Engineering of Materials) (30 hours)(2010/2011, first semester).

UNIVERSITÀ DEGLI STUDI DI GENOVA

DOCTORATE SCHOOL IN SCIENCES AND TECHNOLOGIES OF CHEMISTRY AND MATERIALS

PH.D. CERTIFICATE
OF
VALENTINA CERULLI

Doctorate Course:
Chemical Sciences and Technologies
Start of the Doctorate Program:
January 1st, 2008
End of the Doctorate Program:
December 31st, 2010
Advisor:
Prof. Renata Riva
Thesis Title:
Diversity Oriented Synthesis of New Classes of Heterocyclic Compounds and Study of their Properties as Antitumoral Agents
Defense Date:
February 18th, 2011

On February 18th, 2011, at the Department of Chemistry and Industrial Chemistry, Valentina Cerulli has orally presented her doctorate research work in front of the Commission, formed by

- Prof. Giovanni Appendino, University of Eastern Piedmont
- Prof. Guido Ennas, University of Cagliari
- Dr. Davide Comoretto, University of Genova

The written Dissertation had been previously sent to the Commission members. After careful examination of the Dissertation, of the student's oral presentation, of the overall activity of the student during the three years of doctorate studies, the Commission

HAS APPROVED THE THESIS OF VALENTINA CERULLI,
CONFERRING ON HER THE TITLE OF

RESEARCH DOCTOR IN
CHEMICAL SCIENCES AND TECHNOLOGIES

The commission has evaluated the thesis and the overall activity of Dr. Valentina Cerulli as
EXCELLENT

Genova, February 18th, 2011

The Director of the Doctorate School
(Prof. Luca Banfi)

The Coordinator of the Doctorate Course
(Prof. Luca Banfi)

ACTIVITY REPORT

Research Activity

The research activity was mainly carried out at the Department of Chemistry and Industrial Chemistry (University of Genova). However, Valentina Cerulli **has also spent a research period of 6 months abroad**, in the group of Prof. Mauro Adamo at the Royal College of Surgeons in Ireland, Dublin (Ireland) from 1/1/2010 to 1/7/2010.

Scientific Publications

Original publications on ISI Journals:

1) Multicomponent synthesis of dihydrobenzoxazepinones, bearing four decorations, as potential α-helix mimics, Banfi, L.; Basso, A.; Cerulli, V.; Guanti, G.; Lecinska, P.; Monfardini, I.; Riva, R., *Molecular Diversity*, **2010**, *14*, 425-442. IMPACT FACTOR (2009): 2.071.
2) A Highly Convergent Synthesis of Tricyclic N-Heterocycles Coupling an Ugi Reaction with a Tandem SN 20-Heck Double Cyclization, Riva, R.; Banfi, L.; Basso, A.; Cerulli, V.; Guanti, G.; Pani, M., *J. Org. Chem.*, **2010**, *75*, 5134-5143. IMPACT FACTOR (2009): 4.219.

Communications at Conferences

Oral communications:

1) Banfi, L.; Basso, A.; Cerulli, V.; Riva, R., "Enantioselective Chemoenzymatic Synthesis of Chiral Building Blocks and Their Applications in Ugi Multicomponent Reactions", IASOC 2010 – Ischia Advanced School of Organic Chemistry, Ischia Porto (Italy), 25-29/9/2010.

Posters:

2) Banfi, L.; Basso, A.; Cerulli, V.; Guanti, G.; Riva, R., "Use of chemoenzymatic methods for the enantioselective preparation of chiral building blocks to be used in multicomponent reactions", BIOTECH.ORG – Chimica Organica e Biotecnologie: Sfide e Opportunità, Forte dei Marmi (Italy), 20-23/5/2009

Congresses Attended

1) Sigma-Aldrich Young Chemists Symposium, Pesaro (Italy), 20-22/10/2008.
2) BIOTECH.ORG – Chimica Organica e Biotecnologie: Sfide e Opportunità, Forte dei Marmi (Italy), 20-23/5/2009.

Courseware

During her doctorate, Valentina Cerulli has acquired 27.0 credits of Courseware.

Courses attended and passed (18 credits)

Courses Given by Teachers of the University of Genova:

1) Databases classification: bibliographic, chemical substances, chemical reactions, numeric patent. Data Bases (2 credits)(2008).
2) Bioorganic Chemistry (2 credits)(2009)
3) Stereoselective synthesis (2 credits)(2009)
4) Diversity oriented synthesis (2 credits)(2009)
5) Microwave technology applied to chemical processes (2 credits)(2009)
6) Bioinformatics (3 credits)(2009)

Courses Given by invited experts:

1) Biotechnological drugs (Barbara Gatto) (1 credit)(2008)
2) "Organic synthesis in microreactors" and "Surfaces and microchannel with controlled wettability for new materials and devices (Michele Maggini and Tommaso Carofiglio) (1 credit)(2008).
3) Development of dyes in the cosmetic industry: the L'Oreal case (Cristina Emanuel) (1 credit)(2009)
4) Fragment-based drug design (Eduard Felder) (1 credit)(2009).
5) The LC-MS toolbox for structural elucidaton of trace compounds: applications in drug discovery and development (Antonio Triolo) (1 credit)(2010).

National and International Schools or Workshops (5 credits)

1) *Giornate di studio "Come Accelerare il Processo di Drug Discovery, Click e Flow Chemistry, Microonde e Dintorni"*, Pavia (Italy), 16/5/2008 e 23/5/2008 (1 credit).
2) *XXXIII Scuola Estiva di Sintesi Organica "A. Corbella"*, Gargnano (Italy), 23-27/6/2008 (2 credits).
3) *International Advanced School of Organic Synthesis (IASOC 2010)*, Ischia (Italy), 25-29/9/2010 (2 credits).

Seminars Given (2 credits)

1) 12/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Organic Synthesis "on water"".

Seminars Attended (2 credits)

1) 1/4/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Cinquant'anni giocando ad aprire e chiudere eterocicli", Prof. Domenico Spinelli, Università di Bologna.
2) 3/7/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Potent XIAP Antagonists by a Fragment-Based MCR Approach", Ilaria Monfardini, DOBIG, Genova.
3) 27/10/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Lo Spazio Chimico e la sua Descrizione Matematica", Prof. Roberto Todeschini, Università Bicocca, Milano
4) 27/10/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Navigare lo Spazio Chimico per la Biologia e la Medicina". Dr. Antonio Macchiarulo, Università di Perugia.
5) 3/11/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "La sintesi orientata alla diversità di collezioni di molecole", Dr. Chiara Ghiron, SienaBiotech.
6) 3/11/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Sfruttare la chemiodiversità delle sostanze naturali", Prof. G. Appendino, Università del Piemonte Orientale.
7) 27/2/2009, Department of Pharmaceutical Sciences, Genova, "Chiral chromatography : a mature technology, a scientific challenge", Prof. Christian Roussel, Marseille, France.
8) 27/2/2009, Department of Pharmaceutical Sciences, Genova, "Chemistry derived from N-(o-amino-phenyl) thiazoline-2-thione", Federico Andreoli, Marseille, France.
9) 19/3/2009, Dept. of Chemistry and Industrial Chemistry, Genova, "Derivati imminici altamente reattivi per la sintesi di composti azotati.", Prof. Marino Petrini, Università di Camerino
10) 18/5/2009, Dept. of Chemistry and Industrial Chemistry, Genova, "Calcolo dello spettro NMR con metodi DFT: applicazione alla determinazione strutturale di molecole organiche complesse, Prof. Alessandro Bagno, Università di Padova.
11) 16/7/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Formation of Multiple Stereocenters via Organocatalysis", Dr. Marco Bella, Università "La Sapienza" Roma
12) 17/9/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Activated Peptides: for Ligation and Large Cyclic Transition States", Prof. A.R. Katritsky, University of Florida, Gainesville.
13) 6/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Clusters in composti intermetallici", Monika Skrobanska.
14) 6/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Molecular Modeling in Drug Design: Ligand-based drug design and Structure-based drug design", Paola Zito.
15) 12/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Self-assembly and crystallization in block copolymers", Dario Cavallo
16) 26/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Il rischio sanitario associato alle biotossine algali nei frutti di mare", Giuliana Ottonello.
17) 26/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "La combinazione della catalisi di metalli di transizione e organocatalisi", Anna Piatek.
18) 26/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Diversity oriented synthesis of heterocyclic compounds exploiting isocyanides and alkynes in multicomponent reactions", Fabio De Moliner.

Teaching Assistance

Valentina Cerulli has assisted the course of "Organic Chemistry and Laboratory" (bachelor degree in Biotechnology) (30 hours)(2007/2008, second semester).

UNIVERSITÀ DEGLI STUDI DI GENOVA

DOCTORATE SCHOOL IN SCIENCES AND TECHNOLOGIES OF CHEMISTRY AND MATERIALS

PH.D. CERTIFICATE
OF
DANIELE CHIAPPE

Doctorate Course:
Materials Science and Technology
Start of the Doctorate Program:
January 1st, 2008
End of the Doctorate Program:
December 31st, 2010
Advisor:
Prof. Francesco Buatier de Mongeot
Thesis Title:
Functional nanostructures by self-organized ion beam patterning
Defense Date:
February 17th, 2011

On February 17th, 2011, at the Department of Chemistry and Industrial Chemistry, Daniele Chiappe has orally presented his doctorate research work in front of the Commission, formed by

- Prof. Pietro Carretta, University of Pavia
- Dr. Andrea Ciccioli, University "La Sapienza", Roma
- Prof. Guido Busca, University of Genova

The written Dissertation had been previously sent to the Commission members. After careful examination of the Dissertation, of the student's oral presentation, of the overall activity of the student during the three years of doctorate studies, the Commission

HAS APPROVED THE THESIS OF DANIELE CHIAPPE,
CONFERRING ON HIM THE TITLE OF

RESEARCH DOCTOR IN
MATERIALS SCIENCE AND TECHNOLOGY

The commission has evaluated the thesis and the overall activity of Dr. Daniele Chiappe as
EXCELLENT

Genova, February 18th, 2011

The Director of the Doctorate School
(Prof. Luca Banfi)

The Coordinator of the Doctorate Course
(Prof. Gabriella Borzone)

ACTIVITY REPORT

Research Activity

The research activity was mainly performed at the Department of Physics (University of Genova). However, Daniele Chiappe **has also carried out a series of short research periods** in Grenoble (France), at the ESFR, in order to carry out beantime experiments, **for an overall time of 43 days**. He also went twice to Villingen (Switzerland) at the Paul Scherrer Institute, in order to carry out XMCD and XNLD experiments (16 days overall).

Scientific Publications

Original publications on ISI Journals:

1) Toma, A.; Chiappe, D.; Massabo, D.; Boragno, C.; Buatier de Mongeot, F., Self-organized metal nanowire arrays with tunable optical anisotropy, *Applied Physics Letters*, **2008,** 93, 163104. IMPACT FACTOR (2009): 3.554
2) Toma, A.; Chiappe, D.; Setina Batic, B.; Godec, M.; Jenko, M.; Buatier de Mongeot, F., Erosive versus shadowing instabilities in the self-organized ion patterning of polycrystalline metal films, *Physical Review B*, **2008,** 78, 153406. IMPACT FACTOR (2009): 3.475
3) Toma, A.; Šetina Batič, B.; Chiappe, D.; Boragno, C.; Valbusa, U.; Godec, M.; Jenko, M.; Buatier de Mongeot, F., Patterning polycrystalline thin films by defocused ion beam: The influence of initial morphology on the evolution of self-organized nanostructures, *Journal of Applied Physics*, **2008,** 104, 104313. IMPACT FACTOR (2009): 2.072
4) Belardini, A.; Larciprete, M. C.; Centini, M.; Fazio, E.; Sibilia, C.; Bertolotti, M.; Toma, A.; Chiappe, D.; Buatier de Mongeot, F., Tailored second harmonic generation from self-organized metal nano-wires arrays, *Optics Express*, **2009,** 17, 3603-3609. IMPACT FACTOR (2009): 3.278
5) Margheriti, L.; Mannini, M.; Sorace, L.; Gorini, L.; Gatteschi, D.; Caneschi, A.; Chiappe, D.; Moroni, R.; Buatier de Mongeot, F.; Comia, A.; Piras, F. M.; Magnani, A.; Sessoli, R., Thermal Deposition of Intact Tetrairon(III) Single-Molecule Magnets in High-Vacuum Conditions, *Small*, **2009,** 5, 1460-1466. IMPACT FACTOR (2009): 6.171.
6) Buatier de Mongeot, F.; Chiappe, D.; Gagliardi, F.; Toma, A.; Felici, R.; Garibbo, A.; Boragno, C., Wetting process in superhydrophobic disordered surfaces, *Soft Matter*, **2010,** 6, 1409-1412. IMPACT FACTOR (2009): 4.869
7) Toma, A.; Chiappe, D.; Boragno, C.; Buatier de Mongeot, F., Self-organized ion-beam synthesis of nanowires with broadband plasmonic functionality, *Physical Review B*, **2010,** 81, art. no. 165436. IMPACT FACTOR (2009): 3.475
8) Chiappe, D.; Toma, A.; Zhang, Z.; Boragno, C.; Buatier de Mongeot, F., Amplified nanopatterning by self-organized shadow mask ion lithography, *Applied Physics Letters*, **2010,** 97, art. no. 053102. IMPACT FACTOR (2009): 3.554
9) Margheriti, L.; Chiappe, D.; Mannini, M.; Car, P.E.; Buatier de Mongeot, F.; Criginski Cezar J.; Piras, F.M.; Magnani, A.; Caneschi, A.; Sessoli, R., X-Ray detected magnetic hysteresis of a thermally evaporated film of oriented TbPc2, *Advanced Materials*, **2010**, *20*, 1-6. IMPACT FACTOR (2009): 8.379.

Patents:

10) Buatier de Mongeot, F.; Boragno, C.; Valbusa, U.; Chiappe, D.; Toma, A., Procedimento per la sintesi di un array di nanofili metallici in grado di supportare risonanze plasmoniche localizzate, *Italian patent application* TO2008A000175. Then extended (Method for the synthesis of an array of metal nanowires capable of supporting localized plasmon resonances and photonic device comprising said array) as *Int. Pat. Appl.* WO 2009109939 20090911, as *U.S. Patent Appl.* US 2011/0001119 and as *European Patent application* EU 09718008.7 (05.10.2010).
11) Buatier de Mongeot, Chiappe, D.; Toma, A., Procedimento per la produzione di un dispositivo fotonico comprendente un array di nanofili metallici con resistività anisotropa, *Italian patent application* TO2008A000986.

Other publications:

1) Buatier de Mongeot, F.; Boragno, C.; Toma, A.; Chiappe, D.; Delli Veneri, P.; Mercaldo, L.V.; Usatii, I., "Plasmon Enhanced Thin Film PV Devices on Nanostructured Metallo-Dielectric Substrates", *Proceedings of 24thEUPVSEC2009*, **2009**, 322-325.
2) Buatier de Mongeot, F.; Boragno, C.; Toma, A.; Chiappe, D.; Delli Veneri, P.; Mercaldo, L.V.; Usatii, I., "Photon harvesting in nanostructured dielectric substrates for thin film solar cells", *Proceedings of 25thEUPVSEC2010*, **2010**, 3112-3116.

Communications at Conferences

Oral Communications:

1) Chiappe, D.; Toma, A.; Šetina Batič, B.; Boragno, C.; Valbusa, U.;. Godec, M.; Jenko, M.; Buatier de Mongeot, F., "Self-organized nanostructuring of supported polycrystalline metal films", Summer school "NanoSteps: Self-organized nanostructures on crystal surfaces", Cargese, 30/6-12/7/2008
2) Chiappe, D.; Toma, A.; Šetina Batič, B.; Boragno, C.; Valbusa, U.;. Godec, M.; Jenko, M.; Buatier de Mongeot, F., "Self-organized nanostructuring of supported polycrystalline metal films", XCIV Congresso Nazionale della Società Italiana di Fisica, Genova, 22/09/2008-27/09/2008.
3) Buatier de Mongeot, F.; Chiappe, D.; Toma, A.; Boragno, C.; Martella, C., Self-organized transparent and flexible metal nanowire electrodes, MRS 2010 Fall Meeting, Boston (MA, USA), 28/11-03/12/10

Posters:

4) Chiappe, D.; Toma, A.; Massabò, D.; Boragno, C.; Buatier de Mongeot, F., "Nanostructured metallo-dielectric interfaces with tunable optical anisotropy", Summer school "NanoSteps: Self-organized nanostructures on crystal surfaces" Cargese, 30/6-12/7/2008.
5) Chiappe, D.; Toma, A.; Massabò, D.; Boragno, C.; Buatier de Mongeot, F., "Nanostructured metallo-dielectric interfaces with tunable optical anisotropy", PCAM summer school: Materials for Energetics, Milano, 14/09-19/09/09.
6) Chiappe, D.; Toma, A.; Boragno, C.; Buatier de Mongeot, F., "Amplified nanopatterning by self-organized shadow mask ion lithography", MNE 2010 Micro and Nano Engineering, Genova, 19/09-22/09/10.
7) Chiappe, D.; Toma, A.; Zhang, Z.; Boragno, C.; Buatier de Mongeot, F., "Interfacial functionalization at the nanoscale: ion beam sputtering of polycrystalline coatings", MRS 2010 Fall Meeting, Boston (MA, USA), 28/11-03/12/10.

Congresses Attended

1) XCIV Congresso Nazionale della Società Italiana di Fisica, DIFI, Genova, 22/09/2008-27/09/2008.
2) MNE 2010 Micro and Nano Engineering, Genova, 19/09-22/09/10
3) MRS 2010 Fall Meeting, Boston (MA, USA), 28/11-03/12/10

Courseware

During his doctorate, Daniele Chiappe has acquired 21.0 credits of Courseware.

Courses attended and passed (12 credits)

Courses Given by Teachers of the University of Genova:

1) Fundamentals of scanning and transmission electronic microscopy (3 credits)(2008).
2) Amorphous metallic materials and composite materials (3 credits)(2008)
3) Viscoelasticity. The paradigmatic example of polymers (2 credits)(2009).

Courses Given by invited experts:

1) Self-assembly and hierarchical microstructures: The principles of Nature for the design of materials (Josè Perez Rigueiro) (1 credit)(2008)
2) Solid State Magnetic Resonance Techniques (Roberto De Renzi) (1 credit)(2008)
3) Magnetic Structure (Peter Rogl) (1 credit)(2009)
4) Advanced spectroscopies for single molecule measurements (Salvatore Cannistraro) (1 credit)(2009)

National and International Schools or Workshops (5 credits)

1) *Summer school "NanoSteps: Self-organized nanostructures on crystal surfaces"*, Cargese, 30/6-12/7/2008 (3 credits).
2) *PCAM summer school: "Materials for Energetics"*, Milano, 14/09-19/09/09 (2 credits).

Seminars Given (2 credits)

The student presented 3 seminars as final test for the 3 attended courses given by internal lecturers (see above).

Seminars Attended (2 credits)

1) 6/2/2009, Dept. of Physics, Genova, "L'energia del futuro", Prof. Carlo Rubbia, CERN, Ginevra.
2) 09/03/2009, Dept. of Physics, Genova, "Quali energie per il futuro?" , Prof. Mauro Marinelli, Università di Genova
3) 21/04/2009, Dept. of Physics, Genova, "Ultra-sensitive force detection applied to magnetic resonance imaging", Prof. Martino Poggio, University of Basel
4) 21/05/2009, Dept. of Physics, Genova, "Origin of Water on Earth: Astronomical Units to Angstroms", Prof. Mike Drake, University of Arizona.
5) 9/10/2009, Dept. of Physics, Genova, "Controlled Fabrication of Epitaxial Functional Oxide Artificial Nano-wire and Nano-dot Structures and their giant properties", H. Tanaka, Institute of Scientific and Industrial Research (ISIR-Sanken), Osaka University (Japan).
6) 9/10/2009, Dept. of Physics, Genova, "Stochastic Resonance in Vanadium Dioxide: Toward Creation of Biomimetic Devices with Neuronal Signal Processing", T. Kanki, Institute of Scientific and Industrial Research (ISIR-Sanken), Osaka University (Japan).
7) 22/10/2009, Dept. of Physics, Genova, "From Single Crystals to Nanoparticles: Moecular Approach to Study the Nature of Catalytic Action of Silver in Ethylene Epoxidation", V.I. Bukhtiyarov, Boreskov Institute of Catalysis, Novosibirsk, Russia.
8) 05/11/2009, Dept. of Physics, Genova, "Ultra Thin Vanadium silicide and Vanadium Oxide studied by STM and High Resolution TEM", Prof. Carlos Achete, Inmetro- UFRJ- Rio de Janeiro Brasil.
9) 21/12/2009, Dept. of Physics, Genova, "Le proprieta' elettroniche del grafene", Prof. Alberto Morpurgo, Universita' di Ginevra.
10) 18/5/2010, Dept. of Physics, Genova, "Comprendere un catalizzatore eterogeneo tramite misure di diffrazione di raggi-x in situ", Roberto Felici, European Synchrotron Radiation Facility, Grenoble, France.

11) 16/6/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Magnetic frustration, a way to new exotic phases", Prof. Julian G. Sereni, Lab. Bajas Temperaturas, CAB - CNEA, 8400 S.C. de Bariloche, Argentina.
12) 21/6/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Materiali per l`energia: risultati recenti su bulk ceramici termoelettrici e film superconduttori a base di Fe", Dr. Paolo Mele, Department of Materials Science and Engineering, Kyushu Institute of Technology.
13) 3/9/2010, Dept. of Physics, Genova, "Ab initio study of the Raman spectra and the crystallization kinetics of chalcogenides phase-change materials, Prof. Riccardo Mazzarello, Aachen University (D).
14) 17/9/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Activated Peptides: for Ligation and Large Cyclic Transition States", Prof. A.R. Katritsky, University of Florida, Gainesville.
15) 8/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Formation mechanism of silver nanoparticle 1D microstructures and their hierarchical assembly into 3D superstructures", Lorenza Suber, C.N.R., Roma.
16) 2/11/2010, Dept. of Physics, Genova, "Dynamics of reactions at surfaces", Gerhard Ertl, Max Planck Gesellschaft, Berlin.
17) 11/11/2010, Dept. of Physics, Genova, "Electronic propertied of quantum dots: From chaos to control", Dr. Esa Räsänen, University of Jyväskylä (Finlandia).

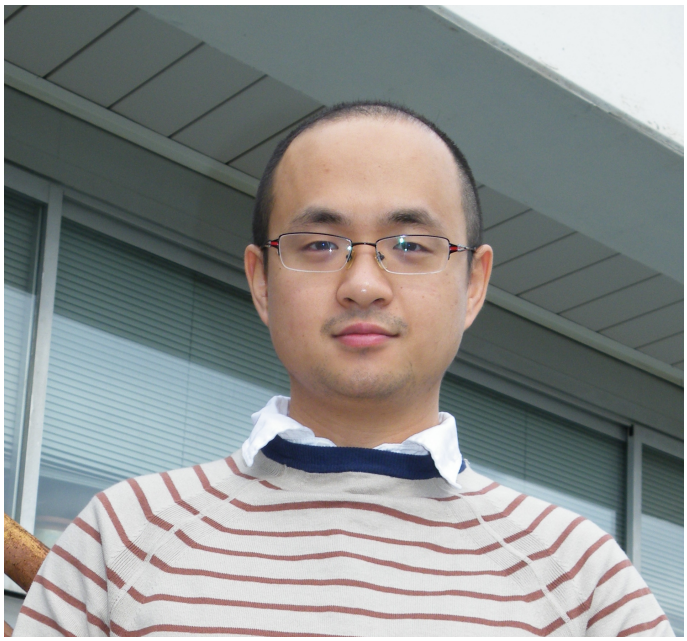
UNIVERSITÀ DEGLI STUDI DI GENOVA

DOCTORATE SCHOOL IN SCIENCES AND TECHNOLOGIES OF CHEMISTRY AND MATERIALS

PH.D. CERTIFICATE

OF

DAJIAN LI



Doctorate Course:
Materials Science and Technology
Start of the Doctorate Program:
January 1st, 2008
End of the Doctorate Program:
December 31st, 2010
Advisor:
Prof. Gabriella Borzone
Thesis Title:
Synthesis and characterization of new alloys for Pb-free solder applications
Defense Date:
February 17th, 2011

On February 17th, 2011, at the Department of Chemistry and Industrial Chemistry, Dajian Li has orally presented his doctorate research work in front of the Commission, formed by

- Prof. Pietro Carretta, University of Pavia
- Dr. Andrea Ciccioli, University "La Sapienza", Roma
- Prof. Guido Busca, University of Genova

The written Dissertation had been previously sent to the Commission members. After careful examination of the Dissertation, of the student's oral presentation, of the overall activity of the student during the three years of doctorate studies, the Commission

HAS APPROVED THE THESIS OF DAJIAN LI,
CONFERRING ON HIM THE TITLE OF

RESEARCH DOCTOR IN
MATERIALS SCIENCE AND TECHNOLOGY

Genova, February 18th, 2011

The Director of the Doctorate School
(Prof. Luca Banfi)

The Coordinator of the Doctorate Course
(Prof. Gabriella Borzone)

ACTIVITY REPORT

Research Activity

The research activity was entirely carried out at the Department of Chemistry and Industrial Chemistry (University of Genova).

Scientific Publications

Original publications on ISI Journals:

1) Novakovic, R.; Giuranno, D.; Ricci, E.; Delsante, S.; Li, D.; Borzone., G., Bulk and surface properties of liquid Sb-Sn alloys, *Surface Science*, **2011**, *65*, 248. IMPACT FACTOR (2009): 1.798.

Communications at Conferences

Oral Communications:

1) Li, D., "Thermodynamic investigation of Ag-Ge-Zn system", 2° Forum Nazionale dei Giovani Ricercatori di Scienza e Ingegneria dei Materiali, 3-5/6/2008, Genova.
2) Li, D.; Bros, J.P.; Borzone, G., "Calorimeteric investigation of liquid Ga-Sn-Ag alloys", XXX National Congress on Calorimetry Thermal Analysis and Chemical Thermodynamics, 9-12/12/2008, Pisa.
3) Li , D.; Watson, A.; Delsante, S.; Borzone, G., "Thermodynamic properties of silver-tin-antimony liquid alloys", COST Action MP0602 "Advanced Solder Materials for High Temperature Application (HISOLD), Mid Term Meeting, 15-17/4/2009, Bochum, Germany.
4) Li, D.; Delsante, S.; Borzone, G., "Recent results on the Sb- Sn system", COST Action MP0602 "Advanced Solder Materials for High Temperature Application (HISOLD), WG1 Meeting, 23-24/12/2009, Genova.
5) Li, D.; Borzone, G.; Watson, A.; Delsante, S., "Integral enthalpy of mixing of the Ag-Sb-Sn ternary system", COST Action MP0602 "Advanced Solder Materials for High Temperature Application (HISOLD)", 2010 Annual COST MP0602 Meeting, 6-9/10/2010, Bratislava, Slovakia.

Posters:

6) Delsante, S.; Parodi, N.; Li, D.; Borzone, G., "Ag-Ge-X (X = Zn, Sn, Cu) systems for high temperature lead free solder applications: a thermodynamic investigation", COST Action MP0602 "Advanced Solder Materials for High Temperature Application (HISOLD), Joint working group meeting, 21-22/2/2008, Genova.
7) Li, D.; Delsante, S.; Borzone, G., "Experimental investigation of the Sb-Sn system", XV Scuola Nazionale di Scienza dei Materiali, 21-30/9/2009, Bressanone, Italy.
8) Novakovic, R.; Lanata, T.; Giuranno, D.; Ricci, E.; Delsante, S.; Li, D.; Borzone, G., "Thermodynamics and wetting characteristics of the SAC (Sn-2.2Ag-0.9Cu) alloy in contact with Cu and Ni substrates", COST Action MP0602 "Advanced Solder Materials for High Temperature Application (HISOLD)", WG1 Meeting, 23-24/11/2009, Genoa, Italy.
9) Giuranno, D.; Delsante, S.; Li, D.; Novakovic, R.; Ricci, E.; Borzone, G., "The effect of Sb on the wetting characteristics of the SAC (Sn-2.2Ag-0.9Cu) alloy in contact with Cu and Ni substrates", COST Action MP0602 "Advanced Solder Materials for High Temperature Application (HISOLD)", WG1 Meeting, 23-24/11/2009, Genoa, Italy.
10) Giuranno, D.; Lanata, T.; Novakovic, R.; Ricci, E.; Delsante, S.; Li, D.; Borzone, G., "Comparison of wetting characteristics of the SAC and SAC-Sb alloys in contact with Cu and Ni substrates", COST Action MP0602 "Advanced Solder Materials for High Temperature Application (HISOLD)", 2010 Annual COST MP0602 Meeting, 6-9/4/2010, Bratislava, Slovakia

Congresses Attended

1) COST Action MP0602 "Advanced Solder Materials for High Temperature Application (HISOLD), Joint working group meeting", 21-22/2/2008, Genova.
2) 2° Forum Nazionale dei Giovani Ricercatori di Scienza e Ingegneria dei Materiali, 3-5/6/2008, Genova.
3) XXX National Congress on Calorimetry Thermal Analysis and Chemical Thermodynamics, 9-12/12/2008, Pisa.
4) COST Action MP0602 "Advanced Solder Materials for High Temperature Application (HISOLD), Mid Term Meeting", 15-17/4/2009, Bochum, Germany.
5) COST Action MP0602 "Advanced Solder Materials for High Temperature Application (HISOLD), WG1 Meeting", 23-24/11/2009, Genova.
6) COST Action MP0602 "Advanced Solder Materials for High Temperature Application (HISOLD)", 2010 Annual COST MP0602 Meeting, 6-9/4/2010, Bratislava, Slovakia.

Courseware

During his doctorate, Dajian Li has acquired 25.0 credits of Courseware.

Courses attended and passed (15 credits)

Courses Given by Teachers of the University of Genova:

1) Fundamentals of scanning and transmission electronic microscopy (3 credits)(2008).
2) Amorphous metallic materials and composite materials (3 credits)(2008)
3) Synthesis, structure and functional properties of intermetallic compounds (2 credits)(2009).

Courses Given by invited experts:

1) Martensitic Transformations (Peter Rogl) (1 credit)(2008)
2) Technologies for control of CO_2 in the atmosphere: from confinement to reutilization (M. Aresta) (1 credit)(2008)
3) Electrical Properties of Glasses (Michel Duclot) (1 credit)(2009)
4) Ionic Liquids (Cinzia Chiappe) (1 credit)(2009)
5) Advanced spectroscopies for single molecule measurements (Salvatore Cannistraro) (1 credit)(2009)
6) Clathrates: Formation, Crystal Chemistry, Phase Relations and Properties (Peter Rogl) (1 credit)(2010)

Other courses not organized by the school

1) Regularization Methods for High Dimensional Learning (F. Odone, L. Rosasco) (1 credit)(2010)

National and International Schools or Workshops (5 credits)

1) *SERPChem Summer School* , Genova, 08-19/06/2009 (3 credits)
2) *XV Scuola nazionale di scienza dei materiali- "Tecnologie Convergenti per i Materiali nei Settori Strategici per lo Sviluppo"*, 21-30/9/2009, Bressanone, Italy. (2 credits)

Seminars Given (2 credits)

The student presented 3 seminars as final test for the 3 attended courses given by internal lecturers (see above).

Seminars Attended (3 credits)

1) 20/2/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Exotic Behaviours of some Rare Earth Intermetallic Compounds " Karl Gschneider Jr, Iowa State University, USA.
2) 20/2/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "....Et d'autres Calorimètres", Jean Pierre Bros, Université Aix- Marseille I, France.
3) 20/2/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "MSIT, 20 years Phase Diagram Data Compilation & Evaluation", Günther Effenberg, MSIT, Stuttgart (Germania).
4) 2/4/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "High pressure high temperature technique as a tool for the synthesis of ceramic materials with transition metals in mixed valence state", Dr. Alberto Ubaldini, Advanced Nano Materials Laboratory, National Institute for Materials Science (NIMS), Tsukuba (Japan).
5) 17/7/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "In situ nanomanipulation and functional characterization on complex superconducting/magnetic oxides", dott.sa Regina Ciancio, Laboratorio SUPERMAT-INFM-CNR, Salerno.
6) 22/10/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Materials Research Activity at the Technological Centre of the Brasilian Navy", Dr.ssa Selma Luiza Silva del "Centro Tecnolgico da Marinha em Sao Paulo (Brasil).
7) 6/2/2009, Dept. of Physics, Genova, "L'energia del futuro", Prof. Carlo Rubbia, CERN, Ginevra.
8) 3/3/2009, Dept. of Chemistry and Industrial Chemistry, Genova, "Ipotesi chimica sull'origine della vita: dal Big Bang alla comparsa dei primi organismi viventi", Prof. Piero Ugliengo, Università di Torino.
9) 25/3/2009, IENI-CNR, Genova, "Experimental methods for investigations of thermophysical and structure-sensitive properties of metallic melts", Dr. Yuriy Plevachuk, Ivan Franko National University, Department of Metal Physics, Lviv, Ukraine.
10) 13/5/2009, Dept. of Chemistry and Industrial Chemistry, Genova, "Microalghe: una risorsa per produrre biodiesel ed alimenti", Prof. M. Tredici, Università di Firenze.
11) 3/7/2009, Dept. of Chemistry and Industrial Chemistry, Genova, "Materiali polimerici per il risparmio energetico: diodi elettroluminescenti e celle fotovoltaiche", Silvia Destri, Istituto per lo Studio delle Macromolecole (ISMAC), CNR, Milano.
12) 28/7/2009, Dept. of Chemistry and Industrial Chemistry, Genova, "Why can't you use thermal neutrons to study gadolinium-based materials?", Prof. Dominic Ryan, Mc Gill University (Montreal).
13) 8/10/09, Dept. of Chemistry and Industrial Chemistry, Genova, "Point-contact spectroscopy: a method for the study of the electron-quasiparticle interaction function", Prof. Marian Reiffers, Institute of Experimental Physics, Kosice (Slovakia).
14) 9/10/2009, Dept. of Physics, Genova, "Controlled Fabrication of Epitaxial Functional Oxide Artificial Nano-wire and Nano-dot Structures and their giant properties", H. Tanaka, Institute of Scientific and Industrial Research (ISIR-Sanken), Osaka University (Japan)
15) 9/10/2009, Dept. of Physics, Genova, "Stochastic Resonance in Vanadium Dioxide: Toward Creation of Biomimetic Devices with Neuronal Signal Processing", T. Kanki, Institute of Scientific and Industrial Research (ISIR-Sanken),

Osaka Un"Diffusion Soldering on Cu/In-48Sn/Cu bonds as alternative Pb-free interconnection technology", Dr. S. Sommadossi, Facultad de Ingeniería, Universidad Nacional del Comahue/CONICET, Argentina.

16) 10/2/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Invisibility. Camouflage techniques.", Prof. Maria Gazda, Faculty of Applied Physics & Mathematics, Gdansk University of Technology, Danzig, Poland.
17) 13/5/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "High temperature lead-free soldering and experimental thermodynamics of intermetallic systems", Hans Flandorfer, Department for Inorganic Chemistry / Materials Chemistry Vienna University.
18) 18/5/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Sports materials", Dr.Andy Watson, Institute for Materials Research, University of Leeds (UK).
19) 8/6/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "L'opzione nucleare in Italia", Dr. Stefano Maggiolo, Agenzia Regionale per la Protezione dell'Ambiente Ligure (A.R.P.A.L.).
20) 16/6/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Magnetic frustration, a way to new exotic phases", Prof. Julian G. Sereni, Lab. Bajas Temperaturas, CAB - CNEA, 8400 S.C. de Bariloche, Argentina.
21) 6/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Clusters in composti intermetallici", Monika Skrobanska.
22) 8/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Formation mechanism of silver nanoparticle 1D microstructures and their hierarchical assembly into 3D superstructures", Lorenza Suber, C.N.R., Roma.
23) 14/10/2010, Dept. of Physics, Genova, "Growing semiconductor nanostructures with an AFM tip", Marco Rolandi, University of Washington, Seattle, WA (USA).
24) 2/11/2010, Dept. of Physics, Genova, "Dynamics of reactions at surfaces", Gerhard Ertl, Max Planck Gesellschaft, Berlin.
25) 11/11/2010, Dept. of Physics, Genova, "Electronic propertied of quantum dots: From chaos to control", Dr. Esa Räsänen, University of Jyväskylä (Finlandia).
26) 3/12/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Magnetic properties of nanoparticles: the effect of particle size and beyond…", Davide Peddis, C.N.R., Istituto di Struttura della Materia, Roma

UNIVERSITÀ DEGLI STUDI DI GENOVA

DOCTORATE SCHOOL IN SCIENCES AND TECHNOLOGIES OF CHEMISTRY AND MATERIALS

PH.D. CERTIFICATE
OF
FABIO DE MOLINER

Doctorate Course:
Chemical Sciences and Technologies
Start of the Doctorate Program:
January 1st, 2008
End of the Doctorate Program:
December 31st, 2010
Advisor:
Dr. Andrea Basso
Thesis Title:
a-Azidoaldehydes in isocyanide based MCR followed by postcondensation modifications
Defense Date:
February 18th, 2011

On February 18th, 2011, at the Department of Chemistry and Industrial Chemistry, Fabio De Moliner has orally presented his doctorate research work in front of the Commission, formed by

- Prof. Giovanni Appendino, University of Eastern Piedmont
- Prof. Guido Ennas, University of Cagliari
- Dr. Davide Comoretto, University of Genova

The written Dissertation had been previously sent to the Commission members. After careful examination of the Dissertation, of the student's oral presentation, of the overall activity of the student during the three years of doctorate studies, the Commission

HAS APPROVED THE THESIS OF FABIO DE MOLINER,
CONFERRING ON HIM THE TITLE OF

RESEARCH DOCTOR IN
CHEMICAL SCIENCES AND TECHNOLOGIES

The commission has evaluated the thesis and the overall activity of Dr. Fabio De Moliner as
EXCELLENT

Genova, February 18th, 2011

The Director of the Doctorate School
(Prof. Luca Banfi)

The Coordinator of the Doctorate Course
(Prof. Luca Banfi)

ACTIVITY REPORT

Research Activity

The research activity was mostly all carried out at the Department of Chemistry and Industrial Chemistry (University of Genova). However, the doctoral worked was fully funded by the company Merck-Serono (Geneve, Switzerland) and therefore it was carried out in collaboration with that company. Fabio De Moliner went to Geneve for short periods (15 days overall) to discuss the work and to assist espansion of the compound libraries. Moreover Fabio De Moliner spent a short period of research (12-24/4/2010) at the University of Pisa, working in the group of Prof. Cinzia Chiappe.

Scientific Publications

Original publications on ISI Journals:

1) De Moliner, F.; Crosignani, S.; Banfi, L.; Riva, R.; Basso, A. "Synthesis of 5-carboxamide-oxazolines with a Passerini-Zhu/Staudinger-Aza-Wittig two step protocol", *J. Comb. Chem.* **2010**, *12*, 613-616. IMPACT FACTOR (2009): 3.450.

Patents

2) Castaldi, G.; Rasparini, M.; Marras, G.; Banfi, L.; De Moliner, F.; Musumeci, M.; Riva, R., "One-step Process for Preparing Paliperidone", *European Patent Appl.*, N. 08382084.5 - 1211. Application date: 22/12/08.

Communications at Conferences

Oral communications:

1) De Moliner, F.; Crosignani, S.; Banfi, L.; Riva, R.; Basso, A., "Synthesis of novel heterocyclic scaffolds via multicomponent reactions coupled with postcondensation modifications", XXXV Scuola Estiva di Sintesi Organica "A. Corbella", Gargnano (Italy), 14-18/6/2010.

Posters:

2) Banfi, L.; Basso, A.; De Moliner, F.; Guanti, G.; Petricci, E.; Riva, R.; Taddei, M., "Synthetic Approach to Highly Functionalized Mesocyclic Heterocycles by Coupling an Ugi or Passerini Reaction (PADAM Strategy) with a Pd-mediated Cyclocarbonylation", MCR2009, Ekaterinburg (Russia), 24-28/5/2009.
3) De Moliner, F.; Crosignani, S.; Banfi, L.; Riva, R.; Basso, A., Synthesis of 5-carboxamide-oxazolines with a Passerini-Zhu/ Staudinger-Aza-Wittig two-step protocol, International Advanced School of Organic Synthresis (IASOC 2010), Ischia (Italy), 25-29/9/2010.

Congresses Attended

1) Meeting "Serono Ph.D. Day", Geneve (Switzerland), 13-15/5/2008.
2) Meeting "Serono Ph.D. Day", Geneve (Switzerland), 23-25/11/2008.
3) MCR2009, Ekaterinburg (Russia), 24-28/5/2009.

Courseware

During his doctorate, Fabio De Moliner has acquired 30.0 credits of Courseware.

Courses attended and passed (19 credits)

Courses Given by Teachers of the University of Genova:

1) Databases classification: bibliographic, chemical substances, chemical reactions, numeric patent. Data Bases (2 credits)(2008).
2) Bioorganic Chemistry (2 credits)(2009)
3) Stereoselective synthesis (2 credits)(2009)
4) Diversity oriented synthesis (2 credits)(2009)
5) Microwave technology applied to chemical processes (2 credits)(2009)
6) Bioinformatics (3 credits)(2009)

Courses Given by invited experts:

1) Biotechnological drugs (Barbara Gatto) (1 credit)(2008)
2) "Organic synthesis in microreactors" and "Surfaces and microchannel with controlled wettability for new materials and devices (Michele Maggini and Tommaso Carofiglio) (1 credit)(2008).
3) Radiodrugs in anti-cancer therapy: preparation and pharmacokinetics (Marco Chinol) (1 credit)(2009)
4) Development of dyes in the cosmetic industry: the L'Oreal case (Cristina Emanuel) (1 credit)(2009)
5) Fragment-based drug design (Eduard Felder) (1 credit)(2009).
6) The LC-MS toolbox for structural elucidaton of trace compounds: applications in drug discovery and development (Antonio Triolo) (1 credit)(2010).

National and International Schools or Workshops (7 credits)

1) *XXXIII Scuola Estiva di Sintesi Organica "A. Corbella"*, Gargnano (Italy), 23-27/6/2008 (2 credits).
2) *Edinburgh University Summer Program* (workshop organized by Biotage on solid phase and MW promoted synthesis), Edimburg (UK), 29-31/7/2008 (1 credit).

3) *XXXV Scuola Estiva di Sintesi Organica "A. Corbella"*, Gargnano (Italy), 14-18/6/2010 (2 credits).
4) *International Advanced School of Organic Synthresis (IASOC 2010)*, Ischia (Italy), 25-29/9/2010 (2 credits)

Seminars Given (2 credits)

1) 26/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Diversity oriented synthesis of heterocyclic compounds exploiting isocyanides and alkynes in multicomponent reactions".

Seminars Attended (2 credits)

1) 1-4-2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Cinquant'anni giocando ad aprire e chiudere eterocicli", Prof. Domenico Spinelli, Università di Bologna.
2) 6-5-2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Metallazione regio- e stereoselettiva di eterocicli: utilità sintetica", Prof. Saverio Florio, Università di Bari.
3) 3-7-2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Potent XIAP Antagonists by a Fragment-Based MCR Approach", Ilaria Monfardini, DOBIG, Genova.
4) 27-10-2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Lo Spazio Chimico e la sua Descrizione Matematica", Prof. Roberto Todeschini, Università Bicocca, Milano
5) 27-10-2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Navigare lo Spazio Chimico per la Biologia e la Medicina". Dr. Antonio Macchiarulo, Università di Perugia.
6) 3-11-2008, Dept. of Chemistry and Industrial Chemistry, Genova, "La sintesi orientata alla diversità di collezioni di molecole", Dr. Chiara Ghiron, SienaBiotech.
7) 3-11-2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Sfruttare la chemiodiversità delle sostanze naturali", Prof. G. Appendino, Università del Piemonte Orientale.
8) 27-2-2009, Dept. of Pharmaceutical Sciences, Genova, "Chiral chromatography : a mature technology, a scientific challenge", Prof. Christian Roussel, Marseille, France.
9) 27-2-2009, Dept. of Pharmaceutical Sciences, Genova, "Chemistry derived from N-(o-amino-phenyl) thiazoline-2-thione", Federico Andreoli, Marseille, France.
10) 19/3/2009, Dept. of Chemistry and Industrial Chemistry, Genova, "Derivati imminici altamente reattivi per la sintesi di composti azotati.", Prof. Marino Petrini, Università di Camerino
11) 18/5/2009, Dept. of Chemistry and Industrial Chemistry, Genova, "Calcolo dello spettro NMR con metodi DFT: applicazione alla determinazione strutturale di molecole organiche complesse, Prof. Alessandro Bagno, Università di Padova.
12) 6/11/2009, Faculty of Medicine, "Targeting beta-amyloid in Alzheimer's Disease: chemical, biochemical and modeling studies", Prof. A. Carotti, Università di Bari
13) 16/7/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Formation of Multiple Stereocenters via Organocatalysis", Dr. Marco Bella, Università "La Sapienza" Roma
14) 17/9/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Activated Peptides: for Ligation and Large Cyclic Transition States", Prof. A.R. Katritsky, University of Florida, Gainesville.
15) 6/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Clusters in composti intermetallici", Monika Skrobanska.
16) 6/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Molecular Modeling in Drug Design: Ligand-based drug design and Structure-based drug design", Paola Zito.
17) 12/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Organic Synthesis "on water"", Valentina Cerulli
18) 12/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Self-assembly and crystallization in block copolymers", Dario Cavallo
19) 26/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Il rischio sanitario associato alle biotossine algali nei frutti di mare", Giuliana Ottonello.
20) 26/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "La combinazione della catalisi di metalli di transizione e organocatalisi", Anna Piatek.
21) 22/11/2010, Dept. of Pharmaceutical Sciences, Genova, "Combinatorial Chemistry", Laura Buffa.
22) 22/11/2010, Dept. of Pharmaceutical Sciences, Genova, "Le Micotossine nelle colture e nei prodotti alimentari", Silvia Mannino.
23) 22/11/2010, Dept. of Pharmaceutical Sciences, Genova, "Molecular Dynamics Simulation: an updated overview on Prion Protein ", Gerolamo Vettoretti.

Teaching Assistance

Fabio De Moliner has assisted the course of "Organic Chemistry and Laboratory" (bachelor degree in Biotechnology) (30 hours)(2008/2009, second semester).

UNIVERSITÀ DEGLI STUDI DI GENOVA

DOCTORATE SCHOOL IN SCIENCES AND TECHNOLOGIES OF CHEMISTRY AND MATERIALS

PH.D. CERTIFICATE

OF

SILVIA MANNINO

Doctorate Course:
Pharmaceutical, Food and Cosmetic Sciences
Start of the Doctorate Program:
January 1st, 2008
End of the Doctorate Program:
December 31st, 2010
Advisor:
Prof. Mauro Mazzei
Thesis Title:
Drugs for Cystic Fibrosis Therapy
Defense Date:
February 17th, 2011

On February 17th, 2011, at the Department of Pharmaceutical Sciences, Silvia Mannino has orally presented her doctorate research work in front of the Commission, formed by

- Prof. Roberta Fruttero, University of Torino
- Prof. Livio Brasili, University of Modena
- Prof. Alessandro Balbi, University of Genova

The written Dissertation had been previously sent to the Commission members. After careful examination of the Dissertation, of the student's oral presentation, of the overall activity of the student during the three years of doctorate studies, the Commission

HAS APPROVED THE THESIS OF SILVIA MANNINO,
CONFERRING ON HER THE TITLE OF

RESEARCH DOCTOR IN
PHARMACEUTICAL, FOOD AND COSMETIC SCIENCES

Genova, February 18th, 2011

The Director of the Doctorate School
(Prof. Luca Banfi)

The Coordinator of the Doctorate Course
(Prof. Alessandro Balbi)

ACTIVITY REPORT

Research Activity

The research activity was entirely carried in part at the Department of Pharmaceutical Sciences (University of Genova).

Scientific Publications

Communications at Conferences

Posters:

1) Mannino, S., "Drugs for Cystic Fibrosis Therapy", "European School of Medicinal Chemistry-ESMEC, Urbino, 4-9/7/2010.

Congresses Attended

1) SAYCS '08 (Sigma Aldrich Young Chemist Symposium), Pesaro (Italy), 20-23/10/2008.
2) 3rd Meeting "Nuove Prospettive in Chimica Farmaceutica", Castelvecchio Pascoli (Italy), 12-14/2/2009.
3) SAYCS '09 (Sigma Aldrich Young Chemist Symposium), Pesaro, 12-14/10/2009.

Courseware

During her doctorate, Silvia Mannino has acquired 26.0 credits of Courseware.

Courses attended and passed (17 credits)

Courses Given by Teachers of the University of Genova:

1) Pharmaceutical biotechnologies (3 credits)(2008).
2) Databases classification: bibliographic, chemical substances, chemical reactions, numeric patent. Data Bases (2 credits)(2008).
3) Microwave technology applied to chemical processes (2 credits)(2009)
4) In vitro tests for evaluation of toxicity and biological action of chemical compounds (2 credits)(2009)
5) New topics about food composition and analysis (2 credits)(2009)

Courses Given by invited experts:

1) Solid State Magnetic Resonance Techniques (Roberto De Renzi) (1 credit)(2008)
2) Biotechnological drugs (Barbara Gatto) (1 credit)(2008)
3) Control of food quality (Consuelo Pizarro) (1 credit)(2008)
4) Radiodrugs in anti-cancer therapy: preparation and pharmacokinetics (Marco Chinol) (1 credit)(2009)
5) Development of dyes in the cosmetic industry: the L'Oreal case (Cristina Emanuel) (1 credit)(2009)
6) Fragment-based drug design (Eduard Felder) (1 credit)(2009).

National and International Schools or Workshops (4 credits)

1) *ESMEC-European School of Medicinal Chemistry*, Urbino, 13-18/9/2009 (2 credits)
2) *ESMEC-European School of Medicinal Chemistry*, Urbino 4-9/7/2010 (2 credits).

Seminars Given (2 credits)

1) 22/11/2010, Dept. of Pharmaceutical Sciences, Genova, "Le Micotossine nelle colture e nei prodotti alimentari".

Seminars Attended (3 credits)

1) 15/2/2008, Dept. of Chemistry and Pharmaceutical and Food Technologies, Genova, "Introduzione alla spettroscopia NIR", Prof.ssa E. Tamburini, Università di Ferrara
2) 15/2/2008, Dept. of Chemistry and Pharmaceutical and Food Technologies, Genova, "La spettroscopia NIR nell'industria farmaceutica", Dr. S. Lonardi, consulente, Verona.
3) 15/2/2008, Dept. of Chemistry and Pharmaceutical and Food Technologies, Genova, "Controllo NIR, dal ricevimento merci al prodotto finito", Dr. G. Campolongo, Büchi Italia
4) 15/2/2008, Dept. of Chemistry and Pharmaceutical and Food Technologies, Genova, Spettroscopia NIR e chemiometria, P. Oliveri.
5) 11/4/2008, Faculty of Medicine, "Targeting the chaperone Hsp90 for the treatment (but not only) of cancer", Prof. Stefano Moro, Dipartimento di Scienze Farmaceutiche, Università di Padova.
6) 10/6/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Studio preclinico in vitro ed in vivo dell'attività antitumorale di nuove molecole a struttura 1,3-butadienica", Dr. Maurizio Viale, Istituto Nazionale per la Ricerca sul Cancro di Genova.
7) 3/11/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "La sintesi orientata alla diversità di collezioni di molecole", D.ssa Chiara Ghiron, SienaBiotech.

8) 3/11/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Sfruttare la chemiodiversità delle sostanze naturali", Prof. G. Appendino, Università del Piemonte Orientale.
9) 7/11/2008, Dept. of Pharmaceutical Sciences, Genova, "Derivati cumarinici con potenziale attività antivirale verso il virus dell'epatite C", M. Giampieri.
10) 7/11/2008, Dept. of Pharmaceutical Sciences, Genova, "Configurazione assoluta: sguardo sui metodi chimico-fisici per la sua determinazione, contributo dell'HPLC chirale, un caso di studio di alcol secondario e suoi derivati", A. Romussi.
11) 7/11/2008, Dept. of Pharmaceutical Sciences, Genova, "Sistemi gelificanti in situ per applicazioni biomediche", R: Stefani.
12) 7/11/2008, Dept. of Pharmaceutical Sciences, Genova, "Green Chemistry e sviluppo sostenibile", B. Trucchi.
13) 24/11/2008, Dept. of Pharmaceutical Sciences, Genova, "Lipidomica", Prof. Daniele Piomelli, Louise Turner Arnold Chair in the Neurosciences, Professor of Pharmacology and Biological Chemistry and Director of the Center for Drug Discovery-University of California, Irvine CA.
14) 27/2/2009, Dept. of Pharmaceutical Sciences, Genova, "Chiral chromatography : a mature technology, a scientific challenge", Prof. Christian Roussel, Marseille, France.
15) 27/2/2009, Dept. of Pharmaceutical Sciences, Genova, "Chemistry derived from N-(o-amino-phenyl) thiazoline-2-thione", Federico Andreoli, Marseille, France.
16) 15/5/2009, Dept. of Pharmaceutical Sciences, Genova, "Farmaci recentemente approvati: uno sguardo critico al passato e un trend per il futuro, Dr. Paolo Pevarello, Preclinical Research Director, Newron Pharmaceuticals S.p.A.
17) 6/11/2009, Faculty of Medicine, "Targeting beta-amyloid in Alzheimer's Disease: chemical, biochemical and modeling studies", A. Carotti, Università di Bari
18) 27/11/2009, Dept. of Pharmaceutical Sciences, Genova, "Retinopatie e Diabete: euolo del fattore di crescita vascolare (VEGF)", F. Catalano.
19) 27/11/2009, Dept. of Pharmaceutical Sciences, Genova, "Spettroscopia atomica di assorbimento ed emissione: basi teoriche e strumentazione", C. Macciò.
20) 27/11/2009, Dept. of Pharmaceutical Sciences, Genova, "Spettroscopia atomica di assorbimento ed emissione: aspetti pratici e applicazioni", M. Carrozza.
21) 27/11/2009, Dept. of Pharmaceutical Sciences, Genova, "Flow chemistry, a new efficient technique for today's chemists", M. Caviglia.
22) 12/02/2010, Dept. of Internal Medicine, Genova, "Quando le staminali sono maligne", Prof. E. Boncinelli, Istituto Scientifico San Raffaele, Milano.
23) 12/03/2010, Dept. of Pharmaceutical Sciences, Genova, "Nuovi approcci terapeutici nel trattamento della neurodegenerazione", Prof. Gabriele Costantino, Università di Parma.
24) 14/5/2010, Dept. of Pharmaceutical Sciences, Genova, "Radicali liberi e antiossidanti. Il ruolo del farmacista nella prevenzione delle malattie del nostro tempo", Eugenio IORIO, Presidente dell'Osservatorio Internazionale dello Stress Ossidativo.
25) 21/10/2010, Faculty of Medicine, " Ligandi multisito e multitarget quali potenziali agenti terapeutici nelle malattie neurodegenerative", Angelo Carotti, Università di Bari.
36) 22/11/2010, Dept. of Pharmaceutical Sciences, Genova, "Combinatorial Chemistry", Laura Buffa.
27) 22/11/2010, Dept. of Pharmaceutical Sciences, Genova, "Molecular Dynamics Simulation: an updated overview on Prion Protein ", Gerolamo Vettoretti.

Teaching Assistance

Silvia Mannino has assisted the courses of "Laboratory of Drug Synthesis" (2009/2010)(30 hours), "Laboratory of extractive preparations of plant active principles" (2009/2010)(30 hours), "Laboratory of Drug Analysis II" (2009/2010)(60 hours) "Laboratory of Drug Analysis II" (2010/2011)(60 hours). Moreover, she has helped first year students engaged in mathematics courses during 2008 (40 hours), 2009 (40 hours) and 2010 (40 hours).

UNIVERSITÀ DEGLI STUDI DI GENOVA

DOCTORATE SCHOOL IN SCIENCES AND TECHNOLOGIES OF CHEMISTRY AND MATERIALS

PH.D. CERTIFICATE

OF

GIULIANA OTTONELLO

Doctorate Course:
Chemical Sciences and Technologies
Start of the Doctorate Program:
January 1st, 2008
End of the Doctorate Program:
December 31st, 2010
Advisors:
Prof. Emanuele Magi
Dr. Barbara Vivaldi
Thesis Title:
Development of analytical methods for the evaluation of fishery products quality
Defense Date:
February 18th, 2011

On February 18th, 2011, at the Department of Chemistry and Industrial Chemistry, Giuliana Ottonello has orally presented her doctorate research work in front of the Commission, formed by

- Prof. Giovanni Appendino, University of Eastern Piedmont
- Prof. Guido Ennas, University of Cagliari
- Dr. Davide Comoretto, University of Genova

The written Dissertation had been previously sent to the Commission members. After careful examination of the Dissertation, of the student's oral presentation, of the overall activity of the student during the three years of doctorate studies, the Commission

HAS APPROVED THE THESIS OF GIULIANA OTTONELLO, CONFERRING ON HER THE TITLE OF

RESEARCH DOCTOR IN CHEMICAL SCIENCES AND TECHNOLOGIES

Genova, February 18th, 2011

The Director of the Doctorate School
(Prof. Luca Banfi)

The Coordinator of the Doctorate Course
(Prof. Luca Banfi)

ACTIVITY REPORT

Research Activity

The research activity was all carried out at the **Istituto Zooprofilattico del Piemonte, Liguria e Valle d'Aosta** (Genova).

Scientific Publications

Communications at Conferences

Oral communications:

1) Ottonello, G.; Vivaldi, B.; Garibaldi, A. C.; Ferrari, A.; Mignone, W.; Tarchino, F., "Detection of 18 PCB congeners in the blubber of stranded striped dolphins from Tirrenian Sea", Convegno ISA 2008 - Incontro di Spettroscopia Analitica, Ferrara (Italy), 25-27/6/2008.
2) Ottonello, G., Workshop "Heavy Metals and Pesticides in Feed", "Pesticidi nei cereali e nei mangimi: resoconto del 3° CRL/ NRL Workshop (Copenhagen 2008)", Genova, 2-3/2/2009 (plenary communication).
3) Ottonello, G., "Impiego della spettrometria di massa per la determinazione di PCB in alimenti di origine animale", Workshop "Spettrometria di massa in Liguria", Genova, 1/12/2009.

Posters:

4) Vivaldi, B.; Ottonello, G.; Tarchino, F.; Ferro, G.; Ferrari, A.; Abete, M.C., "Detection of OCPs and OPPs in feed by solid-phase extraction and GC/MS analysis", EPRW 2008: Pesticide Residues in Food and Drink 7th European Pesticide Residue Workshop, Berlin,Germany, 1-4/6/2008.
5) Ottonello, G.; Tarchino, F.; Marazzotta, G.; Ferrari, A.; Vivaldi, B., "Development and validation of a method for the detection of PCBs in feed and vegetable raw material", Pittcon 2010 – Orlando, Florida (USA), 28/02-05/03/2010.
6) Ottonello, G.; Tarchino, F.; Prearo, M.; Vivaldi, B., "Detection of polycyclic aromatic hydrocarbons (PAHs) in wels catfish (Silurus glanis) collected in the Po River Basin, Italy", GIFC 2010, Genova, 26-27/04/2010.
7) Ottonello, G.; Tarchino, F.; Abete, M.C.; Ferrari, A.; Vivaldi, B., "Detection of organochlorinated pesticides in wels catfish (Silurus glanis) collected in the Po River Basin, northern Italy", EPRW 2010, Strasbourg (France), 20-24/6/2010.
8) Ottonello, G.; Tarchino, F.; Cosma, v.; Prearo, M.; Ferrari, A.; Vivaldi, B., "Detection of PCBs in samples of Aquaculture Tench (Tinca tinca) collected in the Lake Trasimeno, Italy.", Aquaculture Europe 2010, Porto (Portugal), 5-8/10/2010.

Congresses Attended

1) EPRW 2008: Pesticide Residues in Food and Drink 7th European Pesticide Residue Workshop, Berlin,Germany, 1-4/6/2008.
2) ISA 2008 - Incontro di Spettroscopia Analitica, Ferrara, 25-27/6/2008.
4) Résultats du plan d'actions 2006-2007- Colloque de restitution, Paris, 11-12/3/2009.
5) Meeting PITTCON 2010 - Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Orlando, Florida (USA), 28/2-5/3/2010.
6) GIFC 2010 – Giornate Italo-Francesi di Chimica, Genova, 26-27/04//2010.
7) EPRW 2010 - European Pesticide Residue Workshop, Strasbourg (France), 20-24/6/2010.
8) Aquaculture Europe 2010, Porto (Portugal), 5-8/10/2010.

Courseware

During her doctorate, Giuliana Ottonello has acquired 27.5 credits of Courseware.

Courses attended and passed (17 credits)

Courses Given by Teachers of the University of Genova:

1) Databases classification: bibliographic, chemical substances, chemical reactions, numeric patent. Data Bases (2 credits)(2008).
2) Instrumental techniques for trace elements determination in pharmaceuticals, food products and environmental samples (2 credits)(2008)
3) Main plants used in Phytocosmetics and their constituents (2 credits)(2008)
4) In vitro tests for evaluation of toxicity and biological action of chemical compounds (2 credits)(2009)
5) Fundamentals of scanning and transmission electronic microscopy (3 credits)(2009)
6) New topics about food composition and analysis (2 credits)(2009)

Courses Given by invited experts:

1) Technologies for control of CO_2 in the atmosphere: from confinement to reutilization (Michele Aresta) (1 credit)(2008)
2) Control of food quality (Consuelo Pizarro) (1 credit)(2008)
3) Electrical Properties of Glasses (Michel Duclot) (1 credit)(2009).
4) Development of dyes in the cosmetic industry: the L'Oreal case (Cristina Emanuel) (1 credit)(2009)

National and International Schools or Workshops (6.5 credits)

1) *Training school "Metodi statistici di controllo del processo analitico:costruzione ed utilizzo delle Carte di Controllo"*, Ferrara, 6/2/2008 (0.5 credits).
2) *"L'uso delle Fonti Biomediche nella Ricerca Scientifica"*, Genova, 17/3/2008 (0.5 creditrs).
3) *Training school "Revisione critica e produzione di documentazione scientifica"*, Asti (Italy), 12/11/2008 (0.5 credits).
4) *CRL/NRL Workshop for Pesticides residues in Cereals and Feedstuff*, Copenhagen (Denmark), 18-19/9/2008 (1 credit). Participation as representative of the Laboratorio di Riferimento Nazionale C.Re.A.A. (Centro di Referenza Nazionale per la Sorveglianza e il Controllo degli Alimenti per gli Animali), Torino.
5) *Workshop "Heavy Metals and Pesticides in Feed"*, Genova, 2-3/2/2009 (1 credit).
6) *Training school "Una bussola per la ricerca biomedica in rete"*, Torino, 22/9/2009 (0.5 credits).
7) *Workshop "Spettrometria di massa in Liguria"* , Genova, 1/12/2009 (0.5 credits).
8) *Workshop ECM "Heavy Metals and Pesticides in Feed 2010"*, Genova, 28-29/1/2010 (1 credit).
9) *CRL/CF Workshop and training day*, Copenhagen (Denmark), 21-22/9/2010 (1 credit). Participation as representative of the Laboratorio di Riferimento Nazionale C.Re.A.A. (Centro di Referenza Nazionale per la Sorveglianza e il Controllo degli Alimenti per gli Animali), Torino.

Seminars Given (2 credits)

1) 26/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Il rischio sanitario associato alle biotossine algali nei frutti di mare".

Seminars Attended (2 credits)

1) 1/4/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Cinquant'anni giocando ad aprire e chiudere eterocicli", Prof. Domenico Spinelli, Università di Bologna.
2) 30/9/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Proprietà magnetiche inusuali in composti intermetallici", Prof. Julián G. Sereni, Low Temperature Division, CAB-CONICET, S.C. di Bariloche, Argentina.
3) 27/10/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Lo Spazio Chimico e la sua Descrizione Matematica", Prof. Roberto Todeschini, Università Bicocca, Milano
4) 27/10/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Navigare lo Spazio Chimico per la Biologia e la Medicina". Dr. Antonio Macchiarulo, Università di Perugia.
5) 3/3/2009, Dept. of Chemistry and Industrial Chemistry, Genova, "Ipotesi chimica sull'origine della vita: dal Big Bang alla comparsa dei primi organismi viventi", Prof. Piero Ugliengo, Università di Torino.
6) 20-11-2009, Dept. of Chemistry and Industrial Chemistry, Genova, "Materials for solar energy", L. Francis.
7) 20-11-2009, Dept. of Chemistry and Industrial Chemistry, Genova, "Role of dendrimers in Drug Delivery", A. Ullah.
8) 20-11-2009, Dept. of Chemistry and Industrial Chemistry, Genova, "Polimeri per uso nel fotovoltaico", E. Casazza.
9) 10/2/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Invisibility. Camouflage techniques.", Prof. Maria Gazda, Faculty of Applied Physics & Mathematics, Gdansk University of Technology, Danzig, Poland.
10) 16/2/2010, department of Physics, "Inquinamento atmosferico, cambiamenti climatici e fisica nucleare", Prof. Paolo Prati, INFN, Genova.
11) 13/5/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "High temperature lead-free soldering and experimental thermodynamics of intermetallic systems", Hans Flandorfer, Department for Inorganic Chemistry / Materials Chemistry Vienna University.
12) 14/5/2010, Department of Pharmaceutical Sciences, "Radicali liberi e antiossidanti. Il ruolo del farmacista nella prevenzione delle malattie del nostro tempo", Eugenio IORIO, Presidente dell'Osservatorio Internazionale dello Stress Ossidativo.
13) 8/6/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "L'opzione nucleare in Italia", Dr. Stefano Maggiolo, Agenzia Regionale per la Protezione dell'Ambiente Ligure (A.R.P.A.L.).
14) 8/7/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Linear Rigid-Rod Polyelectrolytes: High Conductivity at Low Relative Humidity Due to "Frozen-in" Free Volume. Applications to Fuel Cell Technology", Prof. Morton Litt, Dept. Macromolecular Sciences and Engineering, Case Western University, Cleveland OH, USA.
15) 14/7/2010, Department oif Experimental Medicine, "Possibile ruolo energetico della mielina. Prospettive nello studio del sonno e delle malattie neurodegenerative", Prof. A. Morelli, Università di Genova.
16) 16/7/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Formation of Multiple Stereocenters via Organocatalysis", Dr. Marco Bella, Dip. Chimica, Università "La Sapienza" Roma
17) 26/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "La combinazione della catalisi di metalli di transizione e organocatalisi", Anna Piatek.
18) 26/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Diversity oriented synthesis of heterocyclic compounds exploiting isocyanides and alkynes in multicomponent reactions", Fabio De Moliner.

UNIVERSITÀ DEGLI STUDI DI GENOVA

DOCTORATE SCHOOL IN SCIENCES AND TECHNOLOGIES OF CHEMISTRY AND MATERIALS

PH.D. CERTIFICATE

OF

ANNA MARIA PIĄTEK

Doctorate Course:
Chemical Sciences and Technologies
Start of the Doctorate Program:
January 1st, 2008
End of the Doctorate Program:
December 31st, 2010
Advisors:
Prof. Sergio Thea
Prof. Giorgio Cevasco
Thesis Title:
Synthesis and application of new reagents for identification and quantitative assessment of aminothiols and carboxylic acids, organic molecules of interest in the field of health
Defense Date:
February 18th, 2011

On February 18th, 2011, at the Department of Chemistry and Industrial Chemistry, Anna Maria Piątek has orally presented her doctorate research work in front of the Commission, formed by

- Prof. Giovanni Appendino, University of Eastern Piedmont
- Prof. Guido Ennas, University of Cagliari
- Dr. Davide Comoretto, University of Genova

The written Dissertation had been previously sent to the Commission members. After careful examination of the Dissertation, of the student's oral presentation, of the overall activity of the student during the three years of doctorate studies, the Commission

HAS APPROVED THE THESIS OF ANNA MARIA PIĄTEK,
CONFERRING ON HER THE TITLE OF

RESEARCH DOCTOR IN
CHEMICAL SCIENCES AND TECHNOLOGIES

The commission has evaluated the thesis and the overall activity of Dr. Anna Maria Piątek as
EXCELLENT

Genova, February 18th, 2011

The Director of the Doctorate School
(Prof. Luca Banfi)

The Coordinator of the Doctorate Course
(Prof. Luca Banfi)

ACTIVITY REPORT

Research Activity

The research activity all carried out at the Department of Chemistry and Industrial Chemistry (University of Genova).

Scientific Publications

Original publications on ISI Journals:

1) Cevasco, G.; Piatek, A. M.; Scapolla, C.; Thea, S., An improved method for simultaneous analysis of aminothiols in human plasma by high-performance liquid chromatography with fluorescence detection, *Journal of Chromatography A*, **2010**, *1217*, 2158-2162. IMPACT FACTOR (2009): 4.101
2) Cevasco, G.; Piatek, A. M.; Scapolla, C.; Thea, S., Simultaneous determination of L- and D-lactic acid in plasma by HPLC, *Journal of Chromatography A*, **2011,** *1218*, 787-792. IMPACT FACTOR (2009): 4.101
3) Cevasco, G.; Piatek, A.; Thea, S., The Hydrolysis of 4-Amino- and 4-Dimethylaminobenzene Sulfonyl Chlorides: An Unprecedented Case of Independence of Reactivity from pH, *Organic Letters,* **2011**, DOI**:** 10.1021/ol1029113. IMPACT FACTOR (2009): 5.420.

Communications at Conferences

Oral communications:

1) Cevasco, G.; Piatek, A.; Thea, S., "Un inaspettato effetto del sostituente nell'idrolisi alcalina di tiobenzoati arilici", Giornate di Chimica Organica Fisica e Meccanicistica (COFEM), Sestri Levante (Italy), 24-26/9/2008.
2) Cevasco, G.; Piatek, A.; Scapolla, C.; Thea, S., "New fluorescent reagents with benzofurazan skeleton for the determination of carboxylic acids in biological fluids", XXIII Congresso Nazionale della Società Chimica Italiana, Sorrento (Italy), 5-10/7/2009.
3) Cevasco, G.; Piatek, A.M.; Scapolla, C.; Thea, S., "Fluorescent Benzofurazanic Chiral Reagents for Analysis of Biologically Important Chiral Carboxylic Acids by HPLC", Giornate Italo-Francesi di Chimica (GIFC), Genova (Italy), 26-27/4/2010.
4) Cevasco, G.; Piatek, A.M.; Scapolla, C.; Thea, S., "Reagenti Fluorescenti chirali benzofurazanici per la determinazione di alcuni importanti acidi carbossilici chirali via HPLC", XXXV Scuola Estiva di Sintesi Organica "A. Corbella", Gargnano (Italy), 14-18/6/2010.
5) Cevasco, G.; Piatek, A.; Thea, S., "On the Alkaline Hydrolysis of Thiolesters", Giornate di Chimica Organica Fisica e Meccanicistica, Roma (Italy), 2-4/9/2010.

Posters:

6) Cevasco, G.; Piatek, A.; Thea, S., "New fluorogenic reagents for the determination of carboxylic acids in biological fluids", IV Giornate Italo-Francesi di Chimica (GIFC), Nice (France), 17-18/4/2008.
7) Cevasco, G.; Piatek, A.; Thea, S., "New fluorogenic reagents with benzofurazan skeleton for the determination of carboxylic acids in biological fluids by HPLC", Joint Meeting RSC-SCI on Heterocyclic Chemistry, Lerici (Italy), 8-10/5/2008.
8) Cevasco, G.; Piatek, A.; Scapolla, C.; Thea, S., "Nuovi reagenti fluorescenti benzofurazanico per la determinazione di acidi carbossilici in campioni biologici", Sigma-Aldrich Young Chemists Symposium (SAYCS) 2009, Pesaro (Italy), 12-14/10/2009.
9) Cevasco, G.; Piatek, A.; Scapolla, C.; Thea, S., "Fluorescent Benzofurazanic Chiral Reagents for Analysis of Biologically Important Chiral Carboxylic Acids by HPLC", 8th Spanish-Italian Symposium on Organic Chemistry (SISOC-VIII), Padova (Italy), 3-6/6/2010.

Congresses Attended

1) French-Italian Regional Congress of Chemistry (GIFC), Nice (France), 17-18/4/2008.
2) Joint Meeting RSC-SCI on Heterocyclic Chemistry, Lerici (Italy), 8-10/5/2008.
3) COFEM (Giornate di Chimica Organica Fisica e Meccanicistica), Sestri Levante (Italy), 24-26/9/2008.
4) XXIII Congresso Nazionale della Societa' Chimica Italiana, Sorrento (Italy), 5-10/7/2009.
5) Sigma-Aldrich Young Chemists Symposium (SAYCS) 2009, Pesaro (Italy), 12-14/10/2009.
6) Giornate Italo-Francesi di Chimica (GIFC), Genova (Italy), 26-27/4/2010.
7) 8th Spanish-Italian Symposium on Organic Chemistry (SISOC-VIII), Padova (Italy), 3-6/7/2010.
8) COFEM, Roma, 2-4/9/2010.

Courseware

During her doctorate, Anna Maria Piątek has acquired 26.0 credits of Courseware.

Courses attended and passed (20 credits)

Courses Given by Teachers of the University of Genova:

1) Databases classification: bibliographic, chemical substances, chemical reactions, numeric patent. Data Bases (2 credits)(2008).
2) Instrumental techniques for trace elements determination in pharmaceuticals, food products and environmental samples (2 credits)(2008)
3) Dendritic macromolecules: synthesis and reactivity (2 credits)(2009)
4) Chemometric strategies and algorithms and their applications (3 credits)(2009)
5) Bioorganic Chemistry (2 credits)(2009)
6) Stereoselective synthesis (2 credits)(2009)

Courses Given by invited experts:

1) Biotechnological drugs (Barbara Gatto) (1 credit)(2008)
2) "Organic synthesis in microreactors" and "Surfaces and microchannel with controlled wettability for new materials and devices (Michele Maggini and Tommaso Carofiglio) (1 credit)(2008).
3) Radiodrugs in anti-cancer therapy: preparation and pharmacokinetics (Marco Chinol) (1 credit)(2009)
4) Ionic Liquids (Cinzia Chiappe) (1 credit)(2009).
5) Fragment-based drug design (Eduard Felder) (1 credit)(2009).
6) The LC-MS toolbox for structural elucidaton of trace compounds: applications in drug discovery and development (Antonio Triolo) (1 credit)(2010).
7) Synthesis, formulation and marketing of generic drugs (Graziano Castaldi) (1 credit)(2010).

National and International Schools or Workshops (2 credits)

1) *XXXV Scuola Estiva di Sintesi Organica "A. Corbella"*, Gargnano (Italy), 14-18/6/2010.

Seminars Given (2 credits)

1) 26/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "La combinazione della catalisi di metalli di transizione e organocatalisi".

Seminars Attended (2 credits)

1) 1/4/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Cinquant'anni giocando ad aprire e chiudere eterocicli", Prof. Domenico Spinelli, Università di Bologna.
2) 6/5/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Metallazione regio- e stereoselettiva di eterocicli: utilità sintetica", Prof. Saverio Florio, Università di Bari.
3) 10/6/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Studio preclinico in vitro ed in vivo dell'attività antitumorale di nuove molecole a struttura 1,3-butadienica", Dr. Maurizio Viale, Istituto Nazionale per la Ricerca sul Cancro di Genova.
4) 3/7/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Potent XIAP Antagonists by a Fragment-Based MCR Approach", Ilaria Monfardini, DOBIG, Genova.
5) 27/10/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Lo Spazio Chimico e la sua Descrizione Matematica", Prof. Roberto Todeschini, Università Bicocca, Milano
6) 27/10/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Navigare lo Spazio Chimico per la Biologia e la Medicina". Dr. Antonio Macchiarulo, Università di Perugia.
7) 3/11/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "La sintesi orientata alla diversità di collezioni di molecole", Dr. Chiara Ghiron, SienaBiotech.
8) 3/11/2008,Dept. of Chemistry and Industrial Chemistry, Genova, "Sfruttare la chemiodiversità delle sostanze naturali", Prof. G. Appendino, Università del Piemonte Orientale.
9) 27-2-2009, Dept. of Pharmaceutical Sciences, Genova, "Chiral chromatography : a mature technology, a scientific challenge", Prof. Christian Roussel, Marseille, France.
10) 27-2-2009, Dept. of Pharmaceutical Sciences, Genova, "Chemistry derived from N-(o-amino-phenyl) thiazoline-2-thione", Federico Andreoli, Marseille, France.
11) 3/3/2009, Dept. of Chemistry and Industrial Chemistry, Genova, "Ipotesi chimica sull'origine della vita: dal Big Bang alla comparsa dei primi organismi viventi", Prof. Piero Ugliengo, Università di Torino.
12) 19/3/2009, Dept. of Chemistry and Industrial Chemistry, Genova, "Derivati imminici altamente reattivi per la sintesi di composti azotati.", Prof. Marino Petrini, Università di Camerino
13) 18/5/2009, Dept. of Chemistry and Industrial Chemistry, Genova, "Calcolo dello spettro NMR con metodi DFT: applicazione alla determinazione strutturale di molecole organiche complesse, Prof. Alessandro Bagno, Università di Padova.
14) 18/5/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Sports materials", Dr.Andy Watson, Institute for Materials Research, University of Leeds (UK).

15) 16/7/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Formation of Multiple Stereocenters via Organocatalysis", Dr. Marco Bella, Dip. Chimica, Università "La Sapienza" Roma
16) 17/9/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Activated Peptides: for Ligation and Large Cyclic Transition States", Prof. A.R. Katritsky, University of Florida, Gainesville.
17) 6/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Clusters in composti intermetallici", Monika Skrobanska.
18) 6/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Molecular Modeling in Drug Design: Ligand-based drug design and Structure-based drug design", Paola Zito.
19) 12/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Organic Synthesis "on water"", Valentina Cerulli
20) 12/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Self-assembly and crystallization in block copolymers", Dario Cavallo
21) 26/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Il rischio sanitario associato alle biotossine algali nei frutti di mare", Giuliana Ottonello.
22) 26/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Diversity oriented synthesis of heterocyclic compounds exploiting isocyanides and alkynes in multicomponent reactions", Fabio De Moliner.

Teaching Assistance

Anna Maria Piątek has assisted the course of "Organic Chemistry and Laboratory" (bachelor degree in Biotechnology) (30 hours)(2009/2010, second semester).

UNIVERSITÀ DEGLI STUDI DI GENOVA

DOCTORATE SCHOOL IN SCIENCES AND TECHNOLOGIES OF CHEMISTRY AND MATERIALS

PH.D. CERTIFICATE
OF
ALESSIO RINDI

Doctorate Course:
Chemical Sciences and Technologies
Start of the Doctorate Program:
January 1st, 2008
End of the Doctorate Program:
December 31st, 2010
Advisors:
Prof. Giovanna Dellepiane
Prof. Giancarlo Margheri
Thesis Title:
Hybrid metal/organic nanostructures for sensors and photonic devices
Defense Date:
February 18th, 2011

On February 18th, 2011, at the Department of Chemistry and Industrial Chemistry, Alessio Rindi has orally presented his doctorate research work in front of the Commission, formed by

- Prof. Giovanni Appendino, University of Eastern Piedmont
- Prof. Guido Ennas, University of Cagliari
- Dr. Davide Comoretto, University of Genova

The written Dissertation had been previously sent to the Commission members. After careful examination of the Dissertation, of the student's oral presentation, of the overall activity of the student during the three years of doctorate studies, the Commission

HAS APPROVED THE THESIS OF ALESSIO RINDI,
CONFERRING ON HIM THE TITLE OF

RESEARCH DOCTOR IN
CHEMICAL SCIENCES AND TECHNOLOGIES

Genova, February 18th, 2011

The Director of the Doctorate School
(Prof. Luca Banfi)

The Coordinator of the Doctorate Course
(Prof. Luca Banfi)

ACTIVITY REPORT

Research Activity

The research activity was mainly carried out at the C.N.R. Institute of Complex Systems in Firenze (Italy) However, Alessio Rindi **has also spent a research period of 1 month abroad**, at Saltillo (Mexico), performing research under the guidance of Dr. Ivana Moggio, at the Centro de Investigation en Quimica Aplicada, from 1/4/2010 to 30/4/2010.

Scientific Publications

Original publications on ISI Journals:

1) Giorgetti, E.; Cicchi, S.; Muniz-Miranda, M.; Margheri, G.; Del Rosso, T.; Giusti, A.; Rindi, A.; Ghini, G.; Sottini, S.; Marcelli, A.; Foggi, P., Forster resonance energy transfer (FRET) with a donor-acceptor system adsorbed on silver or gold nanoisland films, *Physical Chemistry Chemical Physics*, **2009,** 11, 9798-9803. IMPACT FACTOR (2009): 4.064
2) Del Rosso, T.; Giorgetti, E.; Cicchi, S.; Muniz-Miranda, M.; Margheri, G.; Giusti, A.; Rindi, A.; Ghini, G.; Sottini, S.; Marcelli, A.; Foggi, P., Surface-enhanced fluorescence and surface-enhanced Raman scattering of ultrathin layers of bichromophoric antenna systems adsorbed on silver nanoisland films, *Journal of Luminescence*, **2009,** 129, 1955-1959. IMPACT FACTOR (2009): 1.628
3) Del Rosso, T.; Giorgetti, E.; Margheri, G.; Rindi, A.; Muniz- Miranda, M.; Carloni, A.; Pavone, F.; Fabbrizzi, P.; Cicchi, S., Cu^{2+} chemosensing behaviour of self-organized micro-array structures of a Donor-Acceptor bichromophoric compound anchored onto Ag nanoisland films; *Sensors and Actuators B: Chemical*, in press, doi:10.1016/j.snb.2010.11.021. IMPACT FACTOR (2009): 3.083

Communications at Conferences

Posters:

1) Rindi, A.; Margheri, G.; Muniz-Miranda, M.; Dellepiane, G.; Alloisio, M., "Metal-organic platforms for photonic applications based on poly-10,12 docosadiynedioic acid (PDCDA), 30th Congresso Europeo di Spettroscopia Molecolare, Firenze (EUCMOS 2010), 29/8-3/9/2010.
2) Alloisio, M.; Demartini, A.; Leporatti, S.; Rindi, A.; Cuniberti, C.; Dellepiane, G.; Margheri, G., "Noble Metal-Organic Nanohybrids with Controlled Shape and Properties", 30th Congresso Europeo di Spettroscopia Molecolare, Firenze (EUCMOS 2010), 29/8-3/9/2010.

Congresses Attended

1) "30th Congresso Europeo di Spettroscopia Molecolare", Firenze (EUCMOS 2010), 29/8-3/9/2010

Courseware

During his doctorate, Alessio Rindi has acquired 22.0 credits of Courseware.

Courses attended and passed (18 credits)

Courses Given by Teachers of the University of Genova:

1) Vibrational spectroscopy (2 credits)(2008)
2) Experimental design (3 credits)(2008)
3) Fundamentals of scanning and transmission electronic microscopy (3 credits)(2009).
4) Dendritic macromolecules: synthesis and reactivity (2 credits)(2009)
5) Chemometric strategies and algorithms and their applications (3 credits)(2009)

Courses Given by invited experts:

1) Self-assembly and hierarchical microstructures: The principles of Nature for the design of materials (Josè Perez Rigueiro) (1 credit)(2008)
2) Ionic liquids (Cinzia Chiappe) (1 credit)(2009)
3) Soft Tissue Mechanics (Gerrit W.M. Peters) (1 credit)(2010)
4) Nanomagnetism and magnetic recording (Marco Affronte) (1 credit)(2010)
5) Polymer Assisted Solution Phase Combinatorial Synthesis (Luca Raveglia) (1 credit)(2010)

National and International Schools or Workshops (0 credits)

Seminars Given (2 credits)

1) 12/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Splitting fotocatalitico dell'acqua"

Seminars Attended (2 credits)

1) 13/3/2008, C.N.R., Institute of Complex Systems, Sesto Fiorentino (Italy), "Near Field Optical Microscopy: Results and Prospectives on Soft Samples", Dr. Antonio Ambrosio.

2) 23/4/2008, ICCOM-CNR, Firenze (Italy), "Design of low dimensional inorganic materials with tailored light-emitting properties", D.ssa Lidia Armelao.
3) 14/5/2008, Dept. of Pharmaceutical Sciences, Firenze (Italy), "Synthetic Lectines: receptors for carbohydrates in aqueous solution", Prof. A. P. Davis, University of Bristol (UK).
4) 10/6/2008, CNR, Sesto Fiorentino (Italy), "Protein folding, unfolding and aggregation", Prof. A. Irbäck, Lund University (Sweden).
5) 16/6/2008, LENS, Firenze (Italy), "Ultrafast dynamics of inorganic charge transfer complexes: fundamentals and application in solar cell energy conversion", Prof. J. McCasker, Michigan State University (USA).
6) 9/9/2008, CNR, Sesto Fiorentino (Italy), "Organometallic chemistry and catalysis on gold metal surfaces", Prof. R.J. Angelici, Iowa State University (USA).
7) 23/9/2008, Department of Chemistry, Sesto Fiorentino (Italy), "An atomistic view of simple electrochemical processes", Prof. D. Kolb, University of Ulm (D).
8) 9/10/2008, LENS, Firenze (Italy), "Nanotecnologie su sistemi viventi e umanoidi", Prof. R. Cingolani, Università di Lecce e IIT.
9) 3/6/2009, Department of Chemistry, Sesto Fiorentino (Italy), "Self-organized metal/polymer nanowire arrays with plasmonic functionality and tunable optical anisotropy", F. Buatier de Mongeot, Università di Genova.
10) 1/8/2009, Department of Chemistry, Sesto Fiorentino (Italy), "From the atomic water structure at solid-liquid interfaces to macroscopic properties", A. Striolo, University of Oklahoma, USA.
11) 26/11/2009, Department of Chemistry, Sesto Fiorentino (Italy), "Synthesis of magnetic nanoparticles for NMR imaging of liver and brain", M. del Puero Morales, Università di Madrid (Spain).
12) 13/5/2010, C.N.R., Sesto Fiorentino (Italy), "Time domain terahertz spectroscopy as a powerful tool for investigating biosystems: dielectric relaxation dynamics of water in model membranes", P. Paparo, C.N.R.-SPIN, Dipartimento di Scienze Fisiche.
13) 3/6/2010, C.N.R., Sesto Fiorentino (Italy), "Cyanobacteria as constructive and destructive agents of carbonates in nature: who, where, and how", Ferran Garcia Pichel, Arizona State University, USA.
14) 10/6/2010, Department of Chemistry, Sesto Fiorentino (Italy), "Studies of crystalline solids by inelastic neutron scattering: pathways to more general considerations", Bruce Hudson, Syracuse University, USA.
15) 16/6/2010, Department of Chemistry, Sesto Fiorentino (Italy), "Nanostrutture plasmoniche per l'amplificazione di segnali ottici di specie organiche", Ida Ros, Università di Padova.
16) 30/6/2010, Department of Chemistry, Sesto Fiorentino (Italy), "Free energy methods to study complex biological phenomena", Francesco Gervasio, Spanish National Cancer Research Center, Madrid (Spain).
17) 23/9/2010, C.N.R., Sesto Fiorentino (Italy), "New polyolefins from chain shuttling", Roger L.Kuhlman, Dow Oil& Gas, Freeport (TX), USA.

UNIVERSITÀ DEGLI STUDI DI GENOVA

DOCTORATE SCHOOL IN SCIENCES AND TECHNOLOGIES OF CHEMISTRY AND MATERIALS

PH.D. CERTIFICATE

OF

MONIKA SKROBAŃSKA

Doctorate Course:
Chemical Sciences and Technologies
Start of the Doctorate Program:
January 1st, 2008
End of the Doctorate Program:
December 31st, 2010
Advisor:
Prof. Adriana Saccone
Thesis Title:
Constitutional and morphological properties of Mg - X - T (X= Si, Ge, Sn; T= transition element) alloys synthesized via conventional methods and mechanical alloying
Defense Date:
February 18th, 2011

On February 18th, 2011, at the Department of Chemistry and Industrial Chemistry, Monika Skrobańska has orally presented her doctorate research work in front of the Commission, formed by

- Prof. Giovanni Appendino, University of Eastern Piedmont
- Prof. Guido Ennas, University of Cagliari
- Dr. Davide Comoretto, University of Genova

The written Dissertation had been previously sent to the Commission members. After careful examination of the Dissertation, of the student's oral presentation, of the overall activity of the student during the three years of doctorate studies, the Commission

HAS APPROVED THE THESIS OF MONIKA SKROBAŃSKA,
CONFERRING ON HER THE TITLE OF

RESEARCH DOCTOR IN
CHEMICAL SCIENCES AND TECHNOLOGIES

Genova, February 18th, 2011

The Director of the Doctorate School
(Prof. Luca Banfi)

The Coordinator of the Doctorate Course
(Prof. Luca Banfi)

ACTIVITY REPORT

Research Activity

The research activity was mainly carried out at Departmnent of Chemistry and Industrial Chemistry of the University of Genova, apart from a short (10 days) stay at the University of Cagliari (Prof. G. Ennas), from 9/10 to 19/10/2010.

Scientific Publications

Original publications on ISI Journals:

1) De Negri, S.; Skrobañska, M.; Delfino, S.; Saccone, A., The Mg-Zn-Si system: Constitutional properties and phase formation during mechanical alloying, *Intermetallics*, **2010,** 18, 1722-1728. IMPACT FACTOR (2009): 2.231.

Communications at Conferences

Oral communications:

1) Skrobañska, M.; De Negri, S.; Saccone, A., "Nanostructured alloys and intermetallic compounds sintered via mechanical alloying (MA)" 2° Forum Nazionale dei Giovani Ricercatori di Scienza e Ingegneria dei materiali, Genova, 3-5/06/2008.
2) Skrobañska, M., "Constitutional and morphological properties of Mg–Zn–Si alloys synthesized via conventional methods and mechanical alloying", XXXII National Congress on Calorimetry, Thermal Analysis and Applied Thermodynamics, Trieste (Italy), 26-28/05/2010.

Posters:

3) Skrobañska, M.; De Negri, S.; Saccone, A., "Mg – Zn – Si alloys prepared by conventional methods and by mechanical alloying", XIV Scuola Nazionale di Scienza dei Materiali, Bressanone (Italy), 21-30/9/2008.

Congresses Attended

1) 2° Forum Nazionale dei Giovani Ricercatori di Scienza e Ingegneria dei materiali, Genova, 3-5/6/2008.
2) XXXII National Congress on Calorimetry, Thermal Analysis and Applied Thermodynamics, Trieste (Italy), 26-28/05/2010.

Courseware

During her doctorate, Monika Skrobañska has acquired 29.0 credits of Courseware.

Courses attended and passed (19 credits)

Courses Given by Teachers of the University of Genova:

1) Fundamentals of scanning and transmission electronic microscopy (3 credits)(2008)
2) Amorphous metallic materials and composite materials (3 credits)(2008)
3) Advanced microscopy (3 credits)(2008)
4) Synthesis, structure and functional properties of intermetallic compounds (2 credits)(2009)
5) Application of RAMAN spectroscopy to materials (2 credits)(2010)

Courses Given by invited experts:

1) Martensitic Transformations. (Peter Rogl) (1 credit)(2008)
2) Solid State Magnetic Resonance Techniques (Roberto De Renzi) (1 credit)(2008)
3) Technologies for control of CO_2 in the atmosphere: from confinement to reutilization (Michele Aresta) (1 credit)(2008)
4) Magnetic structure (Peter Rogl) (1 credit)(2009)
5) Advanced spectroscopies for single molecule measurements (Salvatore Cannistraro) (1 credit)(2009)
6) Development of dyes in the cosmetic industry: the L'Oreal case (Cristina Emanuel) (1 credit)(2009)

National and International Schools or Workshops (5 credits)

1) *XIV Scuola Nazionale di Scienza dei Materiali dal titolo "Tecnologie Convergenti per i Materiali: Problematiche nella Scienza, Energia e Ambiente"*, Bressanone, 22-30/9/2008 (2 credits).
2) *European Summer School SERP – Chem.*, Genova, 8-22/06/2009 (3 credits).

Seminars Given (2 credits)

1) 6/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Clusters in composti intermetallici".

Seminars Attended (3 credits)

1) 12/2/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Supramolecular chirality and photomodulation of properties of amorphous and liquid crystal polymers obtained by ATRP", Dr. Loris Giorgini, Università di Bologna.

2) 20/2/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Exotic Behaviours of some Rare Earth Intermetallic Compounds " Karl Gschneider Jr, Iowa State University, USA.
3) 20/2/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "....Et d'autres Calorimètres", Jean Pierre Bros, Université Aix- Marseille I, France.
4) 20/2/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "MSIT, 20 years Phase Diagram Data Compilation & Evaluation", Günther Effenberg, MSIT, Stuttgart (Germania).
5) 2/4/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "High pressure high temperature technique as a tool for the synthesis of ceramic materials with transition metals in mixed valence state", Dr. Alberto Ubaldini, Advanced Nano Materials Laboratory, National Institute for Materials Science (NIMS), Tsukuba (Japan).
6) 17/7/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "In situ nanomanipulation and functional characterization on complex superconducting/magnetic oxides", dott.sa Regina Ciancio, Laboratorio SUPERMAT-INFM-CNR, Salerno.
7) 22/10/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Materials Research Activity at the Technological Centre of the Brasilian Navy", Dr.ssa Selma Luiza Silva del "Centro Tecnologico da Marinha em Sao Paulo (Brasil).
8) 24/11/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Alkaline earth metals and europium intercalation into graphite in the presence of lithium", Dr. Nicolas Emery, Laboratoire de Chimie du Solide Minéral, Université /Henri Poincaré/ Nancy I, France.
9) 6/2/2009, Dept. of Chemistry and Industrial Chemistry, Genova, "L'energia del futuro", Prof. Carlo Rubbia, CERN, Ginevra.
10) 3/3/2009, Dept. of Chemistry and Industrial Chemistry, Genova, "Ipotesi chimica sull'origine della vita: dal Big Bang alla comparsa dei primi organismi viventi", Prof. Piero Ugliengo, Università di Torino.
11) 13/3/09, Dept. of Chemistry and Industrial Chemistry, Genova, "Macromolecular engineering for nanostructured materials via Atom Transfer Radical Polymerization (ATRP)", Prof. Krzysztof Matyjaszewski, Department of Chemistry, Carnegie Mellon University, Pittsburgh, PA, USA.
12) 25/3/2009, IENI-CNR, Genova, "Experimental methods for investigations of thermophysical and structure-sensitive properties of metallic melts", Dr. Yuriy Plevachuk, Ivan Franko National University, Department of Metal Physics, Lviv, Ukraine.
13) 13/5/2009, Dept. of Chemistry and Industrial Chemistry, Genova, "Microalghe: una risorsa per produrre biodiesel ed alimenti", Prof. M. Tredici, Università di Firenze.
14) 3/7/2009, Dept. of Chemistry and Industrial Chemistry, Genova, "Materiali polimerici per il risparmio energetico: diodi elettroluminescenti e celle fotovoltaiche", Silvia Destri, Istituto per lo Studio delle Macromolecole (ISMAC), CNR, Milano.
15) 28/7/2009, Dept. of Chemistry and Industrial Chemistry, Genova, "Why can't you use thermal neutrons to study gadolinium-based materials?", Prof. Dominic Ryan, Mc Gill University (Montreal).
16) 6-10-2009, Dept. of Chemistry and Industrial Chemistry, Genova, "Chimica della fotografia, dai sali d'argento ai pixel", F. Wrubl.
17) 6-10-2009, Dept. of Chemistry and Industrial Chemistry, Genova, "Acciai inossidabili: aspetti metallurgici della saldatura", M. Fabbreschi.
18) 8/10/09, Dept. of Chemistry and Industrial Chemistry, Genova, "Point-contact spectroscopy: a method for the study of the electron-quasiparticle interaction function", Prof. Marian Reiffers, Institute of Experimental Physics, Kosice (Slovakia).
19) 10/2/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Invisibility. Camouflage techniques.", Prof. Maria Gazda, Faculty of Applied Physics & Mathematics, Gdansk University of Technology, Danzig, Poland.
20) 17/2/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Chimica e Colore", Prof. Paolo Piaggio, Università di Genova.
21) 13/5/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "High temperature lead-free soldering and experimental thermodynamics of intermetallic systems", Hans Flandorfer, Department for Inorganic Chemistry / Materials Chemistry, Vienna University.
22) 18/5/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Sports materials", Dr.Andy Watson, Institute for Materials Research, University of Leeds (UK).
23) 8/6/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "L'opzione nucleare in Italia", Dr. Stefano Maggiolo, Agenzia Regionale per la Protezione dell'Ambiente Ligure (A.R.P.A.L.).
24) 16/6/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Magnetic frustration, a way to new exotic phases", Prof. Julian G. Sereni, Lab. Bajas Temperaturas, CAB - CNEA, 8400 S.C. de Bariloche, Argentina.
25) 21/6/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Materiali per l`energia: risultati recenti su bulk ceramici termoelettrici e film superconduttori a base di Fe", Dr. Paolo Mele, Department of Materials Science and Engineering, Kyushu Institute of Technology.
26) 1/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Topos versus intermetallics", Vladislav A. Blatov, Department of Chemistry, Samara State University (Russia).
27) 6/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Molecular Modeling in Drug Design: Ligand-based drug design and Structure-based drug design", Paola Zito.
28) 8/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Formation mechanism of silver nanoparticle 1D microstructures and their hierarchical assembly into 3D superstructures", Lorenza Suber, C.N.R., Roma.

29) 3/12/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Magnetic properties of nanoparticles: the effect of particle size and beyond…", Davide Peddis, C.N.R., Istituto di Struttura della Materia, Roma

UNIVERSITÀ DEGLI STUDI DI GENOVA

DOCTORATE SCHOOL IN SCIENCES AND TECHNOLOGIES OF CHEMISTRY AND MATERIALS

PH.D. CERTIFICATE

OF

KATARZYNA SUFRYD

Doctorate Course:
Materials Science and Technology
Start of the Doctorate Program:
January 1st, 2008
End of the Doctorate Program:
December 31st, 2010
Advisor:
Dr. Paola Riani
Thesis Title:
Aluminium-based intermetallics for Technological Applications
Defense Date:
February 17th, 2011

On February 17th, 2011, at the Department of Chemistry and Industrial Chemistry, Katarzyna Sufryd has orally presented her doctorate research work in front of the Commission, formed by

- Prof. Pietro Carretta, University of Pavia
- Dr. Andrea Ciccioli, University "La Sapienza", Roma
- Prof. Guido Busca, University of Genova

The written Dissertation had been previously sent to the Commission members. After careful examination of the Dissertation, of the student's oral presentation, of the overall activity of the student during the three years of doctorate studies, the Commission

HAS APPROVED THE THESIS OF KATARZYNA SUFRYD,
CONFERRING ON HER THE TITLE OF

RESEARCH DOCTOR IN
MATERIALS SCIENCE AND TECHNOLOGY

Genova, February 18th, 2011

The Director of the Doctorate School
(Prof. Luca Banfi)

The Coordinator of the Doctorate Course
(Prof. Gabriella Borzone)

ACTIVITY REPORT

Research Activity

The research activity was entirely carried out at the Department of Chemistry and Industrial Chemistry (University of Genova), apart from a short research period in Department of Inorganic Chemistry / Materials Chemistry, University of Vienna, Austria (under the supervision of Prof. Klaus Richter), 14-19 March 2010.

Scientific Publications

Original publications on ISI Journals:

1) Riani, P.; Sufryd, K.; Cacciamani, G., About the Al-Cu-Si isothermal section at 500 degrees C and the stability of the epsilon-$Cu_{15}Si_4$ phase, *Intermetallics*, **2009,** 17, 154-164. IMPACT FACTOR (2009): 2.231

Communications at Conferences

Oral Communications:

1) Sufryd, K., "Phase equilibrium investigations in the Al-Cu-Si system", 2° Forum Nazionale dei Giovani Ricercatori di Scienza e Ingegneria dei Materiali, 3-5/06/2008 Genova.

Posters:

2) Sufryd, K.; Riani, P.; Cacciamani, G.; Marazza, R., "Phase equilibrium investigations in the Al-Cu-Si system", XIV Scuola nazionale di scienza dei materiali**,** Bressanone, Italy, 22-30/9/2008.
3) Riani, P.; Sufryd, K.; Arrighi, L.; Cacciamani, G.; Mazzone, D.; Zanicchi, G.; Marazza, R., "A contribution to the investigation of Nd-Co-Al system"; 17th International Conference on Solid Compounds of Transition Elements; Annecy, France, 5-10/9/2010

Congresses Attended

1) COST Action MP0602 "Advanced Solder Materials for High Temperature Application (HISOLD), Joint working group meeting", 21-22/2/2008, Genova.
2) 2° Forum Nazionale dei Giovani Ricercatori di Scienza e Ingegneria dei Materiali, 3-5/6/2008, Genova.

Courseware

During her doctorate, Katarzyna Sufryd has acquired 23.0 credits of Courseware.

Courses attended and passed (15 credits)

Courses Given by Teachers of the University of Genova:

1) Fundamentals of scanning and transmission electronic microscopy (3 credits)(2008).
2) Amorphous metallic materials and composite materials (3 credits)(2008)
3) Synthesis, structure and functional properties of intermetallic compounds (2 credits)(2009).

Courses Given by invited experts:

1) Martensitic Transformations (Peter Rogl) (1 credit)(2008)
2) Solid State Magnetic Resonance Techniques (Roberto De Renzi) (1 credit)(2008)
3) Technologies for control of CO_2 in the atmosphere: from confinement to reutilization (M. Aresta) (1 credit)(2008)
4) Magnetic Structure (Peter Rogl) (1 credit)(2009)
5) Electrical Properties of Glasses (Michel Duclot) (1 credit)(2009)
6) Development of dyes in the cosmetic industry: the L'Oreal case (Cristina Emanuel) (1 credit)(2009)
7) Clathrates: Formation, Crystal Chemistry, Phase Relations and Properties (Peter Rogl) (1 credit)(2010)

National and International Schools or Workshops (3 credits)

1) XIV *Scuola nazionale di scienza dei materiali, "Phase equilibrium investigations in the Al-Cu-Si system"*, Bressanone, Italy, 22-30/9/2008 (2 credits).
2) *Third World Round Robin Seminar WRRS 2010, "Phase Diagrams for Energy Saving"*, Montpellier, France, 21-23/3/2010 (1 credit).

Seminars Given (2 credits)

The student presented 3 seminars as final test for the 3 attended courses given by internal lecturers (see above).

Seminars Attended (3 credits)

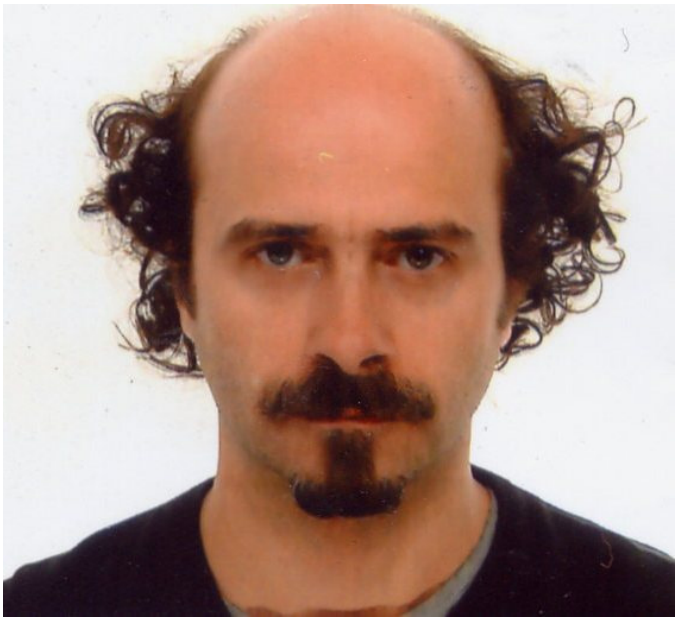
1) 12/2/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Supramolecular chirality and photomodulation of properties of amorphous and liquid crystal polymers obtained by ATRP", Dr. Loris Giorgini, Università di Bologna.
2) 20/2/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Exotic Behaviours of some Rare Earth Intermetallic Compounds " Karl Gschneider Jr, Iowa State University, USA.

3) 20/2/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "....Et d'autres Calorimètres", Jean Pierre Bros, Université Aix- Marseille I, France.
4) 20/2/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "MSIT, 20 years Phase Diagram Data Compilation & Evaluation", Günther Effenberg, MSIT, Stuttgart (Germania).
5) 22/4/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "La grande macchina dei suoni: le tecnologie e i materiali degli organi a canne", Prof. Umberto Anselmi Tamburini, Dipartimento di Chimica Fisica dell'Università di Pavia.
6) 22/10/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Materials Research Activity at the Technological Centre of the Brasilian Navy", Dr.ssa Selma Luiza Silva del "Centro Tecnolgico da Marinha em Sao Paulo (Brasil).
7) 24/11/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Alkaline earth metals and europium intercalation into graphite in the presence of lithium", Dr. Nicolas Emery, Laboratoire de Chimie du Solide Minéral, Université /Henri Poincaré/ Nancy I, France.
8) 6/2/2009, Dept. of Physics, Genova, "L'energia del futuro", Prof. Carlo Rubbia, CERN, Ginevra.
9) 3/3/2009, Dept. of Chemistry and Industrial Chemistry, Genova, "Ipotesi chimica sull'origine della vita: dal Big Bang alla comparsa dei primi organismi viventi", Prof. Piero Ugliengo, Università di Torino.
10) 13/3/09, Dept. of Chemistry and Industrial Chemistry, Genova, "Macromolecular engineering for nanostructured materials via Atom Transfer Radical Polymerization (ATRP)", Prof. Krzysztof Matyjaszewski, Department of Chemistry, Carnegie Mellon University, Pittsburgh, PA, USA.
11) 13/5/2009, Dept. of Chemistry and Industrial Chemistry, Genova, "Microalghe: una risorsa per produrre biodiesel ed alimenti", Prof. M. Tredici, Università di Firenze.
12) 28/7/2009, Dept. of Chemistry and Industrial Chemistry, Genova, "Why can't you use thermal neutrons to study gadolinium-based materials?", Prof. Dominic Ryan, Mc Gill University (Montreal).
13) 10/2/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Invisibility. Camouflage techniques.", Prof. Maria Gazda, Faculty of Applied Physics & Mathematics, Gdansk University of Technology, Danzig, Poland.
14) 17/2/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Chimica e Colore", Prof. Paolo Piaggio, Università di Genova.
15) 13/5/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "High temperature lead-free soldering and experimental thermodynamics of intermetallic systems", Hans Flandorfer, Department for Inorganic Chemistry / Materials Chemistry Vienna University.
16) 18/5/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Sports materials", Dr.Andy Watson, Institute for Materials Research, University of Leeds (UK).
17) 16/6/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Magnetic frustration, a way to new exotic phases", Prof. Julian G. Sereni, Lab. Bajas Temperaturas, CAB - CNEA, 8400 S.C. de Bariloche, Argentina.
18) 21/6/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Materiali per l`energia: risultati recenti su bulk ceramici termoelettrici e film superconduttori a base di Fe", Dr. Paolo Mele, Department of Materials Science and Engineering, Kyushu Institute of Technology.
19) 01/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "TOPOS vs. Intermetallics", Vladislav A. Blatov, Samara State University, Samara, Russia
20) 8/10/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Formation mechanism of silver nanoparticle 1D microstructures and their hierarchical assembly into 3D superstructures", Lorenza Suber, C.N.R., Roma.
21) 3/12/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Magnetic properties of nanoparticles: the effect of particle size and beyond…", Davide Peddis, C.N.R., Istituto di Struttura della Materia, Roma

UNIVERSITÀ DEGLI STUDI DI GENOVA

DOCTORATE SCHOOL IN SCIENCES AND TECHNOLOGIES OF CHEMISTRY AND MATERIALS

PH.D. CERTIFICATE
OF
MATTEO TROPEANO



Doctorate Course:
Materials Science and Technology
Start of the Doctorate Program:
January 1st, 2008
End of the Doctorate Program:
December 31st, 2010
Advisor:
Prof. Marina Putti
Thesis Title:
The Fe-based compounds: from magnetic ordering to superconductivity
Defense Date:
February 17th, 2011

On February 17th, 2011, at the Department of Chemistry and Industrial Chemistry, Matteo Tropeano has orally presented his doctorate research work in front of the Commission, formed by

- Prof. Pietro Carretta, University of Pavia
- Dr. Andrea Ciccioli, University "La Sapienza", Roma
- Prof. Guido Busca, University of Genova

The written Dissertation had been previously sent to the Commission members. After careful examination of the Dissertation, of the student's oral presentation, of the overall activity of the student during the three years of doctorate studies, the Commission

HAS APPROVED THE THESIS OF MATTEO TROPEANO,
CONFERRING ON HIM THE TITLE OF

RESEARCH DOCTOR IN
MATERIALS SCIENCE AND TECHNOLOGY

The commission has evaluated the thesis and the overall activity of Dr. Matteo Tropeano as
EXCELLENT

Genova, February 18th, 2011

The Director of the Doctorate School
(Prof. Luca Banfi)

The Coordinator of the Doctorate Course
(Prof. Gabriella Borzone)

ACTIVITY REPORT

Research Activity

The research activity was mainly performed at the Department of Physics (University of Genova). However, Matteo Tropeano **has also carried out a series of short research periods** in Grenoble (France), **for an overall time of 26 days**, performing experiments at the High Magnetic Field Laboratory and at the Institut Laue Langevin. Moreover, he spent a short study period (CNR-CSIR bilateral agreement) at the National Physics Laboratory, New Dehli, India, from 30 July to 12 August 2010.

Scientific Publications

Original publications on ISI Journals:

1) Marini, C.; Mirri, C.; Profeta, G.; Lupi, S.; Di Castro, D.; Sopracase, R.; Postorino, P.; Calvani, P.; Perucchi, A.; Massidda, S.; Tropeano, M.; Putti, M.; Martinelli, A.; Palenzona, A.; Dore, P., The optical phonon spectrum of SmFeAsO, *EPL*, **2008**, *84* 67013. IMPACT FACTOR (2009): 2.893.
2) Vignolo, M.; Romano, G.; Malagoli, A.; Braccini, V.; Bernini, C.; Tropeano, M.; Martinelli, A.; Cubeda, V.; Tumino, A.; Putti, M.; Ferdeghini, C.; Siri, A. S., Development of MgB2 powders and study of the properties and architecture of ex-situ PIT wires, *Ieee Transactions on Applied Superconductivity*, **2008,** 18, 1175-1178. IMPACT FACTOR (2009): 1.310
3) Martinelli, A.; Ferretti, M.; Manfrinetti, P.; Palenzona, A.; Tropeano, M.; Cimberle, M. R.; Ferdeghini, C.; Valle, R.; Bernini, C.; Putti, M.; Siri, A. S., Synthesis, crystal structure, microstructure, transport and magnetic properties of SmFeAsO and SmFeAs(O0.93F0.07), *Superconductor Science & Technology*, **2008,** 21, 095017. IMPACT FACTOR (2009): 2.694
4) Brotto, P.; Tropeano, M.; Ferdeghini, C.; Manfrinetti, P.; Palenzona, A.; d'Agliano, E. G.; Putti, M., Experimental confirmation of the low B isotope coefficient of MgB2, *Physical Review B*, **2008,** 78, 092502. IMPACT FACTOR (2009): 3.475
5) Tropeano, M.; Martinelli, A.; Palenzona, A.; Bellingeri, E.; d'Agliano, E. G.; Nguyen, T. D.; Affronte, M.; Putti, M., Thermal properties of SmFeAsO1-xFx as a probe of the interplay between electrons and phonons, *Physical Review B*, **2008,** 78, 094518. IMPACT FACTOR (2009): 3.475.
6) Malagoli, A.; Braccini, V.; Tropeano, M.; Vignolo, M.; Bernini, C.; Fanciulli, C.; Romano, G.; Putti, M.; Ferdeghini, C.; Mossang, E.; Polyanskii, A.; Larbalestier, D. C., Effect of grain refinement on enhancing critical current density and upper critical field in undoped MgB2 ex-situ tapes, *Journal of Applied Physics*, **2008,** 104, 103908. IMPACT FACTOR (2009): 2.072.
7) Tropeano, M.; Fanciulli, C.; Ferdeghini, C.; Marre, D.; Siri, A. S.; Putti, M.; Martinelli, A.; Ferretti, M.; Palenzona, A.; Cimberle, M. R.; Mirri, C.; Lupi, S.; Sopracase, R.; Calvani, P.; Perucchi, A., Transport and infrared properties of SmFeAs(O1-xFx): from SDW to superconducting ordering, *Superconductor Science & Technology*, **2009,** 22. IMPACT FACTOR (2009): 2.694
8) Pallecchi, I.; Fanciulli, C.; Tropeano, M.; Palenzona, A.; Ferretti, M.; Malagoli, A.; Martinelli, A.; Sheikin, I.; Putti, M.; Ferdeghini, C., Upper critical field and fluctuation conductivity in the critical regime of doped SmFeAsO, *Physical Review B*, **2009,** 79, art. 104515. IMPACT FACTOR (2009): 3.475.
9) Tropeano, M.; Fanciulli, C.; Canepa, F.; Cimberle, M. R.; Ferdeghini, C.; Lamura, G.; Martinelli, A.; Putti, M.; Vignolo, M.; Palenzona, A., Effect of chemical pressure on spin density wave and superconductivity in undoped and 15% F-doped La1-yYyFeAsO compounds, *Physical Review B*, **2009,** 79, art. 174523. IMPACT FACTOR (2009): 3.475
10) Sanna, S.; Renzi, R.; Lamura, G.; Ferdeghini, C.; Martinelli, A.; Palenzona, A.; Putti, M.; Tropeano, M.; Shiroka, T., Intrinsic Ferromagnetic Impurity Phases in SmFeAsO1-x F (x) Detected by mu SR, *Journal of Superconductivity and Novel Magnetism*, **2009,** 22, 585-588. IMPACT FACTOR (2009): 0.831.
11) Ferdeghini, C.; Bellingeri, E.; Fanciulli, C.; Ferretti, M.; Manfrinetti, P.; Pallecchi, I.; Putti, M.; Tarantini, C.; Tropeano, M.; Andreone, A.; Lamura, G.; Vaglio, R., Superconducting Properties of V3Si Thin Films Grown by Pulsed Laser Ablation, *Ieee Transactions on Applied Superconductivity*, **2009,** 19, 2682-2685. IMPACT FACTOR (2009): 1.310
12) Romano, G.; Vignolo, M.; Braccini, V.; Malagoli, A.; Bernini, C.; Tropeano, M.; Fanciulli, C.; Putti, M.; Ferdeghini, C., High-Energy Ball Milling and Synthesis Temperature Study to Improve Superconducting Properties of MgB2 Ex-situ Tapes and Wires, *Ieee Transactions on Applied Superconductivity*, **2009,** 19, 2706-2709. IMPACT FACTOR (2009): 1.310
13) Vignolo, M.; Romano, G.; Malagoli, A.; Braccini, V.; Tropeano, M.; Bellingeri, E.; Fanciulli, C.; Bernini, C.; Honkimaki, V.; Putti, M.; Ferdeghini, C., Role of the Grain Oxidation in Improving the In-Field Behavior of MgB2 Ex-Situ Tapes, *Ieee Transactions on Applied Superconductivity*, **2009,** 19, 2718-2721. IMPACT FACTOR (2009): 1.310
14) Malagoli, A.; Tropeano, M.; Cubeda, V.; Bernini, C.; Braccini, V.; Fanciulli, C.; Romano, G.; Putti, M.; Vignolo, M.; Ferdeghini, C., Study of the Superconducting and Thermal Properties of ex situ GlidCop-Sheathed Practical MgB2 Conductors, *Ieee Transactions on Applied Superconductivity*, **2009,** 19, 3670-3674. IMPACT FACTOR (2009): 1.310
15) Sanna, S.; De Renzi, R.; Lamura, G.; Ferdeghini, C.; Palenzona, A.; Putti, M.; Tropeano, M.; Shiroka, T., Magnetic-superconducting phase boundary of SmFeAsO1-xFx studied via muon spin rotation: Unified behavior in a pnictide family, *Physical Review B*, **2009,** 80, art. 052053. IMPACT FACTOR (2008): 3.322. IMPACT FACTOR (2009): 3.475

16) Martinelli, A.; Palenzona, A.; Tropeano, M.; Ferdeghini, C.; Cimberle, M. R.; Ritter, C., Neutron powder diffraction investigation of the structural and magnetic properties of (La1-yYy)FeAsO (y=0.10, 0.20, and 0.30), *Physical Review B*, **2009,** 80, art. 214106. IMPACT FACTOR (2009): 3.475
17) Bellingeri, E.; Buzio, R.; Gerbi, A.; Marre, D.; Congiu, S.; Cimberle, M. R.; Tropeano, M.; Siri, A. S.; Palenzona, A.; Ferdeghini, C., High quality epitaxial FeSe0.5Te0.5 thin films grown on SrTiO3 substrates by pulsed laser deposition, *Superconductor Science & Technology*, **2009,** 22, art. 034004. IMPACT FACTOR (2009): 2.694
18) Cimberle, M. R.; Canepa, F.; Ferretti, M.; Martinelli, A.; Palenzona, A.; Siri, A. S.; Tarantini, C.; Tropeano, M.; Ferdeghini, C., Magnetic characterization of undoped and 15%F-doped LaFeAsO and SmFeAsO compounds, *Journal of Magnetism and Magnetic Materials*, **2009,** 321, 3024-3030. IMPACT FACTOR (2009): 1.204
19) Pallecchi, I.; Lamura, G.; Tropeano, M.; Putti, M.; Viennois, R.; Giannini, E.; Van der Marel, D., Seebeck effect in Fe1+xTe1-ySey single crystals, *Physical Review B*, **2009,** 80, art. 214511. IMPACT FACTOR (2008): 3.322. IMPACT FACTOR (2009): 3.475
20) Bellingeri, E.; Pallecchi, I.; Buzio, R.; Gerbi, A.; Marre, D.; Cimberle, M. R.; Tropeano, M.; Putti, M.; Palenzona, A.; Ferdeghini, C., T-c=21 K in epitaxial FeSe0.5Te0.5 thin films with biaxial compressive strain, *Applied Physics Letters*, **2010,** 96, art. no. 102512. IMPACT FACTOR (2009): 3.554
21) Martinelli, A.; Palenzona, A.; Tropeano, M.; Ferdeghini, C.; Putti, M.; Cimberle, M. R.; Nguyen, T. D.; Affronte, M.; Ritter, C., From antiferromagnetism to superconductivity in Fe1+yTe1-xSex (0 <= x <= 0.20): Neutron powder diffraction analysis, *Physical Review B*, **2010,** 81, art. no. 094115. IMPACT FACTOR (2009): 3.475
22) Prando, G.; Carretta, P.; Rigamonti, A.; Sanna, S.; Palenzona, A.; Putti, M.; Tropeano, M., F-19 NMR study of the coupling between 4f and itinerant electrons in the pnictide superconductors SmFeAsO1-xFx (0.15 < x < 0.2), *Physical Review B*, **2010,** 81, art. no. 100508. IMPACT FACTOR (2009): 3.475
23) Tropeano, M.; Pallecchi, I.; Cimberle, M. R.; Ferdeghini, C.; Lamura, G.; Vignolo, M.; Martinelli, A.; Palenzona, A.; Putti, M., Transport and superconducting properties of Fe-based superconductors: a comparison between SmFeAsO1-xFx and Fe1+yTe1-xSex, *Superconductor Science & Technology*, **2010,** 23, art. no. 054001. IMPACT FACTOR (2009): 2.694
24) Tropeano, M.; Cimberle, M. R.; Ferdeghini, C.; Lamura, G.; Martinelli, A.; Palenzona, A.; Pallecchi, I.; Sala, A.; Sheikin, I.; Bernardini, F.; Monni, M.; Massidda, S.; Putti, M., Isoelectronic Ru substitution at the iron site in SmFe(1-x)RuxAsO(0.85)F(0.15) and its effects on structural, superconducting, and normal-state properties, *Physical Review B*, **2010,** 81, art. no. 184504. IMPACT FACTOR (2009): 3.475
25) Sanna, S.; De Renzi, R.; Shiroka, T.; Lamura, G.; Prando, G.; Carretta, P.; Putti, M.; Martinelli, A.; Cimberle, M. R.; Tropeano, M.; Palenzona, A., Nanoscopic coexistence of magnetic and superconducting states within the FeAs layers of CeFeAsO1-xFx, *Physical Review B*, **2010,** 82, art. no. 060508. IMPACT FACTOR (2009): 3.475

Other publications:

1) Prando, G.; Carretta, P.; Lascialfari, A.; Rigamonti, A.; Sanna, S.; Romanò, L.; Palenzona, A.; Putti, M.; Tropeano, M., Investigation of fluctuating conductivity and spin dinamics in $SmFeAsO_{1-x}F_x$ superconductors, *Advance in Science and Technology*, **2010**, *75*, 141-146.

Communications at Conferences

Oral Communications:

1) Tropeano, M.; Malagoli, A.; Fanciulli, C.; Romano, G.; Bernini, C.; Vignolo, M.; Braccini, V.; Putti, M.; Ferdeghini, C., "Multifilamentary MgB_2 tapes, electrical ad thermal characterization", International Cryogenics Engineering Conference22-ICEC22 / International Cryogenic Materials Conference-ICMC2008, Seoul, Korea, 21-25/7/2008.
2) Tropeano, M.; Fanciulli, C.; Marré, D.; Ferdeghini, C.; Martinelli, A.; Palenzona, A.; Siri, A.S.; Putti, M., "Transport properties of $SmFeAs(O_{1-x}F_x)$: from SDW to superconducting ordering", International Workshop "Physics and Chemistry of FeAs-based Superconductors", Dresden, Germany, 27-29/10/2008.
3) Tropeano, M.; Fanciulli, C.; Canepa, F.; Cimberle, M.R.; Ferdeghini, C.; Lamura, G.; Martinelli, A.; Putti, M.; Vignolo, M.; Palenzona, A., "Effect of chemical pressure on SDW and superconductivity in undoped and 15% F-doped $La_{(1-y)}Y_{(y)}FeAsO$ compounds", European Conference on Applied Superconductivity, EUCAS2009, Dresden, Germany, 13-17/9/2009.
4) Tropeano, M.; Cimberle, M.R.; Ferdeghini, C.; Lamura, G.; Martinelli, A.; Palenzona, A.; Pallecchi, I.; Putti, M., "The effect of substitution on the iron-based superconductors: doping, chemical pressure, magnetic and not magnetic impurities", Emerging trends in Advanced Correlated materials**,** Anacapri, Italy, 6-8/10/2010.
5) Tropeano, M.; Lamura, G.; Martinelli, A.; Pallecchi, I.; Ferdeghini, C.; Palenzona, A.; Putti, M., "Transport, superconducting properties and the effect of chemical substitutions on the 1111 phase of the Fe-based superconductors", *2nd EuroMagNET Summer School, Science in High Magnetic Fields*, Ameland (The Netherlands), 5-11/9/2010.

Posters:

6) Putti, M.; Tropeano, M.; Brotto, P.; Ferdeghini, C.; Galleani, E.; Manfrinetti, P.; Palenzona, A., "Tc Vs Isotopic Mass Vs Residual Resistivity Investigation in MgB_2", XXVII Congresso Nazionale di Chimica Fisica, Camogli, 24-29/2/2008.

7) Putti, M.; Tropeano, M.; Brotto, P.; Ferdeghini, C.; Galleani, E.; Manfrinetti, P.; Palenzona, A., "Tc Vs Isotopic Mass Vs Residual Resistivity Investigation in MgB_2", SATT14-Conferenza Nazionale di Superconduttività, Parma, 19-21/3/2008.
8) Tropeano, M.; Fanciulli, C.; Marré, D.; Ferdeghini, C.; Martinelli, A.; Palenzona, A.; Galleani, E.; Nguyen, T.D.; Affronte, M.; Putti, M., "Transport and thermal properties of $SmFeAs(O_{1-x}F_x)$: from SDW to superconducting ordering", International Conference on "FeAs High Tc Superconducting Multilayers and Related Phenomena", Roma, 9-12/12/2008.
9) Tropeano, M.; Fanciulli, C.; Canepa, F.; Cimberle, M.R.; Ferdeghini, C.; Lamura, G.; Martinelli, A.; Putti, M.; Vignolo, M.; Palenzona, .„ "Effect of chemical pressure on SDW and superconductivity in undoped and 15% F-doped $La_{(1-y)}Y_{(y)}FeAsO$ compounds", International workshop in the search for new superconductors, Shonan Village Center, Japan, 12-16/5/2009.

Congresses Attended

1) XXVII Congresso Nazionale di Chimica Fisica, Camogli, 24-29/2/2008.
2) SATT14-Conferenza Nazionale di Superconduttività, Parma, 19-21/3/2008.
3) International Cryogenics Engineering Conference22-ICEC22 / International Cryogenic Materials Conference-ICMC2008, Seoul, Korea, 21-25/7/2008.
4) International Workshop "Physics and Chemistry of FeAs-based Superconductors", Dresden, Germany, 27-29/10/2008.
5) International Conference on "FeAs High Tc Superconducting Multilayers and Related Phenomena", Roma, 9-12/12/2008.
6) European Conference on Applied Superconductivity, EUCAS2009, Dresden, Germany, 13-17/9/2009.
7) International workshop in the search for new superconductors, Shonan Village Center, Japan, 12-16/5/2009.
8) Emerging trends in Advanced Correlated materials**,** Anacapri, Italy, 6-8/10/2010.

Courseware

During his doctorate, Matteo Tropeano has acquired 20.0 credits of Courseware.

Courses attended and passed (14 credits)

Courses Given by Teachers of the University of Genova:

1) Fundamentals of scanning and transmission electronic microscopy (3 credits)(2008).
2) Topics in Solid State Theory (3 credits)(2008)
3) Amorphous metallic materials and composite materials (3 credits)(2009)

Courses Given by invited experts:

1) Solid State Magnetic Resonance Techniques (Roberto De Renzi) (1 credit)(2008)
2) Magnetic Structure (Peter Rogl) (1 credit)(2009)
3) Advanced spectroscopies for single molecule measurements (Salvatore Cannistraro) (1 credit)(2009)
4) Nanomagnetism and magnetic recording (Marco Affronte) (1 credit)(2010)

Other courses not organized by the School

5) Gestione e management della ricerca (Giorgio Musso) (1 credit)(2009).

National and International Schools or Workshops (2 credits)

1) *2nd EuroMagNET Summer School, Science in High Magnetic Fields*, Ameland (The Netherlands), 5-11/9/2010 (2 credits).

Seminars Given (2 credits)

The student presented 3 seminars as final test for the 3 attended courses given by internal lecturers (see above).

Seminars Attended (2 credits)

1) 1/4/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Cinquant'anni giocando ad aprire e chiudere eterocicli", Prof. Domenico Spinelli, Università di Bologna.
2) 2//4/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "High pressure high temperature technique as a tool for the synthesis of ceramic materials with transition metals in mixed valence state", Dr. Alberto Ubaldini, Advanced Nano Materials Laboratory, National Institute for Materials Science (NIMS), Tsukuba (Japan).
3) 16/04/2008, Dept. of Physics, Genova, "Sorgenti di radiazione e principi di radioprotezione", Dott. Paolo Prati, INFN, Sezione di Genova
4) 17/7/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "In situ nanomanipulation and functional characterization on complex superconducting/magnetic oxides", dott.sa Regina Ciancio, Laboratorio SUPERMAT-INFM-CNR, Salerno.
5) 30/9/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Proprietà magnetiche inusuali in composti intermetallici", Prof. Julián G. Sereni, Low Temperature Division, CAB-CONICET, S.C. di Bariloche, Argentina.

6) 24/11/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Alkaline earth metals and europium intercalation into graphite in the presence of lithium", Dr. Nicolas Emery, Laboratoire de Chimie du Solide Minéral, Université /Henri Poincaré/ Nancy I, France.
7) 9/10/2009, Dept. of Physics, Genova, "Controlled Fabrication of Epitaxial Functional Oxide Artificial Nano-wire and Nano-dot Structures and their giant properties", H. Tanaka, Institute of Scientific and Industrial Research (ISIR-Sanken), Osaka University (Japan)
8) 9/10/2009, Dept. of Physics, Genova, "Stochastic Resonance in Vanadium Dioxide: Toward Creation of Biomimetic Devices with Neuronal Signal Processing", T. Kanki, Institute of Scientific and Industrial Research (ISIR-Sanken), Osaka University (Japan)
9) 3/12/2009, Dept. of Physics, Genova, "La tecnologia e materiali per l'ultra alto vuoto". Prof. L. Scaltrito, Politecnico di Torino.
10) 10/2/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Invisibility. Camouflage techniques.", Prof. Maria Gazda, Faculty of Applied Physics & Mathematics, Gdansk University of Technology, Danzig, Poland.
11) 8/3/2010, Dept. of Physics, Genova, "Emission of Coherent THz Radiation from intrinsic Josephson Crystals", Prof. Ruggiero Vaglio, CNR-SPIN e Università di Napoli "Federico II".
12) 16/6/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Magnetic frustration, a way to new exotic phases", Prof. Julian G. Sereni, Lab. Bajas Temperaturas, CAB - CNEA, 8400 S.C. de Bariloche, Argentina.
13) 21/6/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Materiali per l`energia: risultati recenti su bulk ceramici termoelettrici e film superconduttori a base di Fe", Dr. Paolo Mele, Department of Materials Science and Engineering, Kyushu Institute of Technology.
14) 17/9/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Activated Peptides: for Ligation and Large Cyclic Transition States", Prof. A.R. Katritsky, University of Florida, Gainesville.
15) 3/12/2010, Dept. of Chemistry and Industrial Chemistry, Genova, "Magnetic properties of nanoparticles: the effect of particle size and beyond…", Davide Peddis, C.N.R., Istituto di Struttura della Materia, Roma
16) 27/10/2010, Dept. of Physics, Genova, "Growing semiconductor nanostructures with an AFM tip", Prof. Marco Rolandi, Università di Genova.
17) 3/12/2010, Dept. of Physics, Genova, "Magnetic properties of nanoparticles: the effect of particle size and beyond.", Dr. Davide Peddis
18) 3/12/2010, Dept. of Physics, Genova, "Statistics and localization of subgap states in s+- superconductors.", Dr. A. E. Koshelev

UNIVERSITÀ DEGLI STUDI DI GENOVA

DOCTORATE SCHOOL IN SCIENCES AND TECHNOLOGIES OF CHEMISTRY AND MATERIALS

PH.D. CERTIFICATE

OF

GEROLAMO VETTORETTI

Doctorate Course:
Pharmaceutical, Food and Cosmetic Sciences
Start of the Doctorate Program:
January 1st, 2008
End of the Doctorate Program:
December 31st, 2010
Advisor:
Prof. Vito Boido
Thesis Title:
Study of derivatives of nitrogen heterocycles, potentially active on the neuroprotection as well as antiviral agents
Defense Date:
February 17th, 2011

On February 17th, 2011, at the Department of Pharmaceutical Sciences, Gerolamo Vettoretti has orally presented his doctorate research work in front of the Commission, formed by

- Prof. Roberta Fruttero, University of Torino
- Prof. Livio Brasili, University of Modena
- Prof. Alessandro Balbi, University of Genova

The written Dissertation had been previously sent to the Commission members. After careful examination of the Dissertation, of the student's oral presentation, of the overall activity of the student during the three years of doctorate studies, the Commission

HAS APPROVED THE THESIS OF GEROLAMO VETTORETTI,
CONFERRING ON HIM THE TITLE OF

RESEARCH DOCTOR IN
PHARMACEUTICAL, FOOD AND COSMETIC SCIENCES

Genova, February 18th, 2011

The Director of the Doctorate School
(Prof. Luca Banfi)

The Coordinator of the Doctorate Course
(Prof. Alessandro Balbi)

ACTIVITY REPORT

Research Activity

The research activity was mainly carried in part at the Department of Pharmaceutical Sciences (University of Genova). However, Gerolamo Vettoretti also carried out **research for 5 months** (1/10/2009-31/3/2010) at the University of Padova, Molecular Modeling Section.

Scientific Publications

Communications at Conferences

Oral communications:

1) Vettoretti, G.; Cristiani, A.; Boido, V.; Giliberti, G.; Moro, S., Alla ricerca di nuovi inibitori della proteina di fusione di RSV: uno studio di docking e dinamica molecolare*,* X SAYCS, Pesaro, 18-20/10/2010.

Posters:

2) Tonelli, M.; Vettoretti, G.; Boido, V.; Canu, C.; Sparatore, A.; Sparatore, F.; Villa, V.; Florio, T., "New Acridine Derivatives as Potential Anti-Prion Agents", GIFC, Nice (France), 17-18/4/2008.
3) Vettoretti, G.; Boido, V.; La Colla, P.; Moro, S., "Docking analisys on 1-substitueted-2-[(benzotriazol-1/2-yl)methyl]benzimidazoles as inhibitors of RSV-F protein", GIFC, Genova, 26-27 Aprile 2010, Atti CP-76
4) Vettoretti, G., "New acridine derivatives as inhitors of Flaviviridae replication cycle, XXX ESMEC, Urbino, 4-9/7/2010.
5) Cristiani, A.; Vettoretti, G.; Boido, V.; Giliberti, G.; Moro, S., "Molecular dynamics and docking studies on RSV fusion protein as tools for the discovering of new inhibitors", XX NNNC, Abano Terme, 12-16/9/2010.

Congresses Attended

1) Giornate Italo-Francesi di Chimica (GIFC), Nice (France), 17-18/4/2008.
2) Giornate Italo–Francesi di Chimica. Genova, 26-27/4/2010.
3) XX N.M.M.C. Abano Terme (Italy), 12-16/9/2010.
4) X S.A.Y.C.S., Pesaro (Italy), 18-20/10/2010.

Courseware

During his doctorate, Gerolamo Vettoretti has acquired 25.0 credits of Courseware.

Courses attended and passed (17 credits)

Courses Given by Teachers of the University of Genova:

1) Databases classification: bibliographic, chemical substances, chemical reactions, numeric patent. Data Bases (2 credits)(2008).
2) Microwave technology applied to chemical processes (2 credits)(2009)
3) Bioorganic Chemistry (2 credits)(2009)
4) Stereoselective synthesis (2 credits)(2009)
5) In vitro tests for evaluation of toxicity and biological action of chemical compounds (2 credits)(2009)
6) Bioinformatics (3 credits)(2009)

Courses Given by invited experts:

1) Technologies for control of CO_2 in the atmosphere: from confinement to reutilization (Michele Aresta) (1 credit)(2008)
2) Biotechnological drugs (Barbara Gatto) (1 credit)(2008)
3) Control of food quality (Consuelo Pizarro) (1 credit)(2008)
4) "Organic synthesis in microreactors" and "Surfaces and microchannel with controlled wettability for new materials and devices (Michele Maggini and Tommaso Carofiglio) (1 credit)(2008).

National and International Schools or Workshops (4 credits)

1) *New trends in drug discovery*, Parma (Italy), 29/2/2008 (0.5 credits).
2) *Introduzione al Computer Aided Drug Design,* Istituto di Ricerche Farmacologiche Mario Negri, Milano, 22-24/10/2008 (1 credit).
3) *La Spettrometria di massa nelle applicazioni farmaceutiche*, Istituto di Chimica Farmaceutica e Tossicologica "P. Pratesi", Milano, 12/11/2008 (0.5 credits).
4) *XXX E.S.M.E.C.*, Urbino (Italy), 4-9/7/2010

Seminars Given (2 credits)

1) 22/11/2010, Polo Alberti, Genova, "Molecular Dynamics Simulation: an updated overview on Prion Protein".

Seminars Attended (2 credits)

1) 15/2/2008, Dept. of Chemistry and Pharmaceutical and Food Technologies, Genova, "Introduzione alla spettroscopia NIR", Prof.ssa E. Tamburini, Università di Ferrara
2) 15/2/2008, Dept. of Chemistry and Pharmaceutical and Food Technologies, Genova, "La spettroscopia NIR nell'industria farmaceutica", Dr. S. Lonardi, consulente, Verona.
3) 15/2/2008, Dept. of Chemistry and Pharmaceutical and Food Technologies, Genova, "Controllo NIR, dal ricevimento merci al prodotto finito", Dr. G. Campolongo, Büchi Italia
4) 15/2/2008, Dept. of Chemistry and Pharmaceutical and Food Technologies, Genova, Spettroscopia NIR e chemiometria, P. Oliveri.
5) 1/4/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Cinquant'anni giocando ad aprire e chiudere eterocicli", Prof. Domenico Spinelli, Università di Bologna.
6) 10/6/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Studio preclinico in vitro ed in vivo dell'attività antitumorale di nuove molecole a struttura 1,3-butadienica", Dr. Maurizio Viale, Istituto Nazionale per la Ricerca sul Cancro di Genova.
7) 27/10/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Lo Spazio Chimico e la sua Descrizione Matematica", Prof. Roberto Todeschini, Università Bicocca di Milano
8) 27/10/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Navigare lo Spazio Chimico per la Biologia e la Medicina". Dr. Antonio Macchiarulo, Università di Perugia.
9) 3/11/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "La sintesi orientata alla diversità di collezioni di molecole", Dr. Chiara Ghiron, SienaBiotech.
10) 3/11/2008, Dept. of Chemistry and Industrial Chemistry, Genova, "Sfruttare la chemiodiversità delle sostanze naturali", Prof. G. Appendino, Università del Piemonte Orientale.
11) 7/11/2008, Dept. of Pharmaceutical Sciences, Genova, "L'approccio computazionale nella Chimica Farmaceutica: cenni teorici ed applicazioni pratiche", E. Cichero.
12) 7/11/2008, Dept. of Pharmaceutical Sciences, Genova, "Derivati cumarinici con potenziale attività antivirale verso il virus dell'epatite C", M. Giampieri.
13) 7/11/2008, Dept. of Pharmaceutical Sciences, Genova, "Configurazione assoluta: sguardo sui metodi chimico-fisici per la sua determinazione, contributo dell'HPLC chirale, un caso di studio di alcol secondario e suoi derivati", A. Romussi.
14) 7/11/2008, Dept. of Pharmaceutical Sciences, Genova, "Sistemi gelificanti in situ per applicazioni biomediche", R: Stefani.
15) 7/11/2008, Dept. of Pharmaceutical Sciences, Genova, "Green Chemistry e sviluppo sostenibile", B. Trucchi.
16) 24-11-2008, Dept. of Pharmaceutical Sciences, Genova, "Lipidomica", Prof. Daniele Piomelli, Louise Turner Arnold Chair in the Neurosciences, Professor of Pharmacology and Biological Chemistry and Director of the Center for Drug Discovery-University of California, Irvine CA.
17) 27-2-2009, Dept. of Pharmaceutical Sciences, Genova, "Chiral chromatography : a mature technology, a scientific challenge", Prof. Christian Roussel, Marseille, France.
18) 27-2-2009, Dept. of Pharmaceutical Sciences, Genova, "Chemistry derived from N-(o-amino-phenyl) thiazoline-2-thione", Federico Andreoli, Marseille, France.
19) 19/3/2009, Dept. of Chemistry and Industrial Chemistry, Genova, "Derivati imminici altamente reattivi per la sintesi di composti azotati.", Prof. Marino Petrini, Università di Camerino
20) 15/5/2009, Dept. of Pharmaceutical Sciences, Genova, "Farmaci recentemente approvati: uno sguardo critico al passato e un trend per il futuro, Dr. Paolo Pevarello, Preclinical Research Director, Newron Pharmaceuticals S.p.A.
21) 21/10/2010, Faculty of Medicine, " Ligandi multisito e multitarget quali potenziali agenti terapeutici nelle malattie neurodegenerative", Angelo Carotti, Università di Bari.
22) 22/11/2010, Dept. of Pharmaceutical Sciences, Genova, "Combinatorial Chemistry", Laura Buffa.
23) 22/11/2010, Dept. of Pharmaceutical Sciences, Genova, "Le Micotossine nelle colture e nei prodotti alimentari", Silvia Mannino.

Teaching Assistance

Gerolamo Vettoretti has assisted the course of "Instrumental Drug Analysis", 2008/2009 (60 hours) and 2009/2010 (60 hours); he has also assisted the course of "Drug Analysis 1" (2010/2011) (60 hours).

UNIVERSITÀ DEGLI STUDI DI GENOVA

DOCTORATE SCHOOL IN SCIENCES AND TECHNOLOGIES OF CHEMISTRY AND MATERIALS

PH.D. CERTIFICATE
OF
DAVIDE NARDELLI

Doctorate Course:
Materials Science and Technology
Start of the Doctorate Program:
January 1st, 2005
End of the Doctorate Program:
December 31st, 2010
Advisors:
Dr. Giovanni Grasso
Prof. Marina Putti
Ing. Roberto Marabotto
Thesis Title:
Plasma spray application for superconducting materials
Defense Date:
February 17th, 2011

On February 17th, 2011, at the Department of Chemistry and Industrial Chemistry, Davide Nardelli has orally presented his doctorate research work in front of the Commission, formed by

- Prof. Pietro Carretta, University of Pavia
- Dr. Andrea Ciccioli, University "La Sapienza", Roma
- Prof. Guido Busca, University of Genova

The written Dissertation had been previously sent to the Commission members. After careful examination of the Dissertation, of the student's oral presentation, of the overall activity of the student during the three years of doctorate studies, the Commission

HAS APPROVED THE THESIS OF DAVIDE NARDELLI,
CONFERRING ON HIM THE TITLE OF

RESEARCH DOCTOR IN
MATERIALS SCIENCE AND TECHNOLOGY

Genova, February 18th, 2011

The Director of the Doctorate School
(Prof. Luca Banfi)

The Coordinator of the Doctorate Course
(Prof. Gabriella Borzone)

ACTIVITY REPORT

Research Activity

The research activity was entirely carried out at the Department of Physics(University of Genova).

Scientific Publications

Original publications on ISI Journals:

1. Braccini, V.; Nardelli, D.; Malagoli, A.; Tumino, A.; Fanciulli, C.; Bernini, C.; Siri, A. S.; Grasso, G., MgB_2 tapes with non-magnetic sheath: Effect of the sintering temperature on the superconducting properties, *Ieee Transactions on Applied Superconductivity*, **2005,** 15, 3211-3214. IMPACT FACTOR (2009): 1.310
2. Musenich, R.; Fabbricatore, P.; Farinon, S.; Ferdeghini, C.; Grasso, G.; Greco, M.; Malagoli, A.; Marabotto, R.; Modica, M.; Nardelli, D.; Siri, A. S.; Tassisto, M.; Tumino, A., Behavior of MgB_2 react & wind coils above 10 K, *Ieee Transactions on Applied Superconductivity*, **2005,** 15, 1452-1456. IMPACT FACTOR (2009): 1.310
3. Modica, M.; Grasso, G.; Greco, M.; Marabotto, R.; Musenich, R.; Nardelli, D.; Penco, R.; Tassisto, M., Behavior of MgB_2 reacted and wound coils from 14 K to 32 K in a cryogen free apparatus, *Ieee Transactions on Applied Superconductivity*, **2006,** 16, 1449-1452. IMPACT FACTOR (2009): 1.310
4. Musenich, R.; Fabbricatore, P.; Farinon, S.; Greco, M.; Modica, M.; Marabotto, R.; Penco, R.; Razeti, M.; Nardelli, D., The behaviour of cryogen-free MgB_2 react and wind coils, *Superconductor Science & Technology*, **2006,** 19, S126-S131. IMPACT FACTOR (2009): 2.694
5. Modica, M.; Angius, S.; Bertora, L.; Damiani, D.; Marabotto, M.; Nardelli, D.; Perrella, M.; Razeti, M.; Tassisto, M., Design, construction and tests of MgB_2 coils for the development of a cryogen free magnet, *Ieee Transactions on Applied Superconductivity*, **2007,** 17, 2196-2199. IMPACT FACTOR (2009): 1.310
6. Alessandrini, M.; Musenich, R.; Penco, R.; Grasso, G.; Nardelli, D.; Marabotto, R.; Modica, M.; Tassisto, M.; Fang, H.; Liang, G.; Diaz, F. R. C.; Salama, K., Behavior of a 14 cm bore solenoid with multifilament MgB_2 tape, *Ieee Transactions on Applied Superconductivity*, **2007,** 17, 2252-2257. IMPACT FACTOR (2009): 1.310
7. Braccini, V.; Nardelli, D.; Penco, R.; Grasso, G., Development of ex situ processed MgB_2 wires and their applications to magnets, *Physica C-Superconductivity and Its Applications*, **2007,** 456, 209-217. IMPACT FACTOR (2009): 0.723
8. Nardelli, D.; Marabotto, R.; Grasso, G.; Martini, L.; Bocchi, M.; Dalessandro, R.; Modica, M.; Tassisto, M.; Pietranera, D.; Penco, R., Test result on MgB_2 windings for AC applications, *Ieee Transactions on Applied Superconductivity*, **2007,** 17, 2742-2745. IMPACT FACTOR (2009): 1.310
9. Musenich, R.; Sorbi, M.; Tavilla, G.; Volpini, G.; Marabotto, R.; Modica, M.; Nardelli, D., A MgB_2 superferric racetrack magnet, *Superconductor Science & Technology*, **2008,** 21. IMPACT FACTOR (2009): 2.694
10. Razeti, M.; Angius, S.; Bertora, L.; Damiani, D.; Marabotto, R.; Modica, M.; Nardelli, D.; Perrella, M.; Tassisto, M., Construction and operation of cryogen free MgB_2 magnets for open MRI systems, *Ieee Transactions on Applied Superconductivity*, **2008,** 18, 882-886. IMPACT FACTOR (2009): 1.310
11. Nardelli, D.; Angius, S.; Capelluto, A.; Damiani, D.; Marabotto, R.; Modica, M.; Perrella, M.; Tassisto, M., Persistent Mode MgB_2 Short Windings, *Ieee Transactions on Applied Superconductivity*, **2010,** 20, 1998-2001. IMPACT FACTOR (2009): 1.310

Original publications on non ISI Journals:

12. Malagoli, A.; Grasso, G.; Vignolo, M.; Tumino, A.; Bernini, C.; Tropeano, M.; Siri, A.S.; Nardelli, D.; Modica, M., Long lengh MgB_2 conductors for industrial application, *Advances in Science and Technology*, **2006**, *47*, 238-245.

Communications at Conferences

Oral Communications:

1) "Persistent mode MgB_2 short windings", MT21 – 21th Conference on Magnet Technology, 18-23/9/2009, Hefei (China).

Posters:

2) "Experience on MgB_2 fault current limiters", SATT13 - Congresso Nazionale di Superconduttività, 29-31/3/2006, Sestri Levante.
3) "Quality control results of long length MgB_2 series production tapes", SATT13 - Congresso Nazionale di Superconduttività, 29-31/3/2006, Sestri Levante.

Congresses Attended

1) MT19- Magnet Technology, 18-23/9/2005, Genova.
2) SATT-13 - Congresso Nazionale di Superconduttività, 29-31/3/2006, Sestri Levante.
3) MEM'06 - 4th Annual Workshop on Mechanical and Electromagnetic Properties of Composite Superconductors, 2-5/7/2006, Durham (UK).
4) MT21 – 21th Conference on Magnet Technology, 18-23/9/2009, Hefei (China).

Courseware

During his doctorate, Davide Nardelli has attended the following courses:

1) Superconductivity (3 credits)(2005)
2) Metallic amorphous materials and composite materials (3 credits)(2005)
3) Ceramic materials (3 credits)(2005)
4) Granulometric characterization techniques for powders (1 credit)(2006).

Seminars Given

1) *The influence of the 'Pinning' on the transport properties* (2005)
2) *Primary phase field nel diagramma di fase del Pb-BSCCO 2223* (2005)