PERSONAL INFORMATION Marco Zannotti E-mail: marco.zannotti@unicam.it

WORK EXPERIENCE

11/01/2014 – 10/07/2014

Visiting Researcher

University of Nottingham, School of Inorganic Chemistry, E. A. Gibson research group

- Optimization, production, study and characterization of p-type Solar Cells for their use in Tandem Solar Cell devices

01/07/2015 – in progress

Post-doc researcher, settore scientifico disciplinare CHIM/01-settore aggiuntivo CHIM/12, Area di ricerca 03 – Scienze Chimiche

University of Camerino, School of Science and Technology, Chemistry Division, Giovannetti and Ferraro research group

Environmental Chemistry, Study on Solar Cells DSSC devices: optimization and characterization of nanomaterials semiconductor; water depuration by photocatalysis: optimization of novel semiconductor materials, "green" Graphene production, material Chemistry.
Characterization of nanomaterials by UV-VIS, DRS, SEM, XRD, XPS, Raman techniques AND Band-gap calculation.
Studies and characterization of natural pigments like porphyrins and carotenoids by UV-Vis spectroscopy, identification and separation by HPLC-MS, kinetic and analytical studies concerning the aggregation- complexation process and acid-base features
Bio-remediation by Antarctic bacteria: purification and studies on secondary compounds by HPLC and GC.

EDUCATION AND TRAINING

19/03/2012 – 19/03/2015

Ph.D. in "Chemical and Pharmaceutical Sciences And Bioctechlonogy: Chemical Sciences"

University of Camerino – School Of Science And Technology – Chemistry Division

Ph.D. Thesis : "*Analytical approach to technologies for the environment: from wastewater aeration to energy production*"

- Aeration process, water depuration
- Adsorption and kinetic studies
- Preparation of nanomaterials and their electrochemical characterization
- Optimization of DSSCs and their characterization

15/12/2008 – 13/04/2011

Master Degree in Chemistry And Advanced Chemical Methodologies (Classe 62/S)

University of Camerino – School Of Science And Technology – Environmental Chemistry

Master Degree Thesis: "*Ottimizzazione dell'assorbimento di coloranti porfirinici su film nanoconduttori: uno studio cinetico e di equilibrio*." **Final Mark: 110/110 with honors**

- Uv-vis characterization
- Adsorption and kinetic studies on natural pigments

6/10/2005 – 15/12/2008

Bachelor Degree in Chemistry (Classe 21)

University of Camerino – School Of Science And Technology – Chemistry Division

Bachelor Degree Thesis : "*Studio delle proprietà coordinative di leganti precarbenici derivati da liquidi ionici a base di imidazoli e triazoli N-alchilati*" **Final Mark: 110/110 with honors**

- Inorganic Synthesis and Coordination chemistry

2001-2005

Diploma di Maturità Scientifica

Liceo Scientifico V.Volterra Fabriano- Final Mark 100/100

PERSONAL SKILLS

Mother tongue(s) Italian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C1	C1	C1	C1	C1
French	A2	A2	A2	A1	A1

Levels: A1/2: Basic user - B1/2: Independent user - C1/2 Proficient user
Common European Framework of Reference for Languages

Communication skills

- Good communication skills gained through my experience in the laboratory teams at University of Camerino and Nottingham;

Organisational / managerial skills

- Good work planning;
- Prone to teamwork and cooperation;
- Analytical and methodical approach ;

Job-related skills

- Experience in oxygenation for wastewater depuration;
- Development and production of DSSCs solar cells devices with electrochemical characteriazion by JV curve and Cyclic Voltammetry.
- Development and production of novel semiconductor nanomaterial and their use in water depuration by Photo-catalysis with TiO_2;
- Development on green method for the synthesis of reduced graphene oxide and metal nanoparticles.
- Band-Gap calculation by Kubelka-Munk plot and deconvolution of spectroscopic data.
- Experience in the use of Raman Horiba Instrumentation of UNICAM for the characterization of materials.
- Experience on characterization of natural pigments by UV-Vis, HPLC, complexation and kinetic studies.

- Good Knowledge of the following characterization techniques :

  - UV-vis Spectrophotometry;
  - Fluorescence Spectrophotometry.
  - Scanning Electron Microscopy;
  - Gas Chromatography;
  - X-Ray Diffraction ;
  - Solar Simulator and charge studies for Solar Cells;
  - Morphological Analysis ;
  - BET:
  - Raman Analysis;
  - ICP-MS;
  - Microwave mineralization

Computer skills

- Good knowledge on Windows® Operating System;
- Good knowledge of Origin Software.
- Good knowledge of Office Software
- Fitting and deconvolution of curve by specific software.

Other Skills

Cultore della materia for the teachings: Environmental Chemistry.

Review activity for international scientific journal:

Catalysts, Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, Scientific Reports, Science of Advanced Materials, Analytical Methods, Chemosphere

PUBLICATIONS

M. Zannotti, *R.Giovannetti, C.A. D'Amato, E. Rommozzi, Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, 153 (2016) 22-29,* ***Spectroscopic studies of porphyrin functionalized multiwalled carbon nanotubes and their interaction with TiO_2 nanoparticle surface****,* DOI:10.1016/j.saa.2015.07.111

- ***M. Zannotti****, Christopher J. Wood, Gareth H. Summers, Lee A. Stevens, Matthew R. Hall, Colin E. Snape, Rita Giovanetti, and Elizabeth A. Gibson, ACS Appl. Mater. Interfaces, 2015, 7 (44), pp 24556–24565* ***Ni Mg mixed metal oxides for p-type dye-sensitized solar cells*** DOI: 10.1021/acsami.5b06170

- R. Giovannetti, C.A. D'Amato, ***M. Zannotti****, E. Rommozzi, R. Gunnella, M. Minicucci, A. Di Cicco, Scientific Reports 5, Article number: 17801 (2015)* ***Visible light photoactivity of Polypropylene coated Nano-TiO_2 for dyes degradation in water****,* DOI: 10.1016/j.saa.2015.07.111.

- Giovannetti, R.; Rommozzi, E.; D'Amato, C.A.; ***Zannotti, M.*** ***Kinetic Model for Simultaneous Adsorption/Photodegradation Process of Alizarin Red S in Water Solution by Nano-TiO_2 under Visible Light.*** *Catalysts* **2016**, *6*, 84. DOI:10.3390/catal6060084

- Giovannetti, R.; Rommozzi, E.; **Zannotti, M.** *; D'Amato, C.A; Ferraro, S.; Cespi, M.; Bonacucina, G.; Minicucci M.; Di Cicco, A.* **Exfoliation of graphite into graphene in aqueous solution: an application as graphene/TiO2 nanocomposite to improve visible light photocatalytic activity.** *RSC Advances 2016, 6, 93048-93055.* DOI: 10.1039/C6RA07617C

Giovannetti, R.; Rommozzi, E; Zannotti, M.; D'Amato, C. A. Catalysts, 2017, 7, 305 **Recent advances on Graphene based TiO2 Nanocomposites (GTiO2Ns) for Photocatalytic Degradation of Synthetic Dyes**, doi:10.3390/catal7100305

Zannotti, M*.; Giovannetti, R.; Minofar, B.; Řeha, D.; Plačková, L.; D'Amato, C.A.; Rommozzi, E.; V. Dudko, H; Kari, N. Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, 133 (2018) 235-248* **Aggregation and metal-complexation behaviour of THPP porphyrin in ethanol/water solutions as function of pH,** https://doi.org/10.1016/j.saa.2017.12.021

D'Amato, C.A.; Giovannetti, R., ***Zannotti, M****.; Rommozzi, E.; Ferraro, S.; Seghetti, C.; Minicucci, M.; Gunnello, R.; Di Cicco, A. Applied Surface Science 441 (2018) 575-587* **Enhancement of visible-light photoactivity by polypropylene coated plasmonic Au/TiO2 for dye degradation in water solution** https://doi.org/10.1016/j.apsusc.2018.01.290

D'Amato, C.A.; Giovannetti, R., ***Zannotti, M****.; Rommozzi, E.; Ferraro, S.; Minicucci, M.; Gunnello, R.; Di Cicco, A. Nanomaterials, 2018, 9, 599* **Band Gap Implications on Nano-TiO_2 Surface Modification with Ascorbic Acid for Visible Light-Active Polypropylene Coated Photocatalyst.** doi: 10.3390/nano8080599.

Rommozzi, E.; **Zannotti, M**.; Giovannetti, R.; D'Amato, C.A.; Ferraro, S.; Minicucci, M.; Gunnella, R.; Di Cicco, A. *Catalysts, 2018, 8, 598* ***R*****educed Graphene Oxide/TiO_2 Nanocomposite: From Synthesis to Characterization for Efficient Visible Light Photocatalytic Applications.** doi: 10.3390/catal8120598

Zannotti, M.; Benazzi, E.; Stevens, L. A.; Minicucci, M.; Bruce, L.; Snape, C. E.; Gibson, E. A.; Giovannetti, R.; *ACS Appl. Energy Mater, 2019* **Reduced Graphene Oxide-NiO Photocathodes for p-Type Dye-Sensitized Solar Cells.** https://doi.org/10.1021/acsaem.9b01323

Research projects participation

FAR 2015-2017: NAMES Nanocomposite Materials for Energy and environment applicationS, University of Camerino.

Development of nano-semiconductor based on graphene material for water depuration by photocatalysis and solar cells, with the synthesis of reduced Graphene Oxide by green methodologies.

Master

*Master "**ESPERTO AMBIENTALE**", TuttoAmbiente, Bologna 14 October- 2 December 2016.*

Presentations

*Speaker at **Salone Europeo della Ricerca di Trieste** (26-28 September 2014) with the talk :*

MASSIMIZZARE L'ENERGIA ACQUISITA DA NANOPARTICELLE:SOLE, COLORE E NANOMATERIALI = ENERGIA.

Conferences and Poster presentations

***ISOC 2013,* 9th International School of Organometallic Chemistry**, *30th August- 3th September 2013, Camerino (MC), **Sensitization of monolayer transparent TiO_2 thin films with metal-porphyrin dyes for DSSC applications. Equilibrium and kinetic aspects**. **M. Zannotti**, C. A. D'Amato, R. Giovannetti.* http://hdl.handle.net/11581/287030

***International Conference on Diamond and Carbon Materials**, 2-5 September 2013, Riva del Garda (TN), **Interaction of Porphyrins with Carbon Nanotubes**, **M. Zannotti**, R. Giovannetti, R. Gunnella, L. Petetta, S. Ferraro.* http://hdl.handle.net/11581/287031

***XXIV Congresso della divisione di Chimica Analitica**, 15-19 September, Sestri Levante (GE), **Oxygen transfer in a gas-liquid system : kinetic influence of water salinity** , **M. Zannotti**, R. Giovannetti, S. Ferraro, S. Piccinini, ISBN 9788890767012.* http://hdl.handle.net/11581/361186

***FNMA '14**, 1-5 September 2014, Camerino (MC), **Porphyrins functionalized MWCNTs and their interaction with TiO_2 nanoparticles surface.** R. Giovannetti, **M. Zannotti**, C. A. D'Amato, E. Rommozzi, S. Ferraro, ISBN 978-83-937979-0-5.* http://hdl.handle.net/11581/361186

***FNMA '14**, 1-5 September 2014, Camerino (MC), **Characterization and environmental application of Polypropylene coated nano-TiO_2 in wastewaters**, R. Giovannetti, C. A. D'Amato, E. Rommozzi, **M. Zannotti**, M. Minicucci, R. Gunnella, ISBN 978-83-937979-0-5.* http://hdl.handle.net/11581/361183

***4th Scientific Day of the School of Science and Technology**, 11th June 2014, Camerino (MC), **Optimization of Photocathode for Tandem-Dye Solar Cell**, **M. Zannotti**, E. Gibson, R. Giovannetti, C. Wood, G. Summers ISBN: 9788867680177.* http://hdl.handle.net/11581/327985

***4th Scientific Day of the School of Science and Technology,* 11th June 2014, Camerino (MC), **Optimization of Photocathode for Tandem-Dye Solar Cell**, **M. Zannotti**,** M. Zannotti; R. Giovannetti; S. Ferraro; S. Piccinini *ISBN: 9788867680177.* http://hdl.handle.net/11581/327984

***SPEA 8, 8th European Meeting on Solar chemistry and Photocatalysis: environmental applications**, 25-28 June 2014, Thessaloniki, Greece. **Visible light photoactivity of polypropylene coted Nano-TiO_2 for dyes degradation**, C. A. D'amato, E. Rommozzi, **M. Zannotti**, R. Giovannetti.* http://hdl.handle.net/11581/327981

***SPEA 8, 8th European Meeting on Solar chemistry and Photocatalysis: environmental applications**, 25-28 June 2014, Thessaloniki, Greece. **Kinetic Model of photocatalytic Degradation of Alizarin Red-S Polypropylene coated nano-TiO_2,** C. A. D'amato, E. Rommozzi, **M. Zannotti**, R. Giovannetti, S. Ferraro.* http://hdl.handle.net/11581/327982

XXV Congresso Nazionale di Chimica Analitica, 7-12 September 2014, Arcavacata di Rende**, *Equilibrium and kinetic aspects in photoactivity of Polypropilene coated Nano-TiO_2.***
*C. A. D'Amato, E. Rommozzi, **M. Zannotti**, R. Giovannetti.* http://hdl.handle.net/11581/360981

GraphITA 2015, 14-18 September 2015, Bologna, ***Graphene/TiO_2 Nanocomposite for Efficient Visible-Light Photocatalysis: Synthesis, Characterization and Photocatalytic Applications***. E. Rommozzi, R. Giovannetti, **M. Zannotti**, C. A. D'Amato, S. Ferraro, M. Minicucci. http://hdl.handle.net/11581/392138

5th Scientific Day of School of Science and Technology, **UNICAM 2016,** 08 June 2016, Camerino (MC), ***From TiO_2 and Graphite to Graphene doped TiO_2 for photocatalytic applications.***
*E. Rommozzi, R. Giovannetti, **M. Zannotti,** C. A. D'Amato, S. Ferraro, M. Minicucci, M. Cespi, G. Bonacucina, A. Di Cicco. ISBN: 9788867680269.* http://hdl.handle.net/11581/391701

6th Scientific Day of School of Science and Technology, **UNICAM 2016,** 28 September 2018, Camerino (MC), ***Graphene doped nickel oxide for solar conversion***. **M. Zannotti**, R. Giovannetti, C.A. D'Amato, E. Rommozzi, R. Gunnella, M. Minicucci, A. Di Cicco, E.A. Gibson, L. Bruce *ISBN: 9788867680368*

***XXVIII Congresso della divisione di Chimica Analitica**, 22-26 September 2019, Bari, **Silver nanoparticles plasmonic sensor for the detection of mercury ions (hg2+) in aqueous medium**, **M. Zannotti**, R. Giovannetti, S. Ferraro*

Seminars

*"**FREE HPLC/UHPLC Method Development Seminar**", Phenomenex; Bologna 11th October 2011.*

*"**Web Training@Unicam2012** ", University of Camerino, Camerino, 16-17-19-20 July, 2012.*

*"**English for writing research papers**", University of Camerino, Camerino, 18-19-20 June, 2012.*

*"**Communication of science to public", part 2 – how to write a scientific article for the general public** ", University of Camerino, 28th June.*

***"International Conference on Perovskite Solar Cells and Optoelectronics (PSCO-2015)"** Lausanne, Switzerland, between the 27th to 29th September 2015.*

"Materials for Sodium-ion batteries",** University of Camerino, 03th March 2016**.

***7° CORSO NAZIONALE DI INTRODUZIONE ALLA FOTOCHIMICA**, University of Bologna, 06-10 June 2016.*

Teaching activity

Contract professor **2014 → 2020**

***ENVIROMENTAL CHEMISTRY CHIM/12** – Geoenviromental resources and risks (LM-74)*
6 CFU-University of Camerino

Contract professor **2017**

***- ENVIRONMENTAL CHEMISTRY CHIM/12-** Chemistry and Advanced Chemical Methodologies (LM-54) 6 CFU*

Co-Supervisor of Master and Bachelor's Degree's **2013→2020**

ANNEXES