

**Alessia Tombesi**

e-mail: alessia.tombesi@unicam.it

Nationality: Italian

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### **EDUCATION and TRAINING**

- **2015- 2019 PhD in Chemical Science Series XXXI Cycle,  
University of Camerino**

PhD thesis title: "Advanced functional coating for self-cleaning and anti-corrosion applications"

Supervisors: Professor Claudio PETTINARI

A detailed synopsis is in the attached **appendix** to this CV.

- **2013- 2015 Master degree in "Chemistry and advanced chemical methodologies  
University of Camerino**

Thesis title: "Synthesis, Characterization And In Vitro Studies Of The Antimalarial Potential Activity Of Water Soluble Cu(I), Ag(I) And Au(I) Phosphane Complexes"

Supervisors: Prof. Maura PELLEI, Prof. Annette HABLUETZEL

Co- Supervisor: Dr. Sofia TAPANELLI

- **2009- 2013 Bachelor in "Chemistry"  
University of Camerino**

Thesis title: " Synthesis and characterization of Biologically Active Cu (I) and Ag (I) Complexes with Water-soluble Phosphines and Bidentate Nitrogenous ligands"

Supervisors: Prof. Maura PELLEI, Prof. Carlo SANTINI

Co- Supervisor: Dr. Marika MARINELLI

### **RELEVANT SKILLS**

#### **Technical skills**

Experienced in general equipment to identify inorganic compounds:

- Thermogravimetric analysis (TGA)
- Scanning electron microscopy (SEM)
- X-ray photoelectron spectroscopy (XPS)
- UV-Vis spectroscopy
- FT-IR (MIR e FIR)
- Elemental Analysis (EA)
- Spectroscopy NMR ( $^1\text{H}$ ,  $^{13}\text{C}$ ,  $^{31}\text{P}$ ,  $^{19}\text{F}$ )
- Chromatographic techniques (TLC, GC, GC-MS, ESI-MS)
- Melting point determination

## Research and Analysis

- Ability to identify, define and analyse problems, to create solutions and evaluate them, and to choose the best solution for a particular context.
- Imaginative and innovative thinking to find new ways to approach a problem, analytical skills to examine the consequences of a particular solution, and reasoning skills to weigh one solution against another.
- Gathering and assimilating information from published sources to write review documents

## Computing skills

Excellent knowledge of:

- Windows, Microsoft Office tools (Word, Excel and PowerPoint), Internet;
- Scientific software such as ChemOffice;
- Specific software for bibliographic research (SciFinder, Scopus, Web of Knowledge, Reaxys) to obtain research paper and implementing their findings and methods to reactions and research.

## Communications skills

- Ability to summarise information, explain the aims, motives, results and conclusions of the research, and tailor the communication to the needs and knowledge level of a particular audience
- Skilled at communications scientific work in form of presentations poster and written reports obtained thanks to the annual drafting of reports on the PhD activity and related Doctoral dissertation.

## Interpersonal Skills

- Collaboration with colleagues to develop and test research ideas
- Ability to work with others in groups and teams, both formal and informal.
- Open to receiving feedback and improving them as a result

## Teaching Skills

- Co-supervisor the undergraduate research project of final year student.  
Title of student thesis: "*Sintesi di nuovi MOFs con leganti azolici e loro caratterizzazione allo stato solido.*"
- Co-supervisor the undergraduate research project of final year student.  
Title of student thesis: "*Synthesis and characterization of new ruthenium complexes with Schiff bases, evaluation of potential applications in the biological and catalytic fields.*"
- Teaching Assistants of CHEMISTRY a.a 2018/2019 to the students of the first year of the degree course in Chemistry
- Teaching Assistants of CHEMISTRY a.a 2017/2018 to the students of the first year of the degree course in Chemistry

- Teaching Assistants of CHEMISTRY a.a 2016/2017 to the students of the first year of the degree course in Biological sciences
- Laboratory Assistant in "Progetto Lauree Scientifiche" project 2015/2016

### **RESEARCH INTERESTS**

- Sol-Gel chemistry: designed construction of hybrid organic-inorganic materials
- Designed, synthesized and characterized functional sol-gel thin films
- Soft chemistry based routes to nanostructured materials.
- Applications of hybrids ( not limited to surface refinement by coatings)
- New routes to obtain advanced functional materials
- MOFs Metallic organic framework polymers: synthesis and characterization

### **PUBLICATIONS and PRESENTATIONS**

Alessia Tombesi , Shuhui Li , Sanjayan Sathasivam , Kristopher Page , Frances Heale , Claire Carmalt , Claudio Pettinari, Ivan Parkin. "Aerosol-assisted chemical vapour deposition of transparent superhydrophobic film by using mixed functional alkoxy silanes" (Manuscript sent for Production in Scientific Report Springer Nature Limited)

Sofia Tapanelli, Annette Habluetzel, Maura Pellei, Luciano Marchiò, Alessia Tombesi, Ambra Capparè, Carlo Santini. "Novel metalloantimalarials: Transmission blocking effects of water soluble Cu(I), Ag(I) and Au(I) phosphane complexes on the murine malaria parasite *Plasmodium berghei*" Journal of Inorganic Biochemistry 166 (2017) 1–4 ( publication)

Alessia Tombesi, Nello Mosca, Rebecca Vismara, Andrea Rossin, Claudio Pettinari, Corrado Di Nicola, Simona Galli. "Synthesis and characterization of novel coordination framework incorporating bis(pyrazoly)-tagged ligands for a different applications. (poster). 11th International School of Organometallic Chemistry (ISOC 2017), Abs. Atti del Conv., poster 70, pag.53, 2-6 Settembre 2017, San Benedetto del Tronto (Italia). ISBN: 9788867680290.

Nello Mosca, Rebecca Vismara, Alessia Tombesi, Giulia Tuci, Giuliano Giambastiani, Andrea Rossin, Claudio Pettinari, Simona Galli. "NO<sub>2</sub>-tagged pyrazolate based MOFs: efficient CO<sub>2</sub> sorbents at ambient conditions". (poster). 11th International School of Organometallic Chemistry (ISOC 2017), Abs. Atti del Conv., poster 46, pag.41, 2–6 Settembre 2017, San Benedetto del Tronto (Italia). ISBN: 9788867680290.

Alessia Tombesi, Claudio Pettinari, Leonardo Ferroni, Simone Sonaglia. "Advanced functional coating: study and research to develop anti-fingerprint coating for industry use" (poster). XXXV Congresso delle Sezioni Toscana-Umbria-Marche-Abruzzo - TUMA2016. Giulianova (TE), September 25-27, 2016.

### **CONFERENCES and COURSES ATTENDED**

- **VI ISGS Summer School Frontier Hybrid Materials** 16-19 September 2018 , Alghero Italy
- **11<sup>th</sup> International School of Organometallic Chemistry (ISOC 2017)**, 2–6 Settembre 2017, San Benedetto del Tronto (Italia)
- XXXV Congresso delle Sezioni Toscana-Umbria-Marche-Abruzzo della Società Chimica Italiana - **TUMA2016**, 25-27 Settembre 2016, Giulianova (TE) XLIII Congresso Nazionale della Divisione Chimica Inorganica della Società Chimica Italiana.

#### Seminar:

**Research Ethics** carried out in University of Camerino 2016

**English for writing research papers** *carried out in* University of Camerino 2016

**Scientific Writing, part II** carried out in University of Camerino 2016

**DNA G-QUADRUPLEXES from nucleic acid aptamers to highly ordered supramolecular structures** carried out in University of Camerino 2016

**Materials for Sodium-ion batteries** carried out in University of Camerino

Workshop: **Horizon 2020** carried out *in* University of Camerino 2016

#### APPENDIX

##### **Brief Synopsis of Research:**

The research activity of the PhD project has been directed to the design and synthesis of an advanced functional coating. The preparation of organic-inorganic hybrid systems with targeted properties. In particular, thesis presents the synthesis, characterization and application of two types of functional coating, which are hydrophobic / self-cleaning and anticorrosion coatings. During PhD years, the aim of the research has been synthesizing a nano-structured coating. It has been investigated the synthesis procedure of the coating through a sol-gel method using  $R_nSiX_{(4-n)}$  alkoxysilanes precursors with different R functional groups.

Moreover, research activity has been also focused on the synthesis and the characterization of novel metal-organic frameworks (MOFs) based on N- and O- donor ligands of some families of ligands for applications in many fields as gas storage, separation, catalysis. In addition, investigation on the possible applications and potentials of thin film coating of metal-organic framework supported on various substrates was involved.