

## PERSONAL INFORMATIONS

## Marco Bertani



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Sex male | birthdate 13/07/1994 | Nationality Italiana

## ACTUAL POSITION

PhD student in the doctorate school “Models and methods for material and environmental sciences” University of Modena and Reggio Emilia, Departement of Chemical and Geological Sciences

## EDUCATION AND TRAINING

September 2008  
- July 2013

Second degree secondary school diploma (high school diploma)  
- technical organization - industrial expert - head technician - address:  
chemical – Final mark: 85/100

State Industrial Technical Institute: Enrico Fermi, Modena

- Main subjects dealt with: organic chemistry and fermentations, physical chemistry, analytical chemistry, industrial chemical technologies
- Main skills acquired: Ability in advanced chemical laboratory for chemical analysis and organic chemistry and fermentation

September 2013  
- April 2017

Bachelor's degree in chemistry (Class L-27 D.M. 16/03/07) – Final mark: 101/110  
University of Modena and Reggio (UNIMORE)

- Main subjects dealt with: Organic theoretical and applied chemistry (industrial), organic retrosynthesis, theoretical and industrial inorganic chemistry, analytical chemistry (simple and on real complex matrices), electrochemistry, thermodynamics, kinetics, quantum mechanics, instrumental methods in analytical chemistry (XRD, atomic absorption, chromatography, ICP, UV-VIS, IR, 1H-NMR), Environmental Chemistry
- Main skills acquired: Resolution of complex problems of chemistry and physics also applying advanced mathematical functions and operators, use of laboratory equipment, use of sophisticated electronic tools applied to qualitative and quantitative analysis
- Degree thesis: "Synthesis and characterization of new targeting vectors for diagnostic applications" at the laboratory of Professor Erika Ferrari at the University of Modena and Reggio Emilia

May, 29th 2017 -  
June, 24<sup>th</sup> 2017

English course  
EF Agency, International school of English of Dublin

- General English course with achievement of level C2 certified by the EFSET exam issued on June 21<sup>st</sup>, 2017

October 2017 –  
December 2019

Master degree course in Chemical Sciences (Class LM-54) – Final mark: 110/110  
and honours

University of Modena and Reggio Emilia (UNIMORE)

- Main subjects dealt with: Inorganic chemistry and crystallography, XRD analysis, synthesis of inorganic and organic compounds, Physical chemistry applied to spectroscopy, group theory, computational chemistry (HF methods, post-HF, DFT, QSPR), Instrumental analytical chemistry (GC, HPLC, Atomic absorption, liquid and solid state NMR, MS, surface analysis instrumentation), mineralogy
- Main skills acquired: Greater knowledge of the structure, symmetry and electrical and magnetic characteristics of inorganic materials. Use of XRD techniques and structural resolution with software. Design of synthesis of an inorganic material with predefined properties. Use of computational software like Gaussian, GULP and DL\_Poly for prediction of physical and chemical features. Application of group theory to the main spectroscopies. Greater knowledge of instrumental analytical techniques such as gas-chromatography, HPLC, Atomic absorption, microwave mineralization NMR and mass spectroscopy.
- **Master Thesis: “A combined MAS NMR and MD investigation of the structure of Magnesium Aluminoborosilicate glasses”. Internship at the laboratory DRF/IRAMIS/NIMBE in the CEA Saclay center in Paris under the supervision of Dr. Thibault Charpentier (Erasmus+ Traineeship)**

10<sup>th</sup> of February  
2020 – 09<sup>th</sup> of  
August 2020

Research scholarship “Development of parameters for computational simulation”

University of Modena and Reggio Emilia (UNIMORE)

Research supervisor: Professor Maria Cristina Menziani

- Development of new force fields for molecular dynamics simulations of silicate, aluminosilicate and phosphosilicate glasses and crystals, containing different alkaline oxides as modifiers, in collaboration with Professor Alfonso Pedone
- Collaboration with the research group of Professor Ashutosh Goel (Department of Materials Science and Engineering, Rutgers, The State University of New Jersey) for the simulation of structural properties and NMR parameters of glass systems containing silicon, boron and phosphorous oxides.

PERSONAL SKILLS

MOTHER TONGUE

Italian

OTHER LANGUAGES

	COMPREHENSION		SPEAKING		WRITTEN PRODUCTION
	Listening	Reading	interaction	Oral production	
english	Great	Great	Good	Good	Good
B2 level certified by University of Modena and Reggio Emilia in 2018					
spanish	Mediocre	Descreet	Mediocre	Mediocre	Mediocre

Livelli: A1/2 Livello base - B1/2 Livello intermedio - C1/2 Livello avanzato  
Quadro Comune Europeo di Riferimento delle Lingue

Scientific Papers

“Combined Experimental and Computational Approach toward the Structural Design of Borosilicate-Based Bioactive Glasses”, authors: N. Stone-Weiss, H. Bradtmüller, M. Fortino, M. Bertani, R. E. Youngman, A. Pedone, H. Eckert, A. Goel. *The Journal of Physical Chemistry C* 2020 124(32), 17655-17674. DOI:10.1021/acs.jpcc.0c04470

**Partecipations in workshop**

I attended the workshop “Computational methods and NMR spectroscopy: a powerful synergy for chemistry, material science and biology” organized by GIDRM (Gruppo Italiano Discussione Risonanze Magnetiche) in Pisa on 10<sup>th</sup> of december 2019

Oral contribution with title “The role of Mg in alumino-borosilicate glasses for nuclear waste confinement: a classical and ab-initio Molecular Dynamics Investigation” (M.Bertani, T.Charpentier, A.Pedone, M.C.Menziani) accepted as flash communication for the workshop “Winter Modeling 2020” organized by the PhD Course in Chemical, Geological and Environmental Sciences of Milano-Bicocca University, and by Scuola Normale Superiore of Pisa that should have taken place in Como on the 27<sup>th</sup> and 28<sup>th</sup> of February 2020. The workshop was canceled due to the “Coronavirus emergency”.

**Attended courses**

“A short introduction to MATLAB”, courses provided by Prof. Mauro Boccolari within the educational activity of the doctorate school M3ES of the Chemical and Geological Sciences department of the University of Modena and Reggio Emilia. The course had a total duration of 8 hours, distributed between the 11<sup>th</sup> and the 21<sup>st</sup> of February 2020

“Experimental Design”, courses provided by Prof. Marina Cocchi within the educational activity of the doctorate school M3ES of the Chemical and Geological Sciences department of the University of Modena and Reggio Emilia. The course had a total duration of 6 hours, distributed between the 12<sup>th</sup> and the 13<sup>th</sup> of May 2020

**Organizational and management skills**

I have good organisation skills for what concerns the design and development of laboratory and computational experiments, acquired during the university studies and during my recent job (research grant) in the computational field

**Professional skills**

- Mastery in the use of manual and electronic chemical instruments and in the general use of a chemical laboratory also for what concerns the design of synthesis, analysis or other experiments
- Ability to use computational chemistry programs like DL\_POLY, GULP, Gaussian and data extraction from simulations outputs

**IT skills**

- Excellent command of Microsoft Office tools (Excell, Word, Power Point)
- Good command of computational softwares related to molecular dynamics simulation and results analysis
- Good command of software related to analytical instrumentation
- Decent ability in graphical software usage
- Comprehension and writing skills of simple scripts in Fortran and bash languages

**Driver's licence**

Patente B

**Further informations**

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**Privacy**

I authorize the processing of my personal data pursuant to Legislative Decree 30 June 2003, n. 196 "Code regarding the protection of personal data".

