

## Letizia Mencaroni's Curriculum Vitae

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### PERSONAL INFORMATION

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Name	<b>MENCARONI Letizia</b>
Address	
Contact numbers	
E-mail	
Nationality	
Date of birth	<b>/1995</b>

### RESEARCH INTERESTS

Investigation of photophysics and photochemistry of organic molecules in solution by conventional steady-state and time-resolved (nanosecond flash-photolysis, picosecond TC-SPC - time-correlated single photon counting - and femtosecond transient absorption and fluorescence up conversion) spectroscopic techniques. Investigation of excited states dynamics focusing on triplet production, photoinduced electron transfer and proton transfer and singlet fission mechanism. Uncovering linear and non-linear optical properties of molecules for optoelectronic, photovoltaic, sensing, imaging and bioimaging applications.

## EDUCATION

September 2009 – **High School**

June 2014 Liceo scientifico "G. Alessi", Perugia

- Maths, Physics, Science, Italian, Latin, English, History, Philosophy, Arts
- Language certification issued by Cambridge University (Level B1)
- Final evaluation: 100/100

September 2014 – **Bachelor degree in Chemistry**

September 2017 University of Perugia, Department of Chemistry, Biology and Biotechnology, Perugia, Italy

- Maths, Physics, Inorganic Chemistry, Organic Chemistry, Analytical Chemistry, Physical Chemistry, Spectroscopy, Biochemistry, Quantum Chemistry, Photochemistry, Molecular design, Computer Science.
- Degree mark: 110/110 with honours

Project title: *Photoinduced intramolecular charge transfer, solvatochromism, NLO properties of push-pull systems*

September 2017 – **Master degree in Chemical Sciences**

July 2019 University of Perugia, Department of Chemistry, Biology and Biotechnology, Perugia, Italy

- Curriculum of Physical Chemistry: Applied molecular sciences, Nanomaterials and Nanostructures, Environmental Chemistry, Dynamics of chemical reactions, Molecular spectroscopy, Advanced Physical Chemistry, Non-reactive Dynamics, Photochemistry, Femtochemistry, Non-linear Optics, Biogeochemistry.
- Erasmus Traineeship at IOCB - Prague, Czech Republic
- Graduation mark: 110/100 with honours

Project title: *Unusual photobehaviour of nitrodistyrylbenzene-like compounds: involvement of Singlet Fission?*

November 2019 – **PhD course in Chemical Sciences**

Present University of Perugia, Department of Chemistry, Biology and Biotechnology, Perugia, Italy

Curriculum PHOTOCHEM: investigation of the excited states deactivation dynamics of organic chromophores.

Project title: *Singlet fission under the gaze of fast and ultrafast spectroscopy: a new interesting mechanism for triplet production*

Funding: Department of Excellence 2018-2022 – AMIS (Approccio Molecolare Integrato per lo Sviluppo Sostenibile) project

## WORK EXPERIENCE

November 2017 – December 2021 **Tutor activity in Physical Chemistry 2 Laboratory**  
University of Perugia, Department of Chemistry, Biology and Biotechnology, Perugia, Italy

- Supervisor and laboratory assistant.

April 2019 – June 2019 **Erasmus Traineeship**  
Institute of Organic Chemistry and Biochemistry (IOCB) of CAS, Prague, Czech Republic  
Supervisor: Professor Josef Michl

- Application of "bracketing method" to DPIBF derivatives, capable of Singlet Fission
- Fluorescence anisotropy measurements of molecular rotors
- Quantum mechanical calculations of optimized geometries and energies with DFT and TD-DFT (Gaussian and Gauss view software) of some biradicaloids and molecular rotor.
- Introduction to the use of SIMPLE program.

January 2022 – May 2022 **Erasmus Traineeship**  
Chalmers University of Technology, Department of Chemistry and Chemical Engineering, Gothenburg, Sweden  
Supervisor: Professor Bo Albinsson

- Total internal reflectance fluorescence (TIRF) technique: set up construction and optimization
- Singlet fission vs excimer formation: application of TIRF technique to 9,10-bisphenylthethynyl-anthracene derivatives

## JOB RELATED SKILLS

Good command of Word, Excel, Power Point gained during the studies. Good command of Origin Pro gained during the university courses.  
Basic knowledge of programming language Fortran77.

Good command of steady-state and time-resolved spectroscopic techniques: Uv-Vis absorption and fluorescence, time-correlated single photon counting, nanosecond flash photolysis and femtosecond transient absorption and fluorescence up-conversion experiments. Data analysis with Global fit using Surface Explorer software and Global or Target analysis by using GloTarAn software.

Basic knowledge of GaussView and Gaussian09 software to compile and perform quantum mechanical calculations (structure and energy optimization, electronic and vibrational transitions prediction, ...)

## LANGUAGE SKILLS

Mother tongue **Italian**

Other language **English**

UNDERSTANDING		SPEAKING		WRITING
Listening	Reading	Spoken interaction	Spoken production	
B2	C1	B2	B2	C1

Online Linguistic Support Certificate: Level C1 (July 1<sup>st</sup> 2019)

## PUBLICATIONS

1. New Styryl Phenanthroline Derivatives as Model D- $\pi$ -A- $\pi$ -D Materials for Non-Linear Optics, C. Bonaccorso, A. Cesaretti, F. Elisei, L. Mencaroni, A. Spalletti and C.G. Fortuna, ChemPhysChem, 2018, 19, 1 - 14 <https://doi.org/10.1002/cphc.201800391>.
2. Photoinduced Intramolecular Charge Transfer and Hyperpolarizability Coefficient in Push-Pull Pyridinium Salts with Increasing Strength of the Acceptor Group, A. Cesaretti, C. Bonaccorso, F. Elisei, C. G. Fortuna, L. Mencaroni, A. Spalletti, ChemPlusChem, 2018, 83, 1021 - 1031 <https://doi.org/10.1002/cplu.201800393>.

3. Competition Between Fluorescence and Triplet Production Ruled by Nitro Groups in One-arm and Two-arm styrylbenzene heteroanalogues, L. Mencaroni, B. Carlotti, A. Cesaretti, F. Elisei, A. Grgičević, I. Škorić, A. Spalletti, *Photochem. Photobiol. Sci.* 2020, 19, 1665 - 1676 <https://doi.org/10.1039/D0PP00271B>.
4. Nonlinear Optical Properties of a New Panchromatic Series of Water-soluble Bicationic Push-pull Fluorophores, L. Mencaroni, C. Bonaccorso, V. Botti, B. Carlotti, G. Consiglio, F. Elisei, C. G. Fortuna, A. Spalletti, A. Cesaretti, *Dyes and Pigments*, 2021, 194, 109620 <https://doi.org/10.1016/j.dyepig.2021.109620>.
5. Exploring a new class of singlet fission fluorene derivatives with high-energy triplets. L. Mencaroni, B. Carlotti, F. Elisei, A. Marrocchi, A. Spalletti, *Chemical science*, 2022, 13(7), 2071-2078. <https://doi.org/10.1039/D1SC07175K>
6. Acid–base strength and acido (fluoro) chromism of three push–pull derivatives of 2, 6-distyrylpyridine, L. Mencaroni, A. Cesaretti, F. Elisei, I. Škorić, M. Mlakić, A. Spalletti, *Photochemical & Photobiological Sciences*, 2022, 21, 935–947. <https://doi.org/10.1007/s43630-022-00184-5>.
7. Amphiphilicity-Controlled Localization of Red Emitting Bicationic Fluorophores in Tumor Cells Acting as Bio-Probes and Anticancer Drugs. A. Cesaretti, L. Mencaroni, C. Bonaccorso, V. Botti, E. Calzoni, B. Carlotti, C.G. Fortuna, N. Montegiove, A. Spalletti, F. Elisei. *Molecules*, 2022, 27(12), 3713. <https://doi.org/10.3390/molecules27123713>.

## ORAL COMMUNICATIONS

1. Photophysical Characterization and Nonlinear Optical (NLO) properties of Organic Bi-cationic Push-pull Compounds Promising as New fluorescent Bioprobes, L. Mencaroni, V. Botti, B. Carlotti, A. Cesaretti, F. Elisei, A. Spalletti, WINTER SCHOOL ON BIOTECHNOLOGY 7th EDITION – Virtual edition 18th-25th January 2021, Perugia, Italy
2. Singlet Fission in Push-pull Fluorene Derivatives under the Gaze of Fast and Ultrafast Spectroscopy, Giornata di discussione sui Metodi Chimico Fisici utilizzati per lo studio di fasi condensate: informazioni dall'interazione tra fotoni e materiali, (GIF, Gruppo di Fotochimica Italiano – SCI) February 24th 2021, on line event, Italy
3. Photophysical Characterization of water-soluble bicationic push-pull systems, L. Mencaroni, B. Carlotti, A. Cesaretti, F. Elisei, A. Spalletti, GIORNATE ITALIANE DI FOTOCHIMICA (GIF, Gruppo di Fotochimica Italiano – SCI) September 23rd-24th 2021, on line event, Italy
4. Singlet Fission Footprints in a new class of Fluorene Derivatives: Charge-Transfer Mediation and Possible Implications, L. Mencaroni, B. Carlotti, F. Elisei, A. Marrocchi, A. Spalletti, ITALIAN PHOTOCHEMISTRY MEETING 2021 (GIF, Gruppo di Fotochimica Italiano – SCI), December, 16-18, Turin, Italy

## POSTERS

1. Unusual photobehaviour of dinitro-distyrylbenzene like compounds: involvement of Singlet Fission? B. Carlotti, V. Botti, L. Mencaroni, F. Elisei, A. Spalletti, page 61 of Book of Abstracts, UK-IT JOINT MEETING ON PHOTOCHEMISTRY 2019, 24 – 26 June 2019 Conference center – Hotel Aktea, Lipari, Italy
2. Singlet Fission in Fluorene Derivatives under the Gaze of Fast and Ultrafast Spectroscopy, L. Mencaroni, B. Carlotti, F. Elisei, A. Marrocchi, A. Spalletti, INTERNATIONAL CONFERENCE ON PHOTOCHEMISTRY 2021 VIRTUAL – Geneve, Switzerland
3. Applying TIRF to highly concentrated 9,10-BPEA samples, L. Mencaroni, B. Carlotti, R. Ringström, A. Spalletti, B. Albinsson, PHOTOIUPAC 2022, 17 – 22 July 2022 – Amsterdam, The Netherlands

## INTERNATIONAL PHD SCHOOL

1. NOAH-INFUSION JOINT VIRTUAL SCHOOL, School of Electrochemistry, Photochemistry and Photophysics of Organic, Inorganic and Hybrid materials, 26th-29th October 2020
2. WINTER SCHOOL ON BIOTECHNOLOGY 7th Edition – Virtual Edition, Biotechnologies in the time of COVID-19, January 18-25, 2021, Perugia, Italy

## CO-SUPERVISION OF BACHELOR AND MASTER THESES

- Acidochromism and acid-base properties of 2,6-distyrylpyridine derivatives: protonation dynamics in the excited electronic state (2020) - Enrico Sorbelli's Bachelor thesis
- Nitro substitution as a new strategy to activate "singlet fission" in compounds bearing acetylene bridges (2020) - Martina Abeldi's Bachelor thesis
- Dynamics of photoinduced charge transfer and proton transfer in pyridine derivatives (2021) - Aurora Mancuso's Master thesis
- Fluorescence anisotropy applied for the study of rotational models (2021) - Marta Loletti's Bachelor thesis
- Rotational diffusion of conformers studied by time-resolved fluorescence anisotropy (2022) - Umberto Pelliccia's bachelor thesis
- Role of doubly excited Ag state on the photobehaviour of stilbenoid compounds- Martina Alebardi's - master thesis
- Dimerization and trimerization effect on the photobehaviour of 9,10-bis(phenylethynyl)anthracenes - Roberto Cantoni's bachelor thesis

## CERTIFICATES

- Proficiency certificate: EChem Test (Inorganic Chemistry 3)
- Online Linguistic Support Certificate: Level C1
- Best flash oral presentation (Italian Photochemistry Meeting 2021 – December, 16-18, Turin, Italy)

Date:

August 29<sup>th</sup>, 2022

Signature: \_\_\_\_\_

(Letizia Mencaroni)