

# Curriculum Vitae of Giorgia Ceselin

## Personal Information

Surname / First name **CESELIN, GIORGIA**  
Nationality Italian  
Place and Date of birth Treviso, September 30<sup>th</sup>, 1987

## Professional Experience

From July 2017 Research fellowship "**Study and simulation of structural, spectroscopic and energetic properties of organic molecules interacting with solid substrates**" at Scuola Normale Superiore. The research activity is focused on the study of the adsorption of prebiotic molecules (e.g. Glycolaldehyde, Glycolic acid) on mineral surfaces (e.g. titanium dioxide) adopting an integrated theoretical-experimental approach. The vibrational spectra of the adsorbed molecule are investigated experimentally by Diffuse Reflectance InfraRed Fourier Transform spectroscopy (DRIFTS) while the structural, energetic and vibrational properties of adsorbed molecules are simulated by quantum chemical methods rooted into density functional theory (DFT).

April 2016 – June 2017 Research fellowship "**Spectroscopic and computational techniques for astrophysical, atmospheric and radioastronomical research**" at the Department of Molecular Sciences and Nanosystems of University Ca' Foscari Venezia. The research concerned the analysis of high resolution infrared spectra recorded by means of a tunable diode laser spectrometer (TDL) installed in the laboratory of Molecular Spectroscopy of the University Ca' Foscari Venezia. On the recorded spectra the line shape analysis was carried out for retrieving the line shape parameters of the radiating species perturbed by different buffer gases of atmospheric and astrophysical relevance. These parameters included the transitions frequency of the ro-vibrational spectral lines, the pressure broadening parameters and the integrated absorption coefficients.

## Education

Date October 2015  
Title of qualification awarded **Master's degree in Chemistry and Sustainable Technologies** (110/110 summa cum laude).  
Title of the thesis "Study of the adsorption of glycolaldehyde on titanium dioxide by diffuse reflectance infrared Fourier transform spectroscopy (DRIFTS) and *ab initio* calculations".  
Name and type of organization Università Ca' Foscari Venezia.  
Date July 2012  
Title of qualification awarded **Bachelor's degree in Chemistry** (105/110).  
Title of the thesis Study of infrared spectra and vibrational analysis of 1,1 - difluoroethane (Freon 152a).  
Name and type of organization Università Ca' Foscari Venezia.  
Date June 2006  
Title of qualification awarded **Diploma of Chemical expert** (84/100).

Name and type of organization	Istituto Tecnico Industriale Statale Enrico Fermi di Treviso.
<b>Languages</b>	
Mother tongue	Italian.
Other language	English.
<b>Instrumentation for IR spectroscopy</b>	Fourier Transform spectrometers, Tunable Diode Laser spectrometers, DRIFT equipment and environmental chambers.
<b>Software for computational quantum chemistry</b>	Gaussian, Crystal, Orca, CFOUR.
<b>Software for chemical visualization</b>	GaussView, Avogadro, GabEdit, Moldraw, XCrySDen, JMol.
<b>Software</b>	Origin, Microsoft Office.
<b>Awards</b>	2018: Astrochem2@2018 award for the best poster at the II Italian Workshop on Astrochemistry Follonica (Grosseto) 13 – 16 Giugno 2018.
<b>Other courses</b>	General training of workers in security and healthy in the place of work.

---

## Publication list of Giorgia Ceselin

- 1) **G. Ceselin**, N. Tasinato, C. Puzzarini, A. Pietropolli Charmet, P. Stoppa, S. Giorgianni, "CO<sub>2</sub>-, He- and H<sub>2</sub>- broadening coefficients of SO<sub>2</sub> for  $\nu_1$  band- and ground state-transitions for astrophysical applications", Journal of Quantitative Spectroscopy and Radiative Transfer, 2017, **203**, 367-376.
- 2) **G. Ceselin**, N. Tasinato, C. Puzzarini, A. Pietropolli Charmet, P. Stoppa, S. Giorgianni, "Collision induced broadening of  $\nu_1$  band and ground state spectral lines of sulfur dioxide perturbed by N<sub>2</sub> and O<sub>2</sub>", Journal of Quantitative Spectroscopy and Radiative Transfer 2017, **198**, 155-163.
- 3) N. Tasinato, **G. Ceselin**, P. Stoppa, A. Pietropolli Charmet, S. Giorgianni, "A bit of sugar on titanium dioxide: quantum chemical insight on the adsorption of glycolaldehyde over TiO<sub>2</sub>", Journal of Physical Chemistry C, 2018, **122**, 6041-6051.
- 4) N. Tasinato, **G. Ceselin**, A. Pietropolli Charmet, P. Stoppa, S. Giorgianni, "Line-by-line spectroscopic parameters of HCF-32 ro-vibrational transitions within the atmospheric window around 8.2  $\mu\text{m}$ " Journal of Molecular Spectroscopy, 2018, **348**, 57-63.
- 5) A. Gambi, A. Pietropolli Charmet, P. Stoppa, N. Tasinato, **G. Ceselin**, V. Barone, "Molecular synthons for accurate structural determinations: the equilibrium geometry of 1-chloro-1-fluoroethene", Physical Chemistry Chemical Physics, **In Press**. 2018 (DOI: 10.1039/C8CP04888F).

## Congress Communication list of Giorgia Ceselin

- 1) N. Tasinato, **G. Ceselin**, G. Saran, P. Stoppa, A. Pietropolli Charmet, S. Giorgianni, "Integrated experimental and computational vibrational spectroscopy of HFC-152a", **TP33**, The twenty-third International Conference on High Resolution Molecular Spectroscopy, Bologna (Italy), p. 212, 2014.
- 2) N. Tasinato, **G. Ceselin**, G. Saran, P. Stoppa, A. Pietropolli Charmet, S. Giorgianni, "Vibrational analysis, absorption cross sections and quantum chemical calculations of HFC-152a", **Q8**, 24<sup>th</sup> Colloquium on High Resolution Molecular Spectroscopy, Dijon (France), 2015.
- 3) N. Tasinato, **G. Ceselin**, P. Stoppa, A. Pietropolli Charmet, S. Giorgianni, "Unveiling the Adsorption Interaction of Glycolaldehyde on TiO<sub>2</sub> - Anatase (1 0 1) by Quantum Chemical Calculations", XXVI Congresso Nazionale della Società Chimica Italiana, Paestum (Italy) 2017.
- 4) **G. Ceselin**, N. Tasinato, C. Puzzarini, A. Pietropolli Charmet, P. Stoppa, S. Giorgianni, "Determination of SO<sub>2</sub>-H<sub>2</sub>, -He and -CO<sub>2</sub> pressure broadening coefficients in the infrared and millimeter/sub-millimeter spectral regions", The 25<sup>th</sup> Colloquium on High Resolution Molecular Spectroscopy, Helsinki (Finland), 2017.
- 5) **G. Ceselin**, N. Tasinato, C. Puzzarini, A. Pietropolli Charmet, P. Stoppa, S. Giorgianni, "N<sub>2</sub>-, O<sub>2</sub>- and air-pressure broadening coefficients of SO<sub>2</sub> for  $\nu_1$  band and ground state transitions for atmospheric applications", The 25<sup>th</sup> Colloquium on High Resolution Molecular Spectroscopy, Helsinki (Finland), 2017.
- 6) **G. Ceselin**, N. Tasinato, P. Stoppa, A. Pietropolli Charmet, S. Giorgianni, "Unveiling the adsorption of glycolaldehyde on TiO<sub>2</sub> - Anatase (1 0 1) by quantum chemical calculations" II Italian Workshop on Astrochemistry, Follonica (Italy), 2018.