

2021-05-17

## Alessandra Del Giudice

### Current Position

- 01/05/2018 – present**      **Post-doctoral researcher**  
Sapienza University of Rome (Italy), Department of Chemistry
- Structural studies on soft matter systems
  - Management of a lab SAXS facility (SAXSLab Sapienza, installation in October 2018) ▪ SAXS data analysis
- 01/05/2017 – 30/04/2018**      **Post-doctoral researcher**  
Sapienza University of Rome (Italy), Department of Chemistry / CNIS
- Structural studies with X-ray scattering techniques

### Education

- 2013-2016**      **PhD in Chemical Sciences**  
Sapienza University of Rome (Italy)  
*Classification:* with honors  
*Thesis:* “Structural and spectroscopic studies of proteins in stress conditions”  
*Field:* Physical Chemistry, Biophysical Chemistry  
*Courses attended:* Biopolymers and biomaterials, Structural characterization of materials
- 2011-2013**      **Master's Degree in Chemistry (Inorganic-Physical Chemistry)**  
Sapienza University of Rome (Italy)  
*Classification:* 110/110 *cum laude*  
*Thesis:* “Denaturation and stabilization of Human Serum Albumin: combined effect of drugs”
- 2007-2011**      **Bachelor's Degree in Chemistry**  
Sapienza University of Rome (Italy)  
*Classification:* 110/110 *cum laude*  
*Thesis:* “The effect of pH on the stability of Human Serum Albumin: spectroscopic investigations”

### Scientific activities

- Research experience**
- April 2014- present**  
Sapienza University of Rome, Department of Chemistry  
Structural and spectroscopic studies of proteins in stress conditions
- May 2018 – present**  
Sapienza University of Rome, Department of Chemistry (Prof. Luciano Galantini, Prof. Anita Scipioni, Prof. Giancarlo Masci, Dr. Mauro Giustini)  
Characterization of supramolecular structures formed by amphiphilic molecules based on biological precursors
- January 2020 – present**  
Sapienza University of Rome, Department of Chemistry (Prof. Paola D'Angelo, Prof.

Alessandra Gentili)  
Structural studies on natural deep eutectic solvents

**May 2017 – present**

Sapienza University of Rome, Department of Chemistry (Prof. Luciano Galantini) and Lund University, Division of Physical Chemistry (Prof. Karin Schillén)  
Characterization of bile-salts and charged block copolymer mixtures

**April 2018 – present**

Collaboration with Lund University, Division of Physical Chemistry (Prof. Ulf Olsson) Self-assembly of model amphiphilic peptides

**November 2013- present**

Collaboration with the University of Bologna, Department of Pharmacy and Biotechnology (Prof. Francesca Sparla) and Department of Chemistry (Prof. Simona Fermani)  
Small angle X-ray scattering study of photosynthetic proteins and their regulatory complexes

**April -July 2016**

Lund University, Division of Pure and Applied Biochemistry (Soft biomaterials and catalysts group, Dr. Cedric Dicko) and Division of Physical Chemistry (Prof. Karin Schillén). (*Visiting PhD student with Erasmus + Unipharm Graduates Scholarship*)  
Molecular aspects of fiber forming proteins.

**March - September 2015**

Lund University, Division of Pure and Applied Biochemistry (Dr. Cedric Dicko) and Max Lab Synchrotron (I911-SAXS beamline).  
 (*Visiting PhD student with Erasmus + Unipharm Graduates Scholarship*) Multi-probe characterization of protein processes.

**Publications**

**Transition from Molecular- to Nano-Scale Segregation in a Deep Eutectic Solvent - Water Mixture**

Busato, M.; Di Lisio, V.; Del Giudice, A.; Tomai, P.; Migliorati, V.; Galantini, L.; Gentili, A.; Martinelli, A.; D'Angelo, P.  
*J. Mol. Liq.* **2021**, *331*, 115747.

**Tuning lipid structure by bile salts: hexosomes for topical administration of catechin**

Fornasier, M.; Pireddu, R.; Del Giudice, A.; Sinico, C.; Nylander, T.; Schillén, K.; Galantini, L.; Murgia, S.  
*Colloids Surfaces B Biointerfaces* **2021**, *199*, 111564.

**Insights about the interaction of methotrexate loaded hydrophilic gold nanoparticles: Spectroscopic, morphological and structural characterizations**

Cerra, S.; Matassa, R.; Beltrán, A. M.; Familiari, G.; Battocchio, C.; Pis, I.; Sciubba, F.; Scaramuzza, F. A.; Del Giudice, A.; Fratoddi, I. *Mater. Sci. Eng. C* **2020**, *117*.

**Poloxamer/sodium cholate co-formulation for micellar encapsulation of doxorubicin with high efficiency for intracellular delivery: An in-vitro bioavailability study**

Tasca, E.; Andreozzi, P.; Del Giudice, A.; Galantini, L.; Schillén, K.; Maria Giuliani, A.; Ramirez, M. de los A.; Moya, S. E.; Giustini, M. *J. Colloid Interface Sci.* **2020**, *579*, 551–561.

**Effect of temperature on the association behavior in aqueous mixtures of an oppositely charged amphiphilic block copolymer and bile salt**

G. Du, [A. Del Giudice](#), V. Alfredsson, A. M. Carnerup, N. V. Pavel, W. Loh, G. Masci, B. Nyström, L. Galantini, K. Schillén *Polymer*, **2020**, *206*, 122871.

**Self-Assembly of Model Amphiphilic Peptides in Nonaqueous Solvents: Changing the Driving Force for Aggregation Does Not Change the Fibril Structure**

A. Del Giudice, A. Rüter, N. V. Pavel, L. Galantini, U. Olsson *Langmuir*, **2020**, *36* (29), 8451–8460.

**Polymorphic Self-Organization of Lauroyl Peptide in Response to pH and Concentration**

F. Novelli, A. Strofaldi, S. De Santis, [A. Del Giudice](#), S. Casciardi, L. Galantini, S. Morosetti, N. V. Pavel, G. Masci, A. Scipioni *Langmuir* **2020**, *acs.langmuir.9b02924*.

**C-12 vs C-3 Substituted Bile Salts: An Example of the Effects of Substituent Position and Orientation on the Self-Assembly of Steroid Surfactant Isomers**

J. Cautela, E. Severoni, C. Redondo-Gómez, M. C. di Gregorio, [A. Del Giudice](#), S. Sennato, R. Angelini, M. D'Abramo, K. Schillén, L. Galantini *Colloids Surfaces B Biointerfaces* **2020**, *185*.

**Deoxycholic acid and l-Phenylalanine enrich their hydrogel properties when combined in a zwitterionic derivative**

L. Travaglini, M. C. di Gregorio, E. Severoni, A. D'Annibale, S. Sennato, F. Tardani, M. Giustini, M. Gubitosi, [A. Del Giudice](#), L. Galantini *J. Colloid Interface Sci.* **2019**, *554*, 453-462.

**Tuning and controlling the shape of mesoporous silica particles with CTAB/sodium deoxycholate catanionic mixtures**

L. Travaglini, P. Picchetti, [A. Del Giudice](#), L. Galantini, L. De Cola *Micropor. Mesopor. Mat.*, **2019**, *279*, 423-431.

**Arabidopsis and Chlamydomonas phosphoribulokinase crystal structures complete the redox structural proteome of the Calvin–Benson cycle**

L. Gurrieri, [A. Del Giudice](#), N. Demitri, G. Falini, N. V. Pavel, M. Zaffagnini, M. Polentarutti, P. Crozet, C. H. Marchand, J. Henri, P. Trost, S. D. Lemaire, F. Sparla, S. Fermani *PNAS*, **2019**, *116* (16), 8048-8053.

**A fluorescence study of the loading and time stability of doxorubicin in sodium cholate/PEO-PPO-PEO triblock copolymer mixed micelles**

E. Tasca, [A. Del Giudice](#), L. Galantini, K. Schillén, A. M. Giuliani, M. Giustini *J. Colloid Interface Sci.*, **2019**, *540*, 593-601.

**Block copolymers as bile salt sequestrants: Intriguing structures formed in a mixture of an oppositely charged amphiphilic block copolymer and bile salt**

K. Schillén, L. Galantini, G. Du, [A. Del Giudice](#), V. Alfredsson, A. M. Carnerup, N. V. Pavel, G. Masci, B. Nyström *Phys. Chem. Chem. Phys.*, **2019**, *21*, 12518-12529.

**Bile Salts: Natural Surfactants and Precursors of a Broad Family of Complex Amphiphiles**

M.C. di Gregorio, L. Travaglini, [A. Del Giudice](#), J. Cautela, N.V. Pavel, L. Galantini *Langmuir*, **2019**, *35* (21), 6803-6821.

**The Effect of Fatty Acid Binding in the Acid Isomerizations of Albumin Investigated With a Continuous Acidification Method**

A. Del Giudice, C. Dicko, L. Galantini, N. V. Pavel  
*Colloids and Surfaces B: Biointerfaces*, **2018**, *168*, 109-116.

**Time-dependent pH scanning of the acid-induced unfolding of human serum albumin reveals stabilization of the native form by palmitic acid binding**

A. Del Giudice, C. Dicko, L. Galantini, N. V. Pavel  
*J. Phys. Chem. B*, **2017**, *121* (17), 4388–4399.

**Structural response of Human Serum Albumin to oxidation: biological buffer to local formation of hypochlorite.**

A. Del Giudice, C. Dicko, L. Galantini, N. V. Pavel  
*J. Phys. Chem. B* **2016**, *120* (48), 12261–12271.

**Unravelling the shape and structural assembly of the photosynthetic GAPDH-CP12-PRK complex from *Arabidopsis thaliana* by small-angle X-ray scattering analysis.**

A. Del Giudice, N. V. Pavel, L. Galantini, G. Falini, P. Trost, S. Fermani, F. Sparla *Acta Crystallogr. Sect. D Biol. Crystallogr.* **2015**, *71*, 2372–2385.

**Ibuprofen and Propofol Cobinding Effect on Human Serum Albumin Unfolding in Urea**

A. Del Giudice, C. Leggio, N. Balasco, L. Galantini, N. V. Pavel  
*J. Phys. Chem. B* **2014**, *118*, 10043–10051.

**Conference Self-assembly of model amphiphilic peptides in non-aqueous solvents: changing driving forces, same structure?**

A. Del Giudice, A. Rüter, N. V. Pavel, L. Galantini, U. Olsson  
Workshop divisionale di Chimica Fisica della Società Chimica Italiana, 14-15/12/2020

**X-ray scattering methods for industrial applications - a focus on the small angles**

A. Del Giudice  
NanoInnovation 2020, Rome, 15-18/09/2020

**Polymorphic self-organization of lipopeptides with single or double lauroyl chains**

A. Del Giudice, F. Novelli, S. De Santis, L. Galantini, N. V. Pavel, G. Masci, A. Scipioni  
Mini-Symposium on "Peptide Self-Assembly"  
Chemical Center, Lund University, Lund, 05/03/2020 (invited speaker)

**Self-assembly of model amphiphilic peptides in non-aqueous solvents: changing driving forces, same structure?**

A. Del Giudice, A. Rüter, N. V. Pavel, L. Galantini, U. Olsson  
33<sup>rd</sup> ECIS conference, Leuven, 8-13/09/2019

**The effect of fatty acid binding in the acid isomerizations of albumin investigated with a continuous acidification method**

A. Del Giudice, C. Dicko, L. Galantini, N. V. Pavel  
XLVII Congresso Nazionale della Divisione di Chimica Fisica, Rome, 1-4/07/2019

**The structural response of Human Serum Albumin to oxidation: a biological buffer to local formation of hypochlorite**

A. Del Giudice, C. Dicko, L. Galantini, N. V. Pavel  
VIII Convegno Giovani Ricercatori del Dipartimento di Chimica, Sapienza University of Rome, 25-26/06/2019

**The effect of fatty acid binding in the acid isomerizations of albumin investigated with a continuous acidification method**

A. Del Giudice, C. Dicko, L. Galantini, N. V. Pavel  
Biophysics@Rome, Rome, 15-16/05/2019

**The structural response of Human Serum Albumin to oxidation: a biological buffer to local formation of hypochlorite**

A. Del Giudice, C. Dicko, L. Galantini, N. V. Pavel  
XXIV Congresso Nazionale della Società Italiana di Biofisica Pura e Applicata, Ancona, 1013/09/2018

**The structural response of Human Serum Albumin to oxidation: a biological buffer to local formation of hypochlorite**

A. Del Giudice, C. Dicko, L. Galantini, N. V. Pavel  
XXVI Congresso Nazionale della Società Chimica Italiana, Paestum, 10-14/09/2017

**Time-dependent pH scanning of the acid-induced unfolding of Human Serum Albumin**

A. Del Giudice, C. Dicko, L. Galantini, N. V. Pavel  
31<sup>st</sup> ECIS conference, Madrid, 3-8/09/2017

**The structural response of Human Serum Albumin to oxidation: a biological buffer to local formation of hypochlorite**

A. Del Giudice, C. Dicko, L. Galantini, N. V. Pavel  
16<sup>th</sup> European Student Colloid Conference, Florence, 19-22/06/2017.

**Structural insights into the shape and assembly of photosynthetic GAPDH/CP12/PRK complex by small angle X-ray scattering**

A. Del Giudice, S. Fermani, F. Sparla, P. Trost, N. V. Pavel  
2<sup>nd</sup> Joint AIC-SILS Conference, Florence, September 15-18 2014.

**Schools and courses**

**International workshop GISAXS 2019**  
22– 24 November 2019, DESY, Hamburg, Germany

**Training course on Small Angle X-ray Scattering techniques on the Xeuss SAXS/WAXS equipment**

8– 11 October 2018, Rome, Italy

**São Paulo FAPESP School on Biophysical Methods to Study Biomolecular Interactions**

16– 26 October 2017, São Paulo, Brasil

**ECIS 2016 Training Course - Colloids and Interfaces in Cultural Heritage**

1- 3 September 2016, Rome, Italy

**13<sup>th</sup> European Summer School on “Scattering Methods Applied to Soft Condensed Matter”**

20 - 27 June 2016, Bombannes, France

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**46<sup>th</sup> IFF Spring School - Functional Soft Matter**

23 February - 6 March 2015, Forschungszentrum Jülich, Germany

**Higher European Research Course for Users of Large Experimental Systems.**

Session B: applications to biomolecular structure and dynamics

23 February - 26 March 2014, Grenoble/Saclay, France

**Teaching activities**

<b>March 2021-present,</b>	SAXS: basics and applications
<b>March-May 2020</b>	Course for PhD students Sapienza University of Rome, Department of Chemistry
<b>11/12/2020</b>	Lecture on SAXS data treatment and analysis within the course of Chimica Fisica III (Prof. Olga Russina)

**Skills**

<b>Main experimental techniques</b>	Small Angle X-Ray Scattering Light Scattering Size Exclusion Chromatography	Circular Dichroism Dynamic Fluorescence UV-visible spectroscopy
<b>Programming languages</b>	Matlab, Fortran, basics of Bash scripting	
<b>Languages</b>	Italian (Mother tongue), English (C1/C2)	

**Other accomplishments**

- ✦ Assignment of a “Finanziamento per Avvio alla Ricerca” research grant by the Sapienza University of Rome (November 2020, “Promoting functionality studies of proteins, peptides and self-assembled nanocarriers at SAXSLab Sapienza”).
- ✦ Assignment of a “Finanziamento per Avvio alla Ricerca” research grant by the Sapienza University of Rome (November 2019, “A physical-chemical view on the consequences of protein chemical damage induced by hypochlorite: studying model proteins to understand general phenomena”).
- ✦ “Langmuir” prize for the oral presentation at the European Colloids and Interface Society conference (September 2019, “Self-assembly of model amphiphilic peptides in non-aqueous solvents: changing driving forces, same structure?”)
- ✦ Award for the best oral presentation by a young scientist at the national meeting of the Division of Physical Chemistry of the Italian Chemical Society (July 2019, “The effect of fatty acid binding in the acid isomerizations of albumin investigated with a continuous acidification method”)
- ✦ Award for the best oral presentation at the “Convegno Giovani Ricercatori” at the Department of

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Chemistry, Sapienza University of Rome (June 2019, “The structural response of Human Serum Albumin to oxidation: a biological buffer to local formation of hypochlorite”)

- ✦ Successful candidate for the assignment of the Erasmus + Unipharma Graduates scholarship (2016 and 2015).
- ✦ Assignment of a “Finanziamento per Avvio alla Ricerca” research grant by the Sapienza University of Rome (2015, “Human Albumin in oxidative stress conditions: structural and spectroscopic studies to characterize the oxidation process and the evaluation of the protective effect of antioxidants”).
- ✦ Winner of a grant for a collaboration as tutor at the Department of Chemistry, Sapienza University of Rome (March-August 2014, for the Spectroscopy course).
- ✦ Acknowledged as "Excellent graduate" of the academic year 2013 by the Sapienza University of Rome.
- ✦ Qualification to professional practice as Chemist (2013).