

Giuseppe Cavallaro

November 2017

PERSONAL AND EDUCATION

Born: April 26, 1983 in Palermo (Italy)

March 13, 2014. Ph.D. in Chemical Sciences at the University of Palermo. Defended thesis: "Innovative smart materials designed for environmental purposes". The examination committee approved with the vote of "very good".

April 10, 2017. National Scientific Habilitation as Associate Professor in Physical Chemistry awarded by Italian Ministry of University and Research (MIUR).

ACADEMIC EMPLOYMENT AND SCIENTIFIC STAGES

December 2006-April 2007. Stage at the laboratory of *ARPA Sicilia* on analytical techniques for the determination of inorganic and organic contaminants in wastewater. Palermo (Italy).

May 2009-June 2009. Stage at the laboratory of *TA Instruments* on dynamic mechanical analysis of viscoelastic materials. Milan (Italy).

July 2009 – September 2009. Stage at the laboratory of *Experimental Zooprophyllactic Institute* on treatment of the urban waste. Palermo (Italy).

October 2010-December 2010. Research contract - Department of Physical Chemistry "F. Accascina", University of Palermo (Italy).

April 2013 – October 2013. Research stage at the laboratories supervised by Prof. Yuri Lvov, *Institute of Micromanufacturing at Louisiana Tech University (USA)*.

March 2014-March 2015. Post doc at Department of Physics and Chemistry - University of Palermo (Italy).

October 2015-January 2017. Post doc at Department of Physics and Chemistry - University of Palermo (Italy).

October 2016-July 2017. Post doc at Technische Universität Berlin-Institut für Chemie (Germany) within the DAAD Research Project.

GRANTS AND AWARDS

April 2011. Grant from “Associazione Italiana di Calorimetria ed Analisi Termica” to attend the *10th Mediterranean Conference on Calorimetry and Thermal Analysis*, Porto (Portugal) 24-27 July 2011.

November 2011. Grant from “ECOST Action D43” to attend the “Training School: Fluids and Solid Interfaces”, Sofia (Bulgaria) 12 – 15 April 2011.

July 12, 2014. Award for the best oral presentation at the “*Summer School for Thermal Analysis Techniques*” organized within The Erasmus Intensive Programme (IP) at Thessaloniki (Greece).

September 8, 2014. *G. Semerano Award* for the best PhD thesis in Physical Chemistry sponsored by Italian Chemical Society.

September 9, 2014. *A. Lucci Award* for young Italian scientist who has been outstanding in the field of Calorimetry or Thermal Analysis sponsored by "Associazione Italiana di Calorimetria ed Analisi Termica".

March 13, 2016. The paper “Ind. Eng. Chem. Res. 2016, 55, 7373–7380” was identified as the Best Presentation in the session “PMSE” of the 2016 ACS Spring National Meeting in San Diego, CA, US .

August 14, 2016. *ICTAC Grant Award* for Young Scientists sponsored by the International Calorimetry and Thermal Analysis Community within the International Meeting held at Orlando, FL, US.

October, 2016. Research Grants Awards for Doctoral Candidates and Young Academics and Scientists (more than 6 months), 2016/17 (57210260) sponsored by the German Academic Exchange Service (DAAD)

August 28, 2017. *CEEC-TAC Grant Award* for Young Scientists sponsored by the Eastern and Central Calorimetry and Thermal Analysis Community within the International Meeting held at Chisinau, Moldova.

SEMINARS AND ORAL COMMUNICATIONS

July 27, 2011. Speaker of the communication “Interactions between nanoclays and biopolymers evidenced by extensive thermodynamic and structural studies” held at *10th Mediterranean Conference on Calorimetry and Thermal Analysis*. Porto (Portugal).

September 18, 2013. Speaker of the seminar “Aqueous colloidal stability and solubilization ability of ionic Surfactant/Clay nanotubes hybrids” held at *Louisiana Tech University* (USA). Ruston, LA, US.

September 10, 2014. Speaker of the Lucci Award Lecture “Calorimetry and thermal analysis: valuable techniques for the development of eco-compatible nanomaterials” held at *XXXVI National Congress on Calorimetry, Thermal Analysis and Applied Thermodynamics*. Cagliari (Italy).

June 14, 2016. Speaker of the Keynote lecture “Inorganic micelles based on halloysite nanotubes and ionic surfactants: structural properties, colloidal stability and solubilization ability” held at VII Meeting of Young Chemists. Rome (Italy).

August 15, 2016. Speaker of the communication "Hybrids based on biopolymer/halloysite clay nanotubes for cultural heritage applications" held at 2016 International Confederation for Thermal Analysis and Calorimetry (ICTAC)". Orlando, FL, US.

October 19, 2016. Speaker of the communication "Smart nanomaterials based on clay halloysite for the treatment of art-works" held at the "Russia-Italy Round Table 2016 New Functional Materials and Prebiotic Compounds" sponsored by the Italian Embassy in the Russian Federation, Ivanovo State University of Chemistry and Technology and National Interuniversity Consortium of Materials Science and Technology Suzdal (Russia).

December 14, 2016. Speaker of the seminar “Halloysite nanotubes: properties and applications” held at Technische Universität Berlin-Institut für Chemie. Berlin (Germany).

August 29, 2017. Speaker of the communication “Composite materials based on halloysite nanotubes and differently charged biopolymers” held at “The 4th Central and Eastern European Conference for Thermal Analysis and Calorimetry”. Chisinau (Moldova).

September 11, 2017. Speaker of the communication “Hybrid nanostructures based on halloysite nanotubes and sustainable polymers” held at the “XXVI National Congress of Italian Chemical Society – Section Physical Chemistry” Paestum (Italy)

INTERNATIONAL SCHOOLS AND COURSES

September 1, 2008 – September 14, 2008. “Italian-Russian School: Chemistry for the Environmental Monitoring and Protection” organized by Russian Institute of Education and Ecological Researches. Palermo (Italy).

April 12, 2011 – April 15, 2011. “Training School: Fluids and Solid Interfaces” organized within the European project ECOST Action D43 “Colloid and Interface Science Nanotechnology”. Sofia (Bulgaria).

June 19, 2011 – June 24, 2011. “Summer School of Calorimetry 2011: Calorimetry and thermal methods in catalysis” organized by IRCELYON (Institut de Recherches sur la Catalyse et l'Environnement de Lyon) and CNRS (Centre national de la recherche scientifique). Lyon (France).

March 8, 2012 – March 16, 2012. 08/03/2012-16/03/2012. Berlin School on Neutron Scattering held in Lise Meitner Campus/Helmholtz-Zentrum Berlin für Materialien und Energie. Berlin (Germany).

December 14, 2012 – December 16, 2012. “1st Winter School - Renewable Energy Systems and Green Nanotechnologies for a Clean Environment”. Drobeta-Turnu Severin (Romania)

April 15, 2013 – May 15, 2013. 15/04/2013 – 15/05/2013 “Nanofabrication by Self-Assembly” course held by Prof. Yuri Lvov at Louisiana Tech University – Institute of Micromanufacturing. Ruston (Louisiana – USA).

April 27, 2014 – June 01, 2014. Tutorial on SANS data at the *Technischen Universitat Berlin (Germany)*.

June 16, 2014 – June 20, 2014. 16/06/2014 – 20/06/2014 “1st Soft Matter School” held by the Italian Chemistry Society – Physical Chemistry Division. San Servolo – Venezia (Italy)

June 29, 2014 – July 12, 2014. 29/06/2014 – 12/07/2014 “Summer School for Thermal Analysis Techniques” organized within The Erasmus Intensive Programme (IP) Thessaloniki (Greece).

July 22, 2014 – July 24, 2014. “2nd Summer School - Renewable Energy Systems and Green Nanotechnologies for a Clean Environment”. Palermo (Italy).

ORGANIZING ACTIVITIES

December 14, 2012 – December 16, 2016. Component of the Organizing Committee for the “1st Winter School - Renewable Energy Systems and Green Nanotechnologies for a Clean Environment”. Drobeta-Turnu Severin (Romania).

August 27, 2013 – August 30, 2013. Component of the Organizing Committee for the “2nd Central and Eastern European Conference for Thermal Analysis and Calorimetry”. Vilnius (Lituania).

July 22, 2014 – July 24, 2014. Component of the Organizing Committee for the “2nd Summer School - Renewable Energy Systems and Green Nanotechnologies for a Clean Environment”. Palermo (Italy).

August 25, 2015 – August 28, 2015. Component of the Executive Committee for the “3rd Central and Eastern European Conference for Thermal Analysis and Calorimetry”. Ljubljana (Slovenia).

EXPERIMENTS AT LARGE FACILITIES

April 18, 2012 – April 22, 2012. “Institut Laue-Langevin” Grenoble (France), Small Angle Neutron Scattering measurements (Instrument D11).

September 24, 2012 – September 28, 2012. “Institut Laue-Langevin” Grenoble (France), Small Angle Neutron Scattering measurements (Instrument D11).

January 12, 2013 – January 19, 2013. “Helmholtz-Zentrum” Berlin (Germany), Small Angle Neutron Scattering measurements (Instrument V4).

September 22, 2016 – September 27, 2016. “Helmholtz-Zentrum” Berlin (Germany), Small Angle Neutron Scattering measurements (Instrument V16).

November 24, 2016 – November 28, 2016. “Institut Laue-Langevin” Grenoble (France), Small Angle Neutron Scattering measurements (Instrument D11).

May 28, 2017 – June 02, 2017. “Helmholtz-Zentrum” Berlin (Germany), Small Angle Neutron Scattering measurements (Instrument V16).

REFeree ACTIVITIES

Referee of the following scientific journals: Journal of Composites Science, Nanoscale, Journal of Thermal Analysis and Calorimetry, Langmuir, Journal of Physical Chemistry C, Journal of Inorganic and Organometallic Polymers and Materials, Clay Minerals, Food Packaging and Shell Life, International Journal of Biological Macromolecules, Clay Minerals. Carbohydrate Polymers, Applied Clay Science, Applied Surface Science, Journal of Composites Science, Materials Today Communication, Bioresources, Polymer Testing, Journal of Colloid and Interface Science, Journal of King Saud University, .

PUBLICATIONS IN ISI JOURNALS

- 1) **G. Cavallaro**, G. Lazzara, S. Milioto
Dispersions of nanoclays of different shapes into aqueous and solid biopolymeric matrices.
Extended physicochemical study
Langmuir 27, 1158, **2011**
- 2) **G. Cavallaro**, D. I. Donato, G. Lazzara, S. Milioto
A comparative thermogravimetric study of waterlogged archaeological and sound woods
J. Therm. Anal. Calorim. 104, 451, **2011**

- 3) **G. Cavallaro**, R. De Lisi, G. Lazzara, S. Milioto
Bionanocomposites based on pectins and halloysite nanotubes
ACS symposium 104, 83, **2011**
- 4) **G. Cavallaro**, D. I. Donato, G. Lazzara, S. Milioto
Films of halloysite nanotubes sandwiched between two layers of biopolymer: from the morphology to the dielectric, thermal, transparency, and wettability properties
J. Phys. Chem. C 115, 20491, **2011**
- 5) **G. Cavallaro**, G. Lazzara, S. Milioto
Aqueous phase/nanoparticles interface: hydroxypropyl cellulose adsorption and desorption triggered by temperature and inorganic salts
Soft Matter, 8, 3627, **2012**
- 6) **G. Cavallaro**, G. Lazzara, S. Milioto
Exploiting the colloidal stability and solubilization ability of clay nanotubes/ionic surfactant hybrid nanomaterials.
J. Phys. Chem. C 116, 21932, **2012**
- 7) **G. Cavallaro**, D. I. Donato, G. Lazzara, S. Milioto
Determining the selective impregnation of waterlogged archaeological woods with poly(ethylene) glycols mixtures by differential scanning calorimetry
J. Therm. Anal. Calorim. 111, 1449, **2013**
- 8) **G. Cavallaro**, R. De Lisi, G. Lazzara, S. Milioto
Polyethylene glycol/clay nanotubes composites: thermal properties and structure.
J. Therm. Anal. Calorim. 112, 383, **2013**
- 9) **G. Cavallaro**, A. Gianguzza, G. Lazzara, S. Milioto, D. Piazzese
Alginate-clay nanotubes hybrid gel beads.
Appl. Clay Sci. 72, 132, **2013**
- 10) M. Massaro, S. Riela, **G. Cavallaro**, M. L. Saladino, S. Agnello, R. Noto.
Properties and structural studies of multi-wall carbon nanotube-phosphate ester hybrids.
Int. J. Org. Chem. 3, 26, **2013**
- 11) **G. Cavallaro**, R. De Lisi, G. Lazzara, S. Milioto
Clay nanotubes/ionic surfactant: Smart hybrid nanomaterials for the solubilization of hydrophobic compounds in aqueous media
ACS symposium 108, 13, **2013**
- 12) **G. Cavallaro**, G. Lazzara, S. Milioto
Sustainable nanocomposites based on halloysite nanotubes and pectin/polyethylene glycol blend
Polym. Degrad. Stab. 98, 2529, **2013**
- 13) S. Cataldo, **G. Cavallaro**, A. Gianguzza, G. Lazzara, A. Pettignano, D. Piazzese, I. Villaescusa

Kinetic and equilibrium study for cadmium and copper removal from aqueous solutions by sorption onto mixed alginate/pectin gel beads

J. Env. Chem. Eng. 1, 1252, **2013**

14) **G. Cavallaro**, G. Lazzara, S. Milioto, G. Palmisan, F. Parisi
Halloysite Nanotube with Fluorinated Lumen: Non-Foaming Nanocontainer for Storage and Controlled Release of Oxygen in Aqueous Media

J. Colloid Int. Sci. 417, 66, **2014**

15) M. Massaro, S. Riela, **G. Cavallaro**, M. Gruttadauria, S. Milioto, R. Noto, G. Lazzara
Eco-friendly functionalization of natural halloysite clay nanotube with ionic liquids by microwave irradiation for Suzuki coupling reaction

J. Organomet. Chem. 749, 410, **2014**

16) **G. Cavallaro**, G. Lazzara, S. Milioto, F. Parisi, V. Sanzillo
Modified Halloysite Nanotubes: nanoarchitectures for enhancing capture of oils from vapor and liquid phases

ACS Appl. Mater. Inter. 6, 606, **2014**

17) F. Arcudi, **G. Cavallaro**, G. Lazzara, M. Massaro, S. Milioto, R. Noto, S. Riela
Selective Functionalization of Halloysite Cavity by Click Reaction: Structured Filler for Enhancing Mechanical Properties of Bionanocomposite Films

J. Phys. Chem. 118, 15095, 2014

18) **G. Cavallaro**, G. Lazzara, S. Milioto, F. Parisi, V. Sanzillo
Halloysite nanotubes as sustainable nanofiller for paper consolidation and protection

J. Therm. Anal. Calorim. 117, 1293, **2014**

19) **G. Cavallaro**, G. Lazzara, S. Konnova, R. Fakhrullin, Y. Lvov
Composites films of natural clay nanotubes with cellulose and chitosan

Green Materials 2, 232, **2014**

20) M. Massaro, S. Riela, P. Lo Meo, R. Noto, **G. Cavallaro**, S. Milioto, G. Lazzara
Functionalized halloysite multivalent glycocluster as a new drug delivery system

J. Mater. Chem. B 2, 7732, **2014**

21) Y. Zhao, **G. Cavallaro**, Y. Lvov
Orientation of charged clay nanotubes in evaporating droplet meniscus

J. Colloid Int. Sci. 440, 68, **2015**

22) **G. Cavallaro**, G. Lazzara, S. Milioto, F. Parisi
Mixed Aggregates based on tetronic-fluorinated surfactants for selective oils capture
Colloid.Surf.A:Physicochem. Eng. Aspects 474, 85, **2015**

23) **G. Cavallaro**, G. Lazzara, M. Massaro, S. Milioto, R. Noto, F. Parisi, S. Riela
Biocompatible poly(N-isopropylacrylamide)-halloysite nanotubes for thermoresponsive curcumin release

J. Phys. Chem. C 119, 8944, **2015**

24) M. Massaro, S. Piana, C. G. Colletti, R. Noto, S. Riela, C. Baiamonte, C. Giordano, G. Pizzolanti, **G. Cavallaro**, S. Milioto, G. Lazzara
Multicavity halloysite–amphiphilic cyclodextrins hybrids for co-delivery of natural drugs into thyroid cancer cells

J. Mater. Chem. B 3, 4044, **2015**

25) **G. Cavallaro**, G. Lazzara, S. Milioto, F. Parisi
Thermodynamics of supramolecular systems based on tetronic and cyclodextrin
Russian Chemical Journal 1, 6, **2015**

26) **G. Cavallaro**, G. Lazzara, S. Milioto, F. Parisi
Hydrophobically modified halloysite nanotubes as reverse micelles for water-in-oil emulsion
Langmuir 31, 7472, **2015**

27) **G. Cavallaro**, G. Lazzara, S. Milioto, F. Parisi, V. Sparacino
Thermal and dynamic mechanical properties of beeswax-halloysite nanocomposites for consolidating waterlogged archaeological woods
Polym. Degrad. Stab. 120, 220, **2015**

28) M. Massaro, S. Riela, **G. Cavallaro**, C. G. Colletti, S. Milioto, R. Noto, F. Parisi, G. Lazzara
Palladium supported on halloysite-triazolium salts as catalyst for ligand free Suzuki cross-coupling in water under microwave irradiation
J. Mol. Catal. A: Chem. 408, 12, **2015**

29) **G. Cavallaro**, G. Lazzara, S. Milioto, F. Parisi
Steric stabilization of modified nanoclays triggered by temperature
J. Colloid Int. Sci. 461, 3468, **2015**

30) I. Calabrese, **G. Cavallaro**, G. Lazzara, M. Merli, L. Sciascia, M.L. Turco Liveri
Preparation and characterization of bio-organoclays using nonionic surfactant
Adsorption 22, 105, **2016**

31) M. Massaro, V. Schembri, V. Campisciano, **G. Cavallaro**, G. Lazzara, S. Milioto, R. Noto, F. Parisi, S. Riela,
Design of PNIPAAm Covalently Grafted on Halloysite Nanotubes as Support for Metal-Based Catalysts
RSC Adv. 6, 55312, **2016**

32) M. Massaro, R. Amorati, **G. Cavallaro**, S. Guernelli, G. Lazzara, S. Milioto, R. Noto, P. Poma, S. Riela
Direct chemical grafted curcumin on halloysite nanotubes as dual-responsive prodrug for pharmacological applications
Colloid.Surf.B: Biointerfaces 140, 505, **2016**

33) M. Massaro, S. Riela, **G. Cavallaro**, C. G. Colletti, S. Milioto, R. Noto, G. Lazzara

Ecocompatible Halloysite/Cucurbit[8]uril Hybrid as Efficient Nanosponge for Pollutants Removal

Chemistry Select 1, 1773, **2016**

34) **G. Cavallaro**, I. Grillo, M. Gradzielski, G. Lazzara

Structure of Hybrid Materials Based on Halloysite Nanotubes Filled with Anionic Surfactants

J. Phys. Chem. C 120, 13492, **2016**

35) V. Bertolino, **G. Cavallaro**, G. Lazzara, M. Merli, S. Milioto, F. Parisi, L. Sciascia

Effect of the biopolymer charge and the nanoclay morphology on nanocomposite materials

Ind. Eng. Chem. Res., 55, 7373, **2016**.

36) G. Biddeci, **G. Cavallaro**, F. Di Blasi, G. Lazzara, M. Massaro, S. Milioto, F. Parisi, S. Riela, G. Spinelli G.

Halloysite nanotubes loaded with peppermint essential oil as filler for functional biopolymer film.

Carb. Polym. 152, 548, **2016**.

37) NT. Dintcheva, G. Catalano, R. Arrigo, E. Morici, G. Cavallaro, G. Lazzara, M. Bruno
Pluronic nanoparticles as anti-oxidant carriers for polymers.

Polym. Degr. Stab. 134, 194, **2016**.

38) **G. Cavallaro**, G. Lazzara, S. Milioto, F. Parisi

Halloysite nanotubes with fluorinated cavity: an innovative consolidant for paper treatment.

Clay Minerals 51,445, **2016**.

39) F. Ferrante, N. Armata, **G. Cavallaro**, G. Lazzara

Adsorption Studies of Molecules on the Halloysite Surfaces: a Computational and Experimental Investigation

J. Phys. Chem. C 121, 2951, **2017**

40) V. Bertolino, **G. Cavallaro**, G. Lazzara, S. Milioto, F. Parisi

Biopolymer-Targeted Adsorption onto Halloysite Nanotubes in Aqueous Media

Langmuir, , 33, 3317, **2017**

41) V.A. Cataldo, **G. Cavallaro**, G. Lazzara, S. Milioto, F. Parisi

Coffee grounds as filler for pectin: Green composites with competitive performances dependent on the UV irradiation

Carb. Polym. 170, 198, **2017**

42) M. Makaremi, P. Pasbakhsh, **G. Cavallaro**, G. Lazzara, Y.K. Aw, S.M. Lee, S. Milioto
Bionanocomposites for Food Packaging Applications

ACS Appl. Mater. Inter. 9, 17476, **2017**

43) R. Arrigo, NT. Dintcheva, G. Catalano, E. Morici, **G. Cavallaro**, G. Lazzara, M. Bruno
Polymeric micelles as a new generation of anti-oxidant carriers

Polimery, 62, 729, **2017**

44) **G. Cavallaro**, G. Lazzara, S. Milioto, F. Parisi, F. Ruisi
Nanocomposites based on esterified colophony and halloysite clay nanotubes as consolidants for waterlogged archaeological woods
Cellulose, 24, 1, **2017**

45) **G. Cavallaro**, A. A. Danilushkina, V. G. Evtugyn, G. Lazzara, S. Milioto, F. Parisi, I. E. V. Rozhina, R. F. Fakhrullin
Halloysite Nanotubes: Controlled Access and Release by Smart Gates
Nanomaterials, 7, 199, **2017**

BOOKS

1) Contribution to the book “Terracuda e nanotecnologie – Tradizione, Innovazione, Sostenibilità” di F. Scalisi and C. Sposito. (Aracne Editor). May, 2013.

Author of the chapter “Correlazioni struttura-proprietà di materiali compositi nanoargilla/biopolimero”

2) Contribution to the book “Functional Polymer Composites with Nanoclays” by Y. Lvov, B. Guo, R. F Fakhrullin (RSC Publishing). October 2016 (ISBN: 978-1-78262-422-6)

Author of the chapter “Halloysite based smart hybrid nanomaterials for the solubilization of hydrophobic compounds in aqueous media”

Palermo, 02 November, 2017
Giuseppe Cavallaro

