Francesco Amato

WORK EXPERIENCES & EDUCATION

Sep. 2021-present — Postdoctoral fellowship
Sapienza University of Rome
Project title: "Synthesis and characterization of graphene-based nanomaterials for advanced applications"
Supervisor: Prof. A. G. Marrani

Nov. 2017-Apr. 2021 — PhD in Nanotechnology
University of Trieste (Department of Chemical and Pharmaceutical Sciences)
Thesis title: "Synthesis, characterization and applications of Carbon Nanodots"
Supervisor: Prof. M. Prato

May 2016-Jan. 2017
Mar. 2017-Aug. 2017 — Postgraduate scholarship
ATeN Center UniPa (Advanced Technologies Network Center)
Nanotechnology for the diagnostic of the cultural heritage: preparation and characterization of nanomaterials for Surface Enhanced Raman Scattering applications
Supervisor: Prof. S. Agnello

May 2015-Nov. 2015 — Postgraduate scholarship
University of Palermo (Department of Physics and Chemistry) & Laviosa Minerals Srl
Design, synthesis, and characterization of biocompatible bentonite/surfactant nanohybrid systems for biotechnological applications.
Supervisor: Prof. M. L. Turco Liveri

Feb. 2015-Apr. 2015 — Postgraduate training
University of Palermo (STEBICEF Department)
Synthesis and characterization of Organoindium (III) complexes with dianionic and tetradentate Schiff bases
Supervisor: Prof. G. Barone

Nov. 2012-Dec. 2014 — Master's Degree in Chemistry
University of Palermo (Department of Physics and Chemistry)
Grade: 110/110 cum Laude
Thesis title: "Synthesis and characterization of triorganotin (IV) complexes of polydentate Schiff bases"
Supervisor: Dr. M. Scopelliti

Sept. 2008-Jan. 2013 — Bachelor's Degree in Chemistry
University of Palermo (STEBICEF Department)
Grade: 96/110
Thesis title: "Synthesis, characterization and interaction with DNA of [Fe^{III}(dipyrido[3,2-a:2',3'-c]phenazine)bis(glycinate)ClO_4"
Supervisor: Prof. G. Barone

Dec. 2011-Mar. 2012 — Academic training in Mass Spectrometry

Centro Grandi Apparecchiature (CGA), Palermo

Sept. 2003-July 2008 — High School diploma - Chemical-Biological Technician

IISS "E. Ascione" Palermo

Grade: 97/100

PERSONAL SKILLS

Mother tongue(s): Italian

Other language(s):

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

Job-related skills:
UV-Vis, AAS, circular dichroism, fluorescence, FT-IR, Raman and SERS spectroscopies
Mass spectrometry and thermogravimetric analysis
AFM and TEM microscopies
Synthesis and characterization of carbon-based nanomaterials
Synthesis and characterization of metal-based nanoparticles
Solid-state synthesis

Computer skills:
Knowledge of the following O.S.: Windows, Linux Based and MacOS
Knowledge of the following analysis programs: OriginLab, Scidavis, Magic Plot and Excel

ADDITIONAL INFORMATION

Publications

1. "Analysis of transition from compact to mossy structures during galvanostatic zinc electrodeposition and its implications for CO_2 electroreduction"
   P. Altimari, S. Iacobelli, P. G. Schiavi, G. Zanellato, **F. Amato**, A. G. Marrani, O. Russina, A. Sanna, F. Pagnanelli, *Nanomaterials* **2025**, *15*, 1025.
2. "Graphite recovery and synthesis of graphene oxide from end-of-life Li-ion batteries: Impact of thermal, mechanical, and mechanochemical pretretments"
   P. G. Schiavi, L. D'Annibale, A. G. Marrani, **F. Amato**, O. Russina, S. Iacobelli, F. Mura, R. Sieweck, F. Pagnanelli, P. Altimari, *Carbon* **2025**, *238*, 120295.
3. "Isolation by dialysis and characterization of luminescent oxidized carbon nanoparticles from graphene oxide dispersions: a facile novel route towards a more controlled and homogeneous substrate with a wider applicability"
   F. Amato*, M. Fazi, L. Giaccari, S. Colecchia, G. Perini, V. Palmieri, M. Papi, P. Altimari, A. Motta, M. Giustini, R. Zanoni, A. G. Marrani, *Nanotechnology* **2025**, *36*, 185602. **corresponding autohor*.
4. "The osteoconductive properties of graphene-based material surfaces are finely tuned by

the conditioning layer and surface chemistry"
F. Tiberio*, **F. Amato***, C. Desiderio, F. Vincenzoni, G. Perini, I. Moretti, A. Augello, G. Friggeri, L. Cui, L. Giaccari, M. Salvati, L. Polito, O. Parolini, M. De Spirito, A. G. Marrani, W. Lattanzi, M. Papi, L. Di Pietro, V. Palmieri, *Mater. Adv.* **2024**, *5*, 4772-4785. *authors contributed equally to this work.

5. "Multifunctional scaffolds for biomedical applications: crafting versatile solutions with polycaprolactone enriched by graphene oxide"
G. Friggeri, I. Moretti, **F. Amato**, A. G. Marrani, F. Sciandra, S. G. Colombarolli, A. Vitali, S. Viscuso, A. Augello, L. Cui, G. Perini, M. De Spirito, M. Papi, V. Palmieri, *APL Bioeng*. **2024**, *8*, 016115.

6. "Targeting the Antifungal Activity of Carbon Dots against Candida albicans Biofilm Formation by tailoring their Surface Functional Groups"
E. Sturabotti, A. Camilli, V. G. Moldoveanu, G. Bonincontro, G. Simonetti, A. Valletta, I. Serangeli, E. Miranda, **F. Amato**, A. G. Marrani, L. M. Migneco, S. Sennato, B. Simonis, F. Vetica, F. Leonelli, *Chem. Eur. J.* **2023**, e202303631.

7. "Fabrication of fluorescent PMMA-carbon nanodots optical fibers and their feasibility in improving solar cells efficiency using low-cost sustainable materials"
M. C. P. Soares, M. Cacioppo, **F. Amato**, T. D. Cabrals, M. N. Carreño, I. Pereyra, C. A. S. Ramos, M. Cid, G. S. Goveia, J. F. D. Chubaci, E. Fujiwara, J. R. Bartoli, *Braz. J. Chem. Eng.* **2023**.

8. "Improving Solar Cells Efficiency with PMMA-Carbon Dots Nanocomposite"
M. Soares, **F. Amato**, T. Cabral, M. Cacioppo, M. Carreño, I. Pereyra, C. Ramos, M. Cid, G. Goveia, J. Chubaci, M. Prato, J. Bartoli, E. Fujiwara*, 2023 International Conference on Optical MEMS and Nanophotonics (OMN) and SBFoton International Optics and Photonics Conference (SBFoton IOPC)*, Campinas, Brazil, **2023**, pp. *1-2*.

9. "Aqueous electrochemical delithiation of cathode materials as a strategy to selectively recover lithium from waste lithium-ion batteries"
P. G. Schiavi, A. G. Marrani, O. Russina, L. D'Annibale, **F. Amato**, F. Pagnanelli, P. Altimari, *J. Energy Chem*. **2024**, *88*, 144-153.

10. "Assessing the evolution of oxygenated functional groups on the graphene oxide surface upon mild thermal annealing in water"
F. Amato, I. Ferrari, A. Motta, R. Zanoni, E. A. Dalchiele, A. G. Marrani, *RSC Adv.* **2023**, *13*, 29308-29315.

11. "Self-Assembling Peptide-Based Magnetogels for the Removal of Heavy Metals from Water"
F. H. Haghighi, R. Binaymotlagh, L. Chronopoulou, S. Cerra, A. G. Marrani, **F. Amato**, C. Palocci, I. Fratoddi, *Gels* **2023**, *9*, 621.

12. "Unlocking the stability of Reduced Graphene Oxide nanosheets in biological media via use of sodium ascorbate"
F. Amato, G. Perini, G. Friggeri, A. Augello, A. Motta, L. Giaccari, R. Zanoni, M. De Spirito, V. Palmieri, A. G. Marrani, M. Papi, *Adv. Mater. Interfaces* **2023**, 2300105.

13. "One-pot carboxyl enrichment fosters water dispersibility of reduced graphene oxide: a combined experimental and theoretical assessment"
F. Amato*, A. Motta, L. Giaccari, R. Di Pasquale, F. A. Scaramuzzo, R. Zanoni, A. G. Marrani,

Nanoscale Adv. **2023**, *5*, 893-906. **corresponding autohor*.

14. "Tailoring the Chemical Structure in Nitrogen-Doped Carbon Dots for Nano-Aminocatalysis in Aqueous Media"
G. Gentile, M. Marmone, C. Rosso, **F. Amato**, C. Lanfrit, G. Filippini, M. Prato, *ChemSusChem* **2023**, *e202202399*.

15. "Graphene oxide-mediated copper reduction allows comparative evaluation of oxygenated reactive residues exposure on the materials surface in a simple one-step method"
V. Palmieri, **F. Amato**, A. G. Marrani, G. Friggeri, G. Perini, A. Augello, M. De Spirito, M. Papi, *Appl. Surf. Sci.* **2023**, *615*, 156315.

16. "Understanding the nature of graphene oxide functional groups by modulation of the electrochemical reduction: a combined experimental and theoretical approach"
I. Ferrari, A. Motta, R. Zanoni, F. A. Scaramuzzo, **F. Amato**, E. A. Dalchiele, A. G. Marrani, *Carbon* **2023**, *203*, 29.

17. "Self-Healing and Reprocessable Oleic Acid-Based Elastomer with Dynamic S-S Bonds as Solvent-Free Reusable Adhesive on Copper Surface"
L. Pettazzoni, F. Leonelli, A. G. Marrani, L. M. Migneco, F. Vetica, L. Celio, V. Napoleone, S. Alfano, A. Colecchia, **F. Amato**, V. Di Lisio, A. Martinelli, *Polymers* **2022**, *14*(22), 4919.

18. "Green In Situ Synthesis of Silver Nanoparticles-Peptide Hydrogel Composites: Investigation of Their Antibacterial Activities"
R. Binaymotlagh, A. Del Giudice, S. Mignardi, **F. Amato**, A. G. Marrani, F. Sivori, I. Cavallo, E. G. Di Domenico, C. Palocci, L. Chronopoulou *Gels* **2022**, *8,* 700.

19. "Efficient and Stable Perovskite Solar Cells Based on Nitrogen-Doped Carbon Nanodots"
S. Collavini, **F. Amato**, A. Cabrera-Espinoza, F. Arcudi, L. Đorđević, I. Kosta, M. Prato, J. L. Delgado, *Energy Technol.* **2022**, *10*, 2101059.

20. "Transfer of Axial Chirality to the Nanoscale Endows Carbon Nanodots with Circularly Polarized Luminescence"
S. Di Noja, **F. Amato**, F. Zinna, L. Di Bari, G. Ragazzon, M. Prato, *Angew. Chemie Int. Ed.* **2022**, *61*, e202202397.

21. "Nuclear Magnetic Resonance Reveals Molecular Species in Carbon Nanodot Samples Disclosing Flaws"
B. Bartolomei, A. Bogo, **F. Amato**, G. Ragazzon, M. Prato, *Angew. Chem. Int. Ed.* **2022**, *61*, e202200038.

22. "Effect of Electrolytic Medium in the Electrochemical Reduction of Graphene Oxide on Si(111) as Probed by XPS"
A. G. Marrani, A. Motta, **F. Amato**, R. Schrebler, R. Zanoni, E. A. Dalchiele, *Nanomaterials* **2022**, *12*, 43.

23. "Agarose-Based Fluorescent Waveguide with Embedded Silica Nanoparticle-Carbon Nanodot Hybrids for pH Sensing"
F. Amato, M. C. Prado Soares, T. Destri Cabral, E. Fujiwara, C. Monteiro de Barros Cordeiro, A. Criado, M. Prato, J. R. Bartoli, *ACS Appl. Nano Mater.* **2021**, *4*, 9738-9751.

24. "Mapping the Surface Groups of Amine-Rich Carbon Dots Enables Covalent Catalysis in Aqueous Media"
G. Filippini, **F. Amato**, C. Rosso, G. Ragazzon, A. Vega-Peñaloza, X. Companyó, L. Dell'Amico, M. Bonchio, M. Prato, *Chem* **2020**, *6*, 3022-3037.

25. "Nitrogen-doped Carbon Nanodots/PMMA Nanocomposites for Solar Cells Applications"
F. Amato, M. Cacioppo, F. Arcudi, M. Prato, M. Mituo, E. G. Fernandes, M. N. P. Carreño, I. Pereyra, J. R. Bartoli, *Chem. Eng. Trans.* **2019**, *74*, 1105-1110.

26. "Luminescence Efficiency of Si/SiO_2 Nanoparticles Produced by Laser Ablation"
M. Cannas, P. Camarda, L. Vaccaro, **F. Amato**, F. Messina, T. Fiore, S. Agnello, F. M. Gelardi, *Phys. Status Solidi A* **2019**, *216*, 1800565.

27. "Enhancing the luminescence efficiency of silicon-nanocrystals by interaction with H^+ ions"
M. Cannas, P. Camarda, L. Vaccaro, **F. Amato**, F. Messina, T. Fiore, M. Li Vigni, *Phys. Chem. Chem. Phys.* **2018**, *20*, 10445-10449.

28. "Inkjet printing Ag nanoparticles for SERS hot spots"
C. Miccichè, G. Arrabito, **F. Amato**, G. Buscarino, S. Agnello, B. Pignataro, *Anal. Methods* **2018**, *10*, 3215-3223.

29. "Ag nanoparticles agargel nanocomposites for SERS detection of cultural heritage interest pigments"
F. Amato, C. Miccichè, M. Cannas, F. M. Gelardi, B. Pignataro, M. Li Vigni, S. Agnello, *Eur. Phys. J. Plus* **2018**, *133*, 74.

Participation in conferences, schools & workshops

1. "European Graphene Forum 2024" conference, Oct. 23-25, 2024, Barcelona, Spain. Oral presentation.

2. "Focus on 2D Materials for Regenerative Medicine" workshop, Nov. 29-30, 2023, Università Cattolica del Sacro Cuore, Rome, Italy. Invited Speaker.

3. "Graphene 2023" conference, June 27-30, 2023, Manchester, United Kingdom. Oral presentation.

4. "First Symposium for Young Chemists: Innovation and Sustainability (SYNC2022)", June 20-23, 2022, Roma, Italy. Oral presentation.

5. "International School of Chemistry", September 01-06, 2020, Camerino, Italy.

6. "Annual Workshop of the PhD program in Nanotechnology", January 22, 2020, Trieste, Italy. Oral presentation.

7. School of Nanomedicine, October 11-13, 2019, Trieste, Italy.

8. "Workshop on Low-Dimensional Materials", July 22-23, 2019, San Sebastiàn, Spain. Oral presentation.

9. "Modena Award 2019" symposium, May 3, 2019, Padova, Italy.

10. "Carbon Nanodots-based hybrids for Oxygen Reduction Reaction", **F. Amato**, L. Đorđević, F. Arcudi, G. Valenti, L. Meng, F. Paolucci, M. Prato, E-WISPOC, January 29-February 1, 2019, Bressanone, Italy. Poster presentation.

11. "Annual workshop of the PhD program in Nanotechnology", January 22, 2019, Trieste, Italy. Oral presentation.

12. "XXII International conference on Organic Synthesis", September 16-21, 2018, Florence, Italy.

13. Workshop on analytical data and limit values in Chemistry, October 20, 2010, Palermo, Italy.

Academic training

Course on Transmission Electron Microscopy analysis (TEM) at the Department of Life Sciences, University of Trieste, 30 hours.

Teaching activity

1. Academic course of 24 hours in the PhD in Chemical Sciences, academic year 2023/24, Sapienza University of Rome;

2. Academic course of 24 hours in the PhD in Chemical Sciences, academic year 2024/25, Sapienza University of Rome.

Tutoring activities

1. *Co-advisor* in the master thesis entitled: "Synthesis, purification and characterization of chiral Carbon Dots". Master's degree in chemistry, University of Trieste, July 2021.

2. General Chemistry with laboratory and elements of Organic, bachelor's degree program in Geology, University of Trieste, 35 hours, 2019-2020.

3. Advanced Organic Chemistry, master's degree program in Chemistry and Pharmaceutical Technologies (CTF), University of Trieste, 2 hours, 2020.

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