

PERSONAL INFORMATION

Name and Surname: **Alessio Adamiano.**

Researcher unique identifier(s): **<https://orcid.org/0000-0002-2077-0411>**

Nationality: **Italian**

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• TEN YEARS TRACK RECORD

Alessio obtained his PhD in Environmental Science with a project on the analysis of protein driving biomineralization processes in 2012. Over the last eight years, he has been investigating the applications of calcium phosphate materials to agriculture, green chemistry, cosmetic, regenerative and nano-medicine. He was one of the two winners of the “Green & Sustainable Chemistry Challenge” promoted by the Elsevier Foundation held during the 3rd Elsevier Green Chemistry Conference held on May 2018. On May 2019, he was awarded by the United Nations Industrial Development Organization (UNIDO-Italy) with the International Award for Innovation in the Agribusiness 2019 for the project “phos-FATE: towards a circular economy of smart phosphorous fertilizers” on the conversion of fishery by-products from artisanal fishing activated in Senegal into valuable agricultural products. He is author of more than 70 publications in international peer-reviewed journals. (h-index 23 on google scholar, 21 on scopus) and two international patents. In 2020, he was the winner of the business plan competition promoted in the framework of the Interreg Mediterranean European project MISTRAL (Italy 2020) with the business idea “Recover Ingredients”. The project was awarded with 3.000,00 € by the Municipality of Ravenna. In 2020, he won the special “Eloquence Price” during the European phase of MISTRAL business plan competition for the same project.

He is Head of Research Unit and WP leader in the framework of national and international research projects. He is founder and Chief Innovation Officer of the CNR-Spinoff company “Recover Ingredients S.p.A.” that researches, develops and produces new innovative materials for cosmetic and agronomic applications from the circular economy of food by products. In 2021, this business project was listed among the “100 Best Industrial Innovations for International Technology Transfer” program of ZGC forum that took place in Beijing, China, in the field of “New Materials”.

He is Editorial Board Member and Guest Editor of international peer-reviewed journals as Applied Sciences (I.F 2.679, MDPI), Agriculture (I.F 3.408, MDPI), and Nanomaterials (I.F 5.719, MDPI). He volunteers for non-profit organizations supporting fragile population groups (e.g., Empori Solidali Case Zanardi, CIVIBO - Cucine Popolari and Mensa dell’Antoniano among others) and promoting environmental awareness (Plastic Free).

• EDUCATION

- 2006 – 2008 Master
Environmental Sciences second level school, Bologna University, Ravenna, Italy
- 2009 – 2012 PhD in Environmental Science
C.I.R.S.A, Interdepartmental Centre of Research for Environmental Sciences, University of Bologna
- 2018 BioBusiness School - Comprehensive Advanced Program on BioEntrepreneurship at USI, Università della Svizzera italiana.

• CURRENT POSITION(S)

- 2021 – 2023 Chief Innovation Officer and board member of Recover Ingredients S.p.A.
CNR –Spinoff company.
- 2023-ongoing Senior Researcher
CNR-ISSMC (Italian national research council – Faenza, Via Granarolo 64, 48018)

• PREVIOUS POSITIONS

- 2012 – 2013 Postdoctoral Researcher
Department of Chemistry “G.Ciamician”, University of Bologna
- 2013 – 2014 Postdoctoral Researcher
CNR-ISTEC (Italian national research council – Faenza)
- 2014 – 2016 Senior postdoctoral Researcher
CNR-ISTEC (Italian national research council – Faenza)
- 2016 – 2018 Research Fellow
CNR-ISTEC (Italian national research council – Faenza)
- 2018 – 2022 Researcher
CNR-ISTEC (Italian national research council – Faenza)

- **GRANTS AND AWARDS**

- 2018 International Award. “Elsevier Foundation Green and Sustainable Chemistry Challenge” – Elsevier Foundation. Netherlands for the project “phos-FATE: Empowering fishing communities against Climate Change”.
- 2018 Travel grant for young researchers under 35. Assigned by the Italian Embassy of Seoul for the project “Development of calcium phosphate nanoparticles functionalized with humic acid as nanocarriers of phosphorous and biostimulant for crops growth”.
- 2019 International Award. “Innovative Ideas and Technologies In Agribusiness”, category Under 35, within the framework of the Expo “EXCO2019 - The International Cooperation Expo” May 15-17 2019, Rome. Award assigned by United Nation for Industrial Development Organization (UNIDO)
- 2019 Climate-KIC Greenhouse program – Award for the project “phosFATE” assigned by: EIT-Climate KIC
- 2020 Winner of the special “Eloquence Price” during the European phase of MISTRAL business plan competition with the Project “Recover Ingredients”.
- 2020 Winner of the business plan competition promoted in the framework of the Interreg Mediterranean European project MISTRAL with the business idea “Recover Ingredients”.

- **SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS**

- 2009 – 2012 Master Students:3
C.I.R.S.A, Interdepartmental Centre of Research for Environmental Sciences, University of Bologna
- 2013 – 2023 Post-doctoral Researcher:1 / PhD:3 / Assistant researcher: 2 / Master Students:4
CNR-ISSM (former ISTEC) (Italian national research council – Faenza)

- **TEACHING ACTIVITIES**

- 2010 Teaching position: Lecturer on Contract. Type of course - International Master's Degree in Science for conservation - restoration of Cultural Heritage. Teaching subject – Laboratory of Analytical chemistry.
- 2011 Teaching position: Lecturer on Contract. Type of course - International Master's Degree in Science for conservation - restoration of Cultural Heritage. Teaching subject – Laboratory of Analytical chemistry of organic materials.
University of Bologna - Department of Chemistry G.Ciamician
- 2012 Teaching position: Lecturer on Contract. Type of course - International Master's Degree in Science for conservation - restoration of Cultural Heritage. Teaching subject – Laboratory of Analytical chemistry of organic materials.
University of Bologna - Department of Chemistry G.Ciamician
- 2019 Lecturer. Seminar teaching subject - Application of nanofertilizers. Ph.D. in Science and Biotechnology Agriculture - University of Udine.
- 2020 Relator. Entrepreneurial school organized in the framework of the H2020-MSCA-ITN "POLYTHEA" project. Athens, Greece.
- 2020 Relator. Re-think Circular Economy Forum. Milan, Italy.
- 2021 Relator. “Climate Smart Ocean track” organized by Future Food Institute. Virtual event.
- 2023 Lecturer. Seminar teaching subject – Sustainable Materials. Ph.D. students in Environmental Science at the University of Bologna, Ravenna Campus.

- **ORGANISATION OF SCIENTIFIC MEETINGS**

- 2019 Organizer - Korea-Italy Bilateral Symposium on Agricultural Advancement and Sustainability – Jinju, South Korea.

- **FORMAL RESPONSIBILITIES**

- 2016 – 2017 Responsible of the Synthesis Laboratory of Biomaterials. CNR-ISTEC, Faenza.
- 2021-2024 Founder and Chief Innovation Officer of the CNR-Spinoff company “Recover Ingredients S.p.A.”.
- 2025-2029 Coordinator of the EU Horizon Europe project entitled “NATURAL BIO-MASS AND MICROBIAL BIO-CONTROL AGENT SOLUTIONS FOR THE REPLACEMENT OF CONTENTIOUS INPUTS IN ORGANIC FARMING - BIO2” Call: HORIZON-CL6-2024-FARM2FORK-02. Topic: HORIZON-CL6-2024-FARM2FORK-02-1-two-stage Type of action: HORIZON Innovation Actions. Total Budget: 6.0 M€

- **EDITOR ACTIVITIES**

- 2020 Editorial Board Member of "Agricultural Engineering" section, Applied Sciences — Open Access Journal (MDPI)
- 2020 Editor of the Special issue: Applications of Nanoparticles in Nanomedicine: The Rising Path of Bioceramics in the Nano-Era", Applied Sciences — Open Access Journal (MDPI)
- **PARTECIPATION IN NATIONAL AND INTERNATIONAL PROJECT**
- 2012-2013 Key personnel: working in the framework of CORALWARM (FP7/2007-2013, agreement n° 249930) on the investigation of the effect of protein on the mineralization of calcite in Mediterranean corals. Research Unit funding: 1.335.632,00 €.
- 2013-2015 Key personnel: working in the framework of NANOREG (FP7/2007-2013, agreement n° 310584) on the development of common protocols for nanomaterials testing, in WP2 on the establishment and recommendation on SOPs for analysing the size-distribution and volume-specific surface area of manufactured nanomaterials in powders and complex viscous matrices. Research Unit funding: 159.666,33 €.
- 2013-2016 Key personnel: from 2013 to 2016, working in the framework of SMILEY (NMP-2012-SMALL, agreement n° 310637) on the synthesis and characterization of multi-substituted apatite and biomineralization process for the development of materials for fabric-integrated photovoltaics. Research Unit funding: 1.417.360,00 €.
- 2015-2016 Key personnel: from 2015 to 2016, working in the framework of CNR Flagship Project “Nanomax – miRnano (PNR-CNR 2011-2015) Face up Cardiac Hypertrophy via micro-RNA carried by Electrically Charged Nanoparticles” on the synthesis and characterization of hydroxyapatite magnetic nanoparticles. Research Unit funding: 300.000,00 €.
- 2016-2018 Key personnel: working in the framework of the POR-FESR 2014-2020; ASSE 1 Ricerca e Innovazione project entitled “NIPROGEN: La natura ispira processi innovativi per lo sviluppo di impianti per la medicina rigenerativa a elevato grado di vascolarizzazione e performance meccaniche”. Research Unit funding: 319.912,50 €.
- 2015-2019 Key personnel/Visiting researcher: working in the framework of the project MSCA-RISE - Marie Skłodowska-Curie Research and Innovation Staff Exchange (RISE), entitled “VivoImag: Multimodal imaging of the in vivo fate of bone transplants”. Research Funding unit: 58.500,00 €.
- 2018-2019 WP leader of the project “rECoVer”, financed by the Italian Ministry of Agricultural, Food, Forestry and Tourism Policies to tackle the issue of food waste. Research Unit funding: 50.000,00 €.
- 2018-2020 Key personnel: working in the framework of the project financed by the Fondazione Ricerca Fibrosi Cistica Onlus, entitled “Biocompatible and inhalable antimicrobial-loaded nanoparticles for the counteraction of biofilm formation and antibiotic resistance: towards a potential new therapy for CF related infections”. Research Unit funding: 16.000,00 €.
- 2018-2020 Principal investigator of the project “phos-FATE: Empowering fishing communities against climate change” founded by the Elsevier Foundation in 2018. Research Unit funding: 25.000,00 €.
- 2019-2020 Principal investigator for the Italian-South Korean bilateral project “Sviluppo di fertilizzanti smart a base di nanoparticelle di idrossiapatite” within the framework of the “Programma di visite scientifiche nella Repubblica di Corea”.
- 2017-2021 Key personnel: working in the framework of the project RIA – 2017-2021 Research and Innovation action/ H2020-EU.2.1.3, entitled “BIORIMA - BIOMaterial RIsk MAnagement”. Research Unit funding: 310.950,00 €.
- 2017-2021 Key personnel: working in the project entitled “CUPIDO - Cardio Ultraefficient nanoParticles for Inhalation of Drug prOducts” (Horizon 2020-RIA-agreement n° 720834) on the development of inhalable magnetic calcium phosphate-based nanoparticles for the regenerative therapy of the heart. Research Unit funding: 1.800.141,25 €.
- 2019-ongoing Coordinator of Research Unit for the project “The role of lipid transporter MFSD2A in the resolution of Colorectal cancer-promoting inflammation: implications for new therapeutic strategies” financed by the Italian Ministry of Health. Research Unit funding: 50.000,00 €.

- 2021-ongoing Task Leader for the project “Ultra-small Nanohybrids for Advanced Theranostics – UNAT” (H2020-MSCA-RISE-2020) on the development of new high performing nano-theranostic agents. Research Unit funding: 124.200,00 €.
- 2022-ongoing Coordinator of Research Unit for ISSMC-CNR within the Next Generation EU (NGEU) project “AgriTech - PNRR – SPOKE 3” financed by the Italian Ministry of University and Research. Research Unit funding: 200.000,00 €.
- 2023-ongoing Task Leader and Key personnel for the project “Calcium phosphate nanocomposites for improving nutrient use efficiency and crop yield and reducing loss” financed by the National Institute of Food and Agriculture (NIFA) of the United States Department of Agriculture. Research Unit funding: 140.000,00 €.

• **INVITED SPEAKER AT:**

- 2015 Nanoscience meets Metrology – International summer workshop, Erice (Italy)
- 2018 3rd Green & Sustainable Chemistry Conference. 13-16 May 2018, Berlin, Germany.
- 2018 2nd International Conference on magnetism and Magnetic Materials. Budapest, Hungary
- 2019 ECOMONDO - Frontiers of recycling and recovery, in a perspective of circular economy. Rimini, Italy.
- 2019 AgriNano Techniques Workshop. Nanoinnovation. June 11-14. 2019, Rome, Italy.
- 2019 4th Green & Sustainable Chemistry Conference. 5-8 May. 2019, Dresden, Germany.
- 2019 Korea-Italy Bilateral Symposium on Agricultural Advancement and Sustainability. Jinju, Republic of Korea.
- 2020 3rd International Conference on Bioscience & Biotechnology (ICBB2020). Pokhara, Nepal.
- 2020 Rethink – Circular Economy Forum. Milan, Italy.
- 2021 Innovation China Technology Roadshows. Hangzhou, China.
- 2021 100 Best Industrial Innovations for International Technology Transfer program of ZGC forum 2021 in the field of “New Materials”. Beijing, China.
- 2021 ECOMONDO – Italian Recovery Plan and blue circular economy. Rimini, Italy. [Click here](#)
- 2021 School of Biochar 2021 – New perspective for biochar. Organized by “Associazione ICHAR”. Firenze, Italy. [Click here](#)
- 2021 Franciscan festival of the gentile economy. Bologna, Italy. [Click here](#)
- 2022 STARTUP ROADSHOW – ClustER-Health of the Emilia-Romagna Region.

• **MAJOR RESEARCH MONOGRAPHS WHERE THE PI IS MAIN AUTHOR OR CORRESPONDING AUTHOR(*)**

- **A. Adamiano**, S. Bonacchi, N. Calonghi, D. Fabbri, G. Falini et al., Structural changes in a protein fragment from abalone shell during calcium carbonate precipitation. *Chemistry - A European Journal* (2012), 18: 14367-14374.
- **A. Adamiano***, D. Fabbri, G. Falini, M.G. Belcastro, A complementary approach using analytical pyrolysis to evaluate collagen degradation and mineral fossilization in archaeological bones. The case study of Vicenne-Campochiaro necropolis (Italy). *Journal of Analytical and Applied Pyrolysis* (2013), 100: 173-180
- **A. Adamiano**, S. Goffredo, Z. Dubinsky, O. Levi, S. Fermani, D. Fabbri, G. Falini, Analytical pyrolysis-based study on intra-skeletal organic matrices from Mediterranean corals. *Analytical and Bioanalytical Chemistry* (2014), 406: 6021-6033.
- **A. Adamiano***, N. Sangiorgi, S. Sprio, A. Ruffini, M. Sandri, A. Sanson, P. Gras, D. Grossin, C. Francés, K. Chatzipanagis, M. Bilton, B. Marzec, A. Varesano, F. Meldrum, R. Kröger, A. Tampieri, Biom mineralization of a titanium-modified hydroxyapatite semiconductor on conductive wool fibers. *Journal of Materials Chemistry B* (2017), 5(36): 7608-7621.
- **Adamiano A***, M. Iafisco, M. Sandri, M. Basini, P. Arosio, T. Canu, G. Sitia, A. Esposito, V. Iannotti, G. Ausanio, E. Frago georgi, M. Rouchota, G. Loudos, A. Lascialfari, A. Tampieri. On the use of superparamagnetic hydroxyapatite nanoparticles as an agent for magnetic and nuclear in vivo imaging. *Acta Bioamaterialia* (2018), 73: 458-469.
- **A. Adamiano**, V.M. Wu, F. Carella, G. Lamura, F. Canepa, A. Tampieri, M. Iafisco, V. Uskoković. Magnetic calcium phosphates nanocomposites for the intracellular hyperthermia of cancers of bone and brain. *Nanomedicine* (2019), 14(10): 1267-1289.
- L. Marchiol, M. Iafisco, G. Fellet, **A. Adamiano**. Nanotechnology support the next agricultural revolution:

Perspectives to enhancement of nutrient use efficiency. *Academic Press* (2020), 161: 27-116.

- Y.H. Young, J.G. Lee, L. Degli Esposti, M. Iafisco, P. Kim, S.G. Shin, J-R. Jeon, and **A. Adamiano***. "Synergistic Release of Crop Nutrients and Stimulants from Hydroxyapatite Nanoparticles Functionalized with Humic Substances: Toward a Multifunctional Nanofertilizer." *ACS omega* (2020), 5(12): 6598-6610.
- Carella F, Seck M, Degli Esposti L, Diadiou H, Maienza A, Baronti S, Vignaroli P, Vaccari FP, Iafisco M, **Adamiano A***. Thermal conversion of fish bones into fertilizers and biostimulants for plant growth—A low tech valorization process for the development of circular economy in least developed countries. *Journal of Environmental Chemical Engineering* (2021), 9(1): 104815.
- **Adamiano A***, G. Fellet, M. Vuerich, D. Scarpin, F. Carella, C. Piccirillo, J-R. Jeon, A. Pizzutti, L. Marchiol, and M. Iafisco. Calcium Phosphate Particles Coated with Humic Substances: A Potential Plant Biostimulant from Circular Economy. *Molecules* (2021), 26(9): 2810.
- Degli Esposti L, **Adamiano A**, Siliqi D, Giannini C, Iafisco M. The effect of chemical structure of carboxylate molecules on hydroxyapatite nanoparticles. A structural and morphological study. *Bioactive Materials*. (2021), 6(8): 2360.
- **Adamiano A***, Carella F, Degli Esposti L, Piccirillo C, Iafisco M. Calcium Phosphates from Fishery Byproducts as a Booster of the Sun Protection Factor in Sunscreens. *ACS Biomaterials Science & Engineering*. (2022), 8(11):4987-95.
- Falini G, Basile ML, Gandolfi S, Carella F, Guarini G, Degli Esposti L, Iafisco M, **Adamiano A***. Natural calcium phosphates from circular economy as adsorbent phases for the remediation of textile industry waste-waters. *Ceramics International*. (2023), 49(1):243-52.
- **Adamiano A**, Scialla S, Carella F, Casella M, Camerini S, Quarta A, Muntiu A, Ferrari F, Vitali A, Iafisco M, Piccirillo C. Simultaneous extraction of calcium phosphates and proteins from fish bones. Innovative valorisation of food by-products. *Journal of Cleaner Production*. (2023), 385:135656.
- Righi S, Prato E, Magnani G, Lama V, Biandolino F, Parlapiano I, Carella F, Iafisco M, **Adamiano A***. Calcium phosphates from fish bones in sunscreen: An LCA and toxicity study of an emerging material for circular economy. *Science of The Total Environment*. (2023), 862:160751.
- **PATENTS**
- Calcium phosphate coated with humic acid or phenolic polymer and uses thereof. WO EP US CN AU BR CA CA3142870A1 Priority 2019-06-07 • Filed 2019-06-07 • Published 2020-12-10.
- Physical sunscreen comprising hydroxyapatite or modified hydroxyapatite obtained from fisheries and aquaculture waste, process for its production and photoprotective compositions comprising it. WO EP US CN JP KR AU IT EP3946224A1 Priority 2019-03-28 • Filed 2020-03-27 • Published 2022-02-09.