CAREER PROFILE

Dr. Chris Franco,
Researcher (Collaborator member)
& Co-founder
MINDlab: Molecular Design & Innovation Laboratory

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Dr. Franco, 36 years-old, completed PhD (2018) in Chemistry from the Federal University of Juiz de Fora (UFJF, MG, Brazil). His PhD thesis comprised of the synthesis and catalytic applications of coordination polymers, along with X-ray crystallography. He was particularly involved in the development of the first system to use coordination polymers as heterogeneous catalysts for coupling of glycerol (Biomass) and urea to produce glycerol carbonate. After his PhD, he was hired as an Assistant Professor (2018–2020), through a competitive call (fixed contractual position), to teach theoretical-practical classes to BSc students. At that time, Dr. Franco had the opportunity to develop his pedagogical and research skills. He also established national collaborations (Brazil) and gave internal training to students in the department.

Dr. Franco moved to Portugal in 2021, where he started an Auxiliary Researcher Position at the Instituto Superior Técnico – University of Lisbon, (IST-ID). He worked on two research projects at the *Centro de Química Estrutural* (CQE/IST-ID) devoted to the synthesis, structural characterization, and applications of functional Coordination Polymers in catalysis and as antimicrobial materials. He is a collaborating researcher in the supervision of a doctoral student (G.A. Correia) within the CHAIR project "C-H Activation for Industrial Renewal" (Marie Curie innovative training/EU program, thesis defense - May 2025). He also worked as Auxiliary Researcher at CQE-IST on the project "CATCH4LIFE - Hydrothermal Catalysis & Methane Reactions for Life". Furthermore, while working in Portugal, he was able to establish international collaborations with other researchers and universities in Portugal, Brazil, Spain, India, and Poland.

Dr. Franco has participated in several research projects on the synthesis and characterization of coordination polymers and catalytic systems, as well as the biological applications of these materials. He has established collaborations with researchers from various universities and has (co-)supervised numerous students. His contributions are reflected in the publication of over 36 research papers, including five journal cover features in 2024–2025. In addition, he focuses on studying and improving the physical and chemical properties of coordination polymers and MOFs and has practical experience in the synthesis of heterogeneous catalysts. In 2024, in collaboration with Prof. Alexander Kirillov and colleagues, he co-founded MINDLab (Molecular Design & Innovation Lab), a research laboratory dedicated to advancing coordination polymers and novel materials for applications in sustainability, health, and functional innovation. Also in 2024, he took a Visiting Professor position at the Federal University of ABC (UFABC, SP, Brazil), focused on advances in nanoscience and quantum physics, aiming at the development of cutting-edge nanomaterials for medical applications.

ACHIEVEMENTS

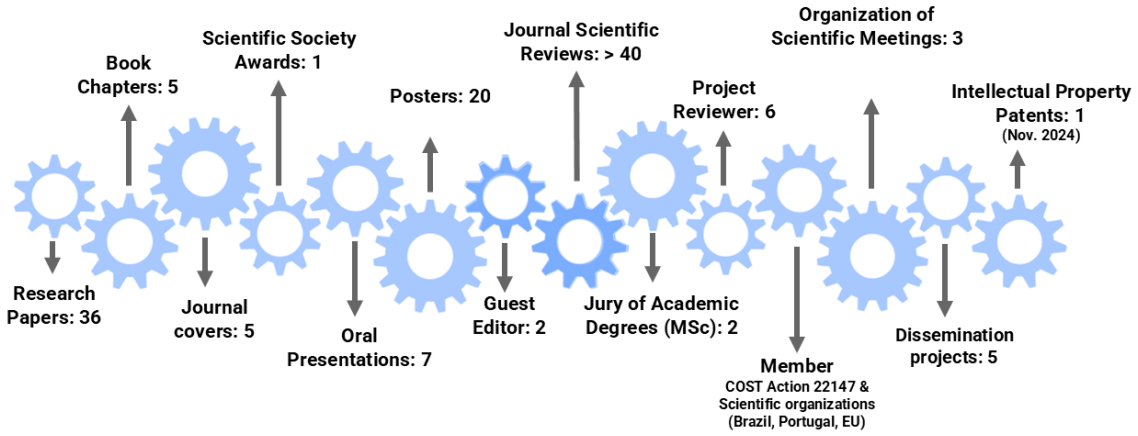
Dr. Franco has conducted research across domains related to the application of coordination compounds, including solid-state polymorphism, industrial waste valorization, CO_2 and C-H bond activation, the development of new catalysts, antimicrobial agents, metal-based compounds for the treatment of neglected diseases, and the design of innovative functional materials. Main research of Dr. Franco focuses on Coordination Chemistry, Catalysis, Crystal Engineering, and Bioinorganic Chemistry. He has published 36 peer-reviewed papers, with 85% of them appearing in Q1/Q2-ranked journals. Between 2024 and 2025, his research was featured on the covers of five prestigious international journals, including *Inorganic Chemistry*, *Green Chemistry*, *RSC Sustainability*, and *CrystEngComm*, underscoring the impact and originality of his work.

He has made pioneering contributions across several areas of chemistry, including: Developing the first catalytic system based on coordination polymers for the synthesis of glycerol carbonate from glycerol and urea; Demonstrating the proof-of-concept for 2D coordination polymers as anti-Chagas agents and publishing the first paper on metal–atovaquone coordination compounds for malaria treatment; Advancing green chemistry through studies on CO_2 fixation to cyclic carbonates and oxidation of terpenic compounds; Improving drug solubility and pharmacokinetics through co-crystallization strategies. Additionally, Dr. Franco is co-inventor of an international patent related to biomass-based technology transfer.

Research Leadership & Innovation: In 2024, Dr. Franco was awarded a competitive research grant as Principal Investigator, focused on developing advanced materials for health-related applications. He is also co-founder of MINDLab (Molecular Design & Innovation Lab), which is actively engaged in international collaborations and the supervision of graduate researchers.

Teaching & Educational Development: With over 1,500 hours of teaching experience in Brazil and Portugal, Dr. Franco has trained undergraduate and graduate students in crystallography, physical chemistry, and materials science. He has authored several book chapters that bridge theoretical and practical aspects of X-ray diffraction and structure–property relationships, providing valuable educational resources for students and researchers.

Scientific Service & Engagement: Dr. Franco contributes actively to the scientific community as a reviewer, guest editor, and invited speaker, having delivered talks at institutions in Brazil, Portugal, and Poland. Over the past three years, he has participated in five scientific outreach initiatives, reinforcing his commitment to interdisciplinary collaboration and public engagement in science.



Summary of major activities and results.