

RESEARCH FELLOW

FRANCESCA CANESTRA



CONTACT INFORMATION

-  Francescacanebra@hotmail.it
-  Via dei prè 45 - 21030 Cremenaga, Varese, Italia
-  3457201984
-  26 Mar 2000

SKILLS

- x-ray diffraction characterization
- tin iodide perovskites synthesis
- bibliographic research
- ssNMR (CPMA and LTMAS)
- VESTA, Origin and MATLAB
- Glovebox and inert atmosphere
- Thin-film spin coating
- Photoluminescence characterization

LANGUAGES

- English | Advanced. Level C1 in grammar, C1 in speaking and a C2 in listening
- German | Elementary
- Spanish | Elementary

OBJECTIVE

Graduate in Photochemistry and Molecular Materials (2025) with a bachelor's in chemistry (2022) from University of Bologna. Passionate about the intersection of photochemistry, materials science, and sustainable technologies, with a strong foundation in photochemical processes, material characterization, and analytical techniques.

Currently undertaking a research fellowship focused on developing LEDs based on 2D tin perovskites, with a particular emphasis on enhancing efficiency, stability, and scalability of next-generation light-emitting devices. Skilled in spectroscopic methods, NMR, fluorescence microscopy, and advanced material synthesis techniques.

Proficient in data analysis, problem-solving, and interdisciplinary collaboration, with a demonstrated ability to translate complex scientific concepts into innovative, practical applications. Seeking to leverage expertise in photochemistry and molecular materials to contribute to cutting-edge research in sustainable materials and next-gen optoelectronics.

EXPERIENCE

MASTER'S INTERNSHIP

Unibo, Bologna | Jun 2024 - Feb 2025
Master's internship focused on the synthesis and characterization of tin-based two-dimensional (2D) perovskites for light-emitting diode (LED) applications. The project involved the comparison of Ruddlesden-Popper and Dion-Jacobson perovskite phases to investigate the influence of organic cations on the structural and optoelectronic properties of the materials. Responsibilities included material synthesis, photophysical characterization, and advanced structural analysis using solid-state NMR spectroscopy. The work aimed to elucidate structure-property relationships critical to the development of lead-free perovskite-based optoelectronic devices.

CBI.ATTRACT PROJECT

Unibo, UniMoRe, UniFe | Feb 2024 - Jun 2024
Participated in the Challenge Based Innovation (CBI.ATTRACT) program, sponsored by the ATTRACT initiative and in collaboration with CERN. Worked with the optical fluorescence microscopy and photodetector technologies provided by Single Quantum. Contributed to the innovation by proposing and developing an application for detecting bacterial and viral infections in blood samples through fluorescence biosensors. The project utilized these advanced imaging technologies to enhance detection capabilities and improve diagnostic precision, providing a novel approach to biosensing.

BACHELOR'S INTERNSHIP

Unibo, Bologna | Mar 2022 - Jun 2022
Bachelor's internship in Crystal Engineering, focused on the design and synthesis of gallium (III)-based co-crystals for potential pharmaceutical applications. The project involved evaluating co-crystal formation through extensive use of X-ray diffraction techniques, including both single-crystal and powder XRD. The work provided hands-on experience in crystallographic methods and solid-state characterization, with the objective of understanding and controlling intermolecular interactions relevant to crystal structure and stability.

EDUCATION

MASTER'S DEGREE IN PHOTOCHEMISTRY

Alma Mater Studiorum - Unibo.
Bologna, Italia | Sep 2022 - Mar 2025
Graduated in Photochemistry with 110/110

BACHELOR'S DEGREE IN CHEMISTRY

Alma Mater Studiorum - Unibo.
Bologna, Italia | Sep 2019 - Jul 2022
Graduated in chemistry with 108/110

HIGHSCHOOL DIPLOMA

Liceo Vittorio Sereni.
Luino, Italia | 2014 - 2019
Graduated with 99/100 in a scientific high school

PROJECTS

Participated in the Challenge Based Innovation (CBI.ATTRACT) program, sponsored by the ATTRACT initiative and in collaboration with CERN. Focused on applying cutting-edge detection and imaging technologies to address real-world challenges, particularly in healthcare and biosensing. Worked on the instantaneous, automatic, and precise diagnosis of bacterial infections using computer vision techniques on fluorescent imaging with biosensors. This was achieved through the integration of a confocal microscope with a superconducting nanowire single-photon detector (SNSPD). Collaborated with Single Quantum's optical fluorescence microscopy and photodetector technologies to develop innovative applications for detecting bacterial and viral infections in blood samples. Achieved a 30L mark, reflecting strong interdisciplinary research and innovation skills, and contributing to the development of advanced diagnostic methods with high precision. This experience reinforced expertise in team collaboration, advanced imaging systems, and translating complex research into practical healthcare solutions.

CERTIFICATES & COURSES

English certificate (C1), Oxford English test, Bologna (2022)

CBI.attract, Bologna (2023) with a mark of 30L/30

CONFERENCES

Francesca Canestra, Yarong He, Nurgul Sarsembekova, Martina Santarelli, Ranita Samanta, Eleonora Previati, Stefano Stagni, Cristina Femoni, Annamaria Petrozza, Daniele Cortecchia* poster with title '*Correlating structural rigidity with amplified spontaneous emission in alkylammonium tin perovskites*' in MATSUS Spring 2025 Conference to be celebrated in Sevilla, Spain, from 3-7 Mar 2025

EXTRACURRICULAR ACTIVITIES

Currently working as the secretary of the AMCM Volleyball Society in Bologna, where I am responsible for organizing meetings, managing communications, and coordinating events. I play a key role in maintaining engagement among society members and ensuring smooth collaboration. My position has helped me develop strong organizational, communication, and leadership skills while fostering a positive and inclusive environment within the team.

Volunteered from 2015 to 2019 at my local church, where I worked with children, the elderly, and contributed to various community outreach activities. I assisted in organizing fundraising events, coordinated theater scenes, and supported other initiatives aimed at strengthening community bonds. This experience helped me develop strong communication, organizational, and event-planning skills while fostering a deep sense of community service.