

## **Prof. Gustavo Portalone**

Since 1.11.2001: Associate Professor of General and inorganic chemistry at the Faculty of Mathematical, Physical and Life Sciences of "Sapienza" University of Rome.

He achieved the National Scientific qualification as full professor in the Italian higher education system, in the call 2016/2018 (Ministerial Decree n. 1532/2016) for the disciplinary field of 03/B1 - Principles of chemistry and inorganic systems. (Academic Recruitment Field 03/B - Inorganic chemistry and applied technologies, according to the national classification).

1981-2001: Academic researcher.

1980-1: Winner of a scholarship in Chemistry of the British Council at the Chemical Crystallography Laboratory in Oxford (Supervisor: Prof. C. K. Prout, the late; Director Prof. D. C Hodgkin, Nobel laureate, the late).

1978-80: Fellow of the Accademia Nazionale dei Lincei - Fondazione Guido Donegani (Supervisor: Prof. A. Vaciago, the late) and member of the Gruppo di Chimica Biologica e Strutturistica Chimica (Director: Prof. Alessandro Ballio, the late).

Research scientist at the Structural Chemistry Research Group of the Hungarian Academy of Sciences (Budapest, 1983, 1986 and 1987) for chemical applications of gas electron diffraction.

Research unit manager (PRIN 1996 and 1997).

As president of the teaching committee of the Italian Crystallographic Association (AIC) he has organized and directed the annual school of Crystallography from 1994 to 1996 and edited the proceedings in three volumes.

In the period 2003-2005 he served as secretary of AIC.

Since 2007 he has been responsible for the X-ray diffraction (XRD) laboratory of the Chemistry Department of "Sapienza" University of Rome.

Author or coauthor of more than 130 peer-reviewed publications (scientific papers, book chapters and three books) in the field of X-ray crystallography, gas electron diffraction, high-level quantum chemical calculations of molecular interactions and a book of Chemistry at university level.

Member of the editorial board of the Journal of Chemistry, the Dataset Papers in Chemistry, the Journal of Crystallography, AIMS Materials Science, Crystals and Frontiers in Chemistry.

Referee for Crystals, Molecules, Crystal Growth & Design, Journal of Molecular Structure, Acta Crystallographica, sect B ad C, Zeitschrift für Kristallographie.

2018: Guest editor of the special issue of Crystals: "Noncanonical nucleobases".

2019: Guest editor of the special issue of Crystals: "Design, Synthesis, and Structures of Modified RNA/DNA Bases".

2020: Topic editor of the special issue of Frontiers in Chemistry: "Structural Characterization and Analysis of Intercalation, Adsorption and Insertion of Chemical Species into Micro and Nanometric materials".

2021: Guest editor of the special issue of Crystals: "DNA and Small Molecular Complex Crystallization".

2021: Guest editor of the special issue of Molecules: "Halogenated Nucleic Acids".

2022: Guest editor of the special issue of Molecules: "New Trends in Supramolecular Chemistry of Nucleobases".

2022: Guest editor of the special issue of Crystals: "Crystal Engineering of API-Based Crystals with Enhanced Properties".

Since nineties he thought General and Inorganic Chemistry (bachelor's degree in Chemistry, Physics, Biological Sciences) and Structural Chemistry (master's degree in Chemistry).

The research of Portalone group lies in the field of supramolecular chemistry and focuses on the design (exploiting molecular recognition through hydrogen and halogen bonds), solid-state synthesis and structure determination of binary/ternary cocrystals of canonical and unnatural DNA/RNA nucleobases *via* the combined approach of SCXRD and PXRD, *ab initio* and molecular dynamics calculations, AFM and thermodynamic measurements. In the solid state, molecular recognition of modified nucleobases *via* hydrogen and halogen bonds has important implications in medicine (drugs against cancer), genetics (synthetic DNA; PAM recognition mechanism) and materials chemistry (DNA-based supercomputers). Public funding received in the period 1991-2021: 359430 euro.