

# Functional Fluoropolymers for Emerging Applications

## Overview

Fluoropolymers (FPs) are niche specialty products which exhibit unique properties of resistance to thermal aging or weather aggressions and excellent inertness to a wide range of chemical environments. Such outstanding properties are attributed to the exceptionally strong C–F bonds and weak intermolecular van der Waals interactions. They are extensively used in many high-tech applications ranging from aeronautics and aerospace items (seals and gaskets for cars and engineering systems, and O-rings for use at extreme temperatures for tanks of liquid hydrogen or hydrazine in boosters of space shuttles), building industries (paints and coating resistant to UV and graffiti), petrochemicals (pipes and coatings as liners), automotive industries (tubes, cables and fluids for transmission), high performance membranes (for water treatment and decontamination of viruses, fuel cells), cores and claddings of optical fibers, textile treatment, wiring insulation, to microelectronics.

This course intends to give an overview of the smart, functional FPs for emerging applications. The proposed course will start with an introduction on the use of FPs in our daily life, followed by fundamental aspects and developments of different RDRP techniques for the synthesis of fluorinated (co)polymers, their characterizations, properties and applications. Finally, properties and relevant applications of these fluorinated copolymers will be highlighted and discussed, as well as recycling of fluoropolymers.

<b>Modules</b>	<b>10 hours of Lectures and 10 hours tutorials: November 17 to November 21, 2023.</b> <b>Number of participants for the course will be limited to 25.</b>
<b>You Should Attend If...</b>	<ul style="list-style-type: none"><li>• You are a BSc/MSc/PhD student of Chemistry, Materials Science and allied disciplines.</li><li>• You are a Faculty of Chemistry or allied disciplines.</li><li>• You are Post-doc Candidate/ Research Associate working at any University/Institution of India or Abroad in the area of Chemistry, Materials Science and allied disciplines.</li><li>• You are a corporate Professional working in research wing of any Private or Public Organizations.</li></ul>
<b>Fees</b>	The participation fees for taking the course is as follows: <b>Participants from abroad : US \$500</b> <b>Industry/ Research Organizations: Rs. 10000</b> <b>Academic Institutions/Faculty: Rs. 5000</b> <b>Students &amp; Research Scholars: Rs. 2000</b> The above fee includes all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24 hr free internet facility. The participants will be provided with accommodation on payment basis, based on the availability of the room.
	All prospective participants need to do web registration for the course on GIAN ( <a href="http://www.gian.iitkgp.ac.in/GREGN/Index">http://www.gian.iitkgp.ac.in/GREGN/Index</a> ) portal by making a onetime non-refundable payment of Rs. 500/-. After the mandatory web registration, only the shortlisted participants will be informed by email to register for the course by making full payment of the course registration fee either by NEFT (Account holder name: Director, IIT Bhilai, Account No. 7793000100014077; IFSC Code: PUNB0957100; Bank: PNB, Sardar Vallabh bhai Patel Market) or by sending a demand draft in favor of "Director, IIT Bhilai" payable at Punjab National Bank, Dumartarai, Raipur, Chhattisgarh before the last date of registration. Please send an email to the course coordinator in case of any questions:



## The Faculty



**Dr. Bruno Ameduri** is CNRS Research Director at ENSCM, France. His research interests include Polymer chemistry, synthesis of fluorinated Monomers and (Co)polymers, and the use of the resulting F-copolymers in elastomers, composites, or materials for Energy (fuel cell membranes, electrolytes for Lithium-ion batteries, actuators, etc.). His studies deal with areas such as Reversible addition-fragmentation chain-transfer polymerization, Radical (co)polymerization and their kinetics, Reactivity and Thermal stability.



**Dr. Sanjib Banerjee** is an Associate Professor and Head of the Department of Chemistry, Indian Institute of Technology Bhilai. His research interests include biomaterials, stimuli-responsive materials, CO<sub>2</sub> capture, energy storage technologies.

## Course Co-ordinator

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<http://www.gian.iitkgp.ac.in/GREGN>