
Departmental Seminar

Seminar Title	: Sustainable and Effective CO ₂ Fixation into Biobased Cyclic Carbonate
Speaker	: Prof. Sujit Sen
Supervisor	: Prof. Sujit Sen
Venue	: New Seminar Room, Department of Chemical Engineering
Date and Time	: 05 Jan 2024 (11:00 A.M.)
Abstract	: One of the most abundant forms of carbon on Earth is carbon dioxide (CO ₂), and it has been seen as a potential sustainable feedstock for the chemicals industry. Therefore, there has been considerable interest in developing new technologies for carbon capture and storage (CCS) and carbon capture and utilization (CCU) over the past two decades. Consequently, CO ₂ has been used as a starting material for producing versatile inorganic carbonates. One of the most important transformations of carbon dioxide is its catalytic coupling with epoxides to prepare cyclic carbonates. Cyclic carbonates are commercially important chemical products as they can be used as electrolytes in Li-ion batteries, sustainable polar aprotic solvents, and monomers for polymer production etc. Here, we report a sustainable, low-cost route for the coupling reaction of the terminal, internal, and highly substituted bioderived epoxides, and CO ₂ into their corresponding cyclic carbonates in good to excellent isolated yields. It is worth highlighting that the cyclic carbonate synthesized in our laboratory is a unique platform molecule for producing non-isocyanate polyurethane, which in turn has versatile applications in medical, defence, space, and other fields.