

## Special Issue

# Innovations in Carbon Capture and Storage/Utilization (CCS-CCU): Sustainable Engineering and Biotechnological Perspectives

### Message from the Guest Editors

This Research Topic encompasses recent CCS/CCU technology advances, emphasizing advanced engineering and biotechnological solutions. Potential themes include the following:

- Advances in CO<sub>2</sub> capture technologies such as Absorption, Membrane Separation, Adsorption, Calcium Looping, Algae-Based Carbon Capture, Microbial Electrosynthesis, and Bioenergy with Carbon Capture and Storage (BECCS).
- Novel CO<sub>2</sub> utilization strategies including chemical conversion, carbonate precipitation, concrete carbonation, mineralization, algae cultivation, and biotechnological processes for converting CO<sub>2</sub> into valuable products like biofuels, chemicals, and materials.
- Developments in CO<sub>2</sub> transportation methods, infrastructure planning, safety protocols, and integration with utilization and storage systems.
- Sustainability and Environmental Impact Assessments evaluating the environmental benefits, carbon footprint, and potential drawbacks of innovative and biotechnological CCS/CCU approaches via life cycle assessments (LCA).

### Guest Editors

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### Deadline for manuscript submissions

15 December 2025



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