Studies on Carbon Capture and Utilization:

1. Spectroscopic Study on Multicyclic Stability of CO2 Adsorbent
2. **Synthesis of Eco-Friendly Polymeric Materials derived from CO2 and Biomass**

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Carbon dioxide capture and conversion has been receiving widespread attention over the years as an effort to mitigate anthropogenic CO2. Supported amine adsorbents emerged as advantaged candidate materials for post-combustion CO2 capture due to their high CO2 capacity and selectivity. The assessment of the performance of these materials under realistic conditions is of importance. In this work, the stability of amine-functionalized silica sorbents was evaluated in multiple temperature swing adsorption (TSA) cycle in the presence of flue gas impurities such as water, oxygen and acid gases.

Poly(lactide)(PLA) is a polyester derived from renewable biomass resources. PLA has unique properties, such as biodegradability and biocompatibility for biomedical applications. A new thermoplastic polymer poly(propylene carbonate)(PPC) is produced via the copolymerization of CO2 and propylene oxide(PO) and has been recently attracted. In this study, triblock copolymers of poly(lactide-*b*-propylene carbonate-*b*-lactide) (PLA-*b*-PPC-*b*-PLA) were synthesized via tandem polymerization of lactide with PPC-OH for the application to drug release system..