

Session Title: Impact of Carbon Removal Technologies

Name: Shuichiro Hirai

Position: Professor, Department of Mechanical Engineering, School of Engineering, Tokyo Institute of Technology

Carbon capture and storage (CCS) is considered as an important key technology to mitigate CO₂ emissions into the atmosphere. The injected CO₂ at deep underground migrates upward because of the buoyancy effect. It is important to prevent CO₂ leakage so that CCS could achieve public acceptance. To develop a stable geological storage technique, we propose a novel method that uses nano-sized CO₂ liquid droplets in a porous structure to allow stable geological storage. The buoyancy effect can be reduced to zero by nano-sized droplets before injection. Experimental study demonstrates the stability of nano-sized CO₂ droplets in the aquifer.