

Earth Science and Climate Change



Ji Whan Ahn

Korea Institute of Geosciences and Mineral Resources, South Korea

Currently, global warming is an emerging issue to all over the world. The goal of reducing our greenhouse gas emissions gives us an opportunity to search for a new solution. Carbon capture utilization and storage technology is a significant world top technology tool to reduce and utilization of CO₂. Korea, a new "21C Frontier Project" started and established a Center for Resource Recycling working on CCUS. This research results revealed that demonstration/commercialization of two technologies such as low carbon green cement and PCC waste paper recycling technology. In 2012 DOE started a coordinated updates of "Carbon Capture Utilization and Storage" potential across over United States and MIT suggested green concrete/cement manufacture is one of the top 10 emerging technologies in 2010. In Korea, carbon mineralization technology is the center of excellent, could start a new CDM model, carbon credits and recycling of waste resources for resource security strategy. CO₂ is utilized for green algae removal, human waste water recycling and hard water treatment by using carbonation process. The developed technology provides the solution for urban mine recycling such as critical elements extraction from waste mineral, manufacture of green cement, permeable concrete for smart city, carbonated materials for mining backfill and sink holes and precipitated calcium carbonates as advanced materials for light weight plastics. The carbon resources recycling appropriate technologies are the real solutions for sustainable climate change.

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ahnjw@kigam.re.kr

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