

Lifecycle and cost assessment of nano calcium carbonate production utilizing waste solids

이재서, 유경환, 이재형[†]

KAIST

(jayhlee@kaist.ac.kr[†])

Climate change mediated by increased CO₂ concentration in the atmosphere is one of the most significant challenges facing humanity. Mineral carbonation technology is considered as an attractive option to store CO₂ for a long period in a stable, inert, and solid form. In addition, this technology is a feasible and verified technology where both CO₂ conversion and treatment of waste solids containing alkaline earth metal occur simultaneously with integrated process. In this study, a newly proposed mineral carbonation technology using waste concrete as a raw material is evaluated. For a comprehensive assessment of the environmental and techno-economic performance of this CO₂ capture and utilization option, CO₂ lifecycle assessment (LCA) and techno-economic analysis (TEA) are conducted. Case analyses are performed with respect to the different feedstock of alkaline earth metal.