Carbon dioxide conversion and calcium carbonate preparation by magnesium phyllosilicate and its application for batch process

송동수, 박승빈*, 한종인
KAIST
(SeungBinPark@kaist.ac.kr*)

As a potent carbonation catalyst that converts gaseous carbon dioxide (CO2) into carbonate ion, magnesium phyllosilicate, aminosilane compound is APTES, was developed and explored for its applicability. Careful investigation of its surface properties revealed the existence of amine group, which is the expected CO2 capture site. The prepared magnesium phyllosilicate was found to successfully convert gaseous CO2 into bicarbonate ion, actively forming calcium carbonate upon counter cation was supplied. Also, to promote the practicality of a potent carbonation agent, magnesium phyllosilicate, two different cheap fabrics, cotton and nylon, were selected and examined as supporting media. Coating of Mg-phyllosilicate on the fabrics were done via sol-gel method. This study shows that the magnesium phyllosilicate, a new type of carbonation agent, can be a good candidate catalyst for CO2 capture.