

Indirect CO<sub>2</sub> conversion into Calcium formate윤하영, 윤성호<sup>†</sup>, 윤택상<sup>1</sup>, 윤하준<sup>1</sup>중앙대학교 화학과; <sup>1</sup>중앙대학교 화학신소재공학부(sunghoyoon@cau.ac.kr<sup>†</sup>)

With the declaration of Net-Zero, more efforts are required to reduce the emission of CO<sub>2</sub>, which is known as one of the greenhouse gases, and accordingly, the need for research and development of eco-friendly and economical CO<sub>2</sub> conversion technology is increasing. By producing Ca(HCO<sub>2</sub>)<sub>2</sub> by using waste containing CaO as a feedstock in the CO<sub>2</sub> hydrogenation process using a heterogeneous catalyst, an efficient and eco-friendly process that proposes Ca(HCO<sub>2</sub>)<sub>2</sub> as a new CO<sub>2</sub> conversion product can be developed. Techno-Economic Analysis (TEA) and Life Cycle Assessment (LCA) were performed to confirm the industrialization potential of the process, and it was confirmed that the production price of Ca(HCO<sub>2</sub>)<sub>2</sub> through the process was 567 US\$/t, which is about 13% lower than the average market price. In addition, as a result of the LCA, it was confirmed that 1.4 kg CO<sub>2</sub> eq/kg Ca(HCO<sub>2</sub>)<sub>2</sub> was reduced compared to the Ca(HCO<sub>2</sub>)<sub>2</sub> production process using CO, proving that the process is superior to the existing process in terms of economy and environment.