Supplementary Materials

1. The mechanism of catalytic CO_2 desorption.

   The mechanism of Catalytic desorption have been published repeatedly. A recent review of 2020 categorized most mechanisms. The mechanism was originally proposed by the author in the Patent [1], and it was not provided into the text to avoid duplication.

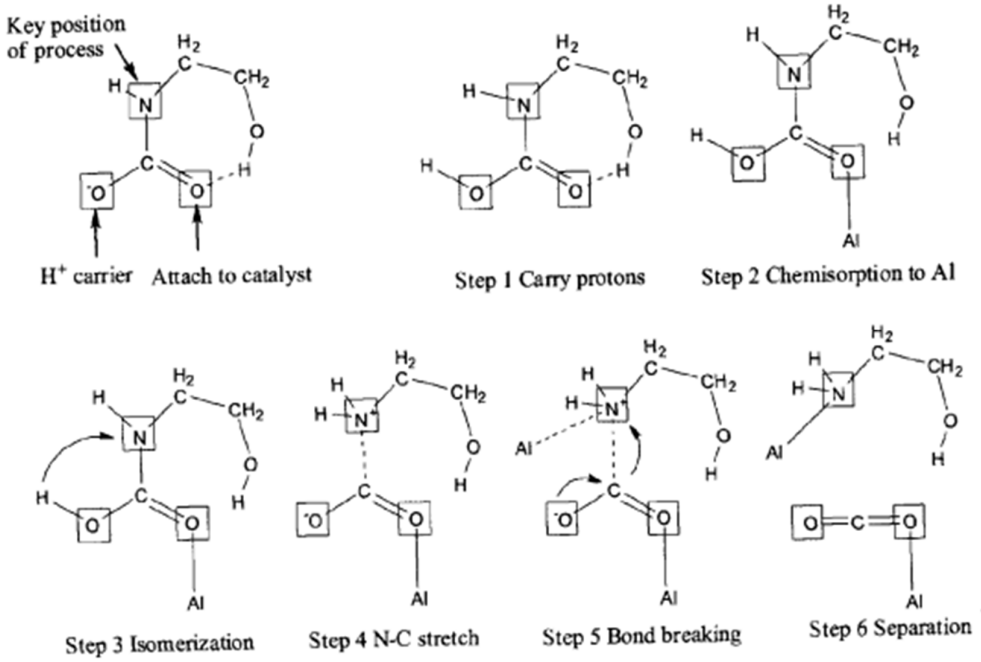

Figure S1. The mechanism of catalytic CO_2 desorption and carbamate breakdown.

2. The diagram of the desorber process.
   The CO_2 desorption process has been published repeatedly, and the Picture was provided as follows.

Figure S2. The picture of CO_2 desorber process.

Reference:

1. R. Idem, H. Shi et al. Catalytic Method and Apparatus for Seperating a Gaseous Component from an Incoming Gas Stream US patent 2013/ 0108532 A1