

CO₂ sorption and regeneration properties of the potassium-based sorbent using MCC for post-combustion CO₂ capture

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Carbon dioxide (CO₂) is a major greenhouse gas that is released into the atmosphere by the combustion of fossil fuels, and it causes global warming. Thus, It is necessary to reduce CO₂. CO₂ can be removed from flue gases using a dry sorbent. Micro-cel C (MCC) is one of the representative materials that is used to design the potassium-based sorbent for strength of the sorbent. In this study, to investigate the properties of the potassium-based sorbent (KMC) using MCC, the KMC sorbent was prepared by using a typical impregnation method. KMC sorbent showed a low CO₂ capture capacity of 21.6 mg CO₂/g sorbent. This is because a by-product such as a K₂Ca(CO₃)₂ phase was generated after calcination of the sorbent, and then the content of the active material (K₂CO₃) was lost. It can be confirmed that controlling the content of K₂CO₃ is a very important factor for ability of the sorbent. From these results, we suggest the method to solve the problem of deactivation of the sorbent.