

In-situ Observation of CO₂ Sorption on Phase Boundary of Eutectic Mixture Promoted/Catalyzed MgO

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Alkali or alkaline earth metal oxides are being paid attention because of its well-known basic properties for capturing acidic CO₂. According to the thermodynamical estimation, the only candidate for medium temperature CO₂ capture is MgO-based sorbent. However, sorption kinetic is quite limited by active solid-gas interface on MgO where CO₂ can be adsorbed chemically. Therefore, a kind of promoter/catalyst such as eutectic mixture is required for enhancing active interface. Still it is not clear how eutectic mixture works as promoter/catalyst during reaction and where the reaction can take place. In this work, CO₂ sorption behavior among MgO particle and eutectic mixture are investigated under controlled temperature and pressure by in-situ TEM. Based on surface, structural change, and eutectic mixture migration, CO₂ absorption mechanism on MgO is proposed. This work was supported by Basic Science Research Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Education (NRF-2013R1A1A2060638).