

BBG005-P18

Room: Convention Hall

Time: May 23 17:15-18:45

Transformation of magnesium oxide in aqueous solution

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Magnesium oxide which has high specific surface area (hereafter HS-MgO) is obtainable by burning nature magnesium carbonate or magnesium hydroxide (hereafter Mg(OH)₂). Magnesium oxide is used as purification material of contaminated solid and ground water because it removes well harmful anion (Yosisaka et al.,2008). In the present work, we aim to understand the uptake mechanism of harmful anion by HS-MgO. Generically, adsorption experiments are performed by reacting adsorbate with adsorbent in solution during about 24 hour (Fukushi, 2008). As a preparatory experiment, we stirred HS-MgO in solution during 16 hour and analyzed filtrated sample by X-ray diffractometry. The result showed that diffraction peak of periclase(MgO) greatly decreased and diffraction peak of brucite(Mg(OH)₂) appeared. The result indicates that adsorbent transforms to different phase within experiment time of general adsorption experiment. Therefore it is necessary to understand the alteration behavior of MgO to Mg(OH)₂ to reveal the mechanism of uptake the harmful anion by HS-MgO. In this study, we intend to reveal altered behavior of HS-MgO by performing alteration experiments in aqueous solution as function of time.

Keywords: periclase, brucite