

### Analysis of effects of ionic liquid in aqueous ammonia solution for CO<sub>2</sub> absorption

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Herein, we demonstrated that adding ionic liquids (ILs) into aqueous ammonia solution enhanced CO<sub>2</sub> removal efficiency due to reduction of ammonia loss. Ionic liquid as additives into aqueous ammonia solution require two criteria such as water-solubility and CO<sub>2</sub> absorption ability. In order to demonstrate, two types of ionic liquid additives (1-butyl-3-methylimidazolium tetrafluoroborate and 1-butyl-ethylimidazolium hexafluorophosphate) were chosen for modifying the absorbent. Here in, we verified the effects of modifying absorbents with ILs on CO<sub>2</sub> absorption ability and ammonia loss of aqueous ammonia at room temperature. In addition, chemical characterization of CO<sub>2</sub>-NH<sub>3</sub>-H<sub>2</sub>O-additive system was analyzed by FT-IR spectroscopy. Introduction of ILs on ammonia-based absorbent provided higher CO<sub>2</sub> absorption capacities and lower ammonia loss than those of bare ammonia absorbent. This result was attributed to the promoted bicarbonate formation induced by the mutual interactions between the anion groups of ILs and ammonia absorbents.