

Absorption of carbon dioxide in aqueous potassium threonate

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Carbon dioxide was absorbed into aqueous solution of potassium threonate (PT) at different concentrations of PT and CO₂, and temperatures in the range of 0.1–1.0 kmol/m³, 10–101.3 kPa, and 293–318 K, respectively, using a stirred semi-batch vessel with a planar gas-liquid interface. Both the reaction order and rate constant are determined from gas absorption rates under the fast reaction regime. The reaction was found to be first order with respect to both CO₂ and PT. The activation energy for the CO₂-PT reaction has been found to be 29.8 kJ/mol. The second-order reaction rate constants were used to obtain the theoretical values of absorption rate based on the film theory.