

CARBON DIOXIDE SEPARATION BY PHASE ENHANCED GAS-LIQUID ABSORPTION

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ABSTRACT

A new process called phase enhanced absorption has been developed in its early stage. It was found that the absorption rate can be enhanced by adding another phase into the absorption system of gas/aqueous phase.

A system with three phases was studied. In the system, gas phase was carbon dioxide. Two liquid phases were used. One was organic phase. Another was aqueous phase. By addition of organic phase into the absorption system of CO₂-aqueous phase, the absorption rate of CO₂ was increased significantly. CO₂ finally accumulated into aqueous phase. The experimental results proved that (1) the absorption rate of carbon dioxide was enhanced by adding organic phase into gas-aqueous phase system; (2) organic phase played the role of transportation of gas solute (CO₂). Carbon dioxide finally accumulated into aqueous phase.

The research proposed here is to develop a new process for separating carbon dioxide from gas mixture. The absorption will be operated at room temperature or elevated temperature. The objective of proposed research is to do further investigation based on our fundamental study and develop a new efficient and low-cost absorption process for carbon dioxide separation. Efforts during this reporting period have been devoted to the purchase and construction of an autoclave to carry out this study.

FACULTY, STAFF, AND STUDENT SUPPORT FOR THE PROJECT

Mrs. Efat Miamee – Chemical Technician
Mrs. Barbara Simandl – Administrative Assistant
Keonya Bradley – Student
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Marcus Williams – Student
Jamaal McDaniels -- Student