

## AN ABSTRACT OF A THESIS

# SULFUR DIOXIDE ABSORPTION BY SODA ASH SOLUTIONS, LIME AND LIMESTONE SLURRIES IN A WETTED-WALL COLUMN

Tsun Nan Chu

Master of Science--Chemical Engineering

The gas absorption coefficients for the system sulfur dioxide-air with soda ash solutions, lime slurries, and limestone slurries as scrubbing liquid were investigated in a wetted-wall column. The gas phase velocity was ranged from 0.2 to 1.2 ft/sec. The sulfur dioxide concentration in the inlet gas ranged from 2500 to 3000 ppm by volumn. The concentration of the inlet liquid was twice that required to react with all the sulfur dioxide. The gas phase and the liquid phase were in countercurrent flow. The column was a two-inch diameter glass tube. The gas absorption coefficient was found to be a linear function of gas velocity. These data agreed better with the Leveque equation than the Graetz equation. The dissolution of the solid reagent in the liquid film is apparently very rapid in order to maintain roughly the same degree of sulfur dioxide removal in all systems.

SULFUR DIOXIDE ABSORPTION BY SODA ASH SOLUTIONS,  
LIME AND LIMESTONE SLURRIES  
IN A WETTED-WALL COLUMN

---

A Thesis  
Presented to  
the Faculty of the Graduate School  
Tennessee Technological University

---

In Partial Fulfillment  
of the Requirements for the Degree  
MASTER OF SCIENCE  
Chemical Engineering

---

by  
Tsun Nan Chu

June 1974

CERTIFICATE OF APPROVAL OF THESIS

SULFUR DIOXIDE ABSORPTION BY SODA ASH SOLUTIONS,  
LIME AND LIMESTONE SLURRIES  
IN A WETTED-WALL COLUMN

by

Tsun Nan Chu

Graduate Advisory Committee:

Clayton P. Kern      April 5, 1974  
Chairman,                      date

William D. Holland      April 5, 1974  
Member                              date

S. B. Cleary      April 5, 1974  
Member                              date

Approved for the Faculty:

Martin Peters  
Dean, Graduate School

April 8, 1974  
Date