## FOURTH SAUDI ENGINEERING CONFERENCE



12-15 Jumada' II 1416H (5-8 November 1995G)

## Development of Technical and Industrial Base in Saudi Arabia

REPRINT

THE FACULTY OF ENGINEERING KING ABDULAZIZ UNIVERSITY Jeddah - Saudi Arabia

## THE ROLE OF POLYMER REACTION ENGINEERING IN ETHYLENE POLYMERIZATION

M. Atiqullah, H. Hamid and A.G. Maadhah

The Research Institute, King Fahd University of Petroleum and Minerals
Dhahran 31261, Saudi Arabia

ABSTRACT. This paper summarizes the contribution of polymer reaction engineering in overall ethylene polymerization process. The objective is to assess the need of developing this particular discipline in the Kingdom. The relevant funding agencies, and research organizations supported by academic faculty have been recommended to come forward to expand expertise in this field which can be later extended to any subsequent polymer manufacturing system as well.

## 1. INTRODUCTION

Commercial polymers consist of macromolecules having several thousand repeat units. Particularly this aspect discriminates the behavior of polymer molecules from that of conventional micromolecules. Consequently, polymer reaction engineering, a relatively recent branch of conventional reaction engineering, came into existence. In the Kingdom of Saudi Arabia, the production of commodity thermoplastics started a little over a decade ago. Polyethylenes, which account for one-third of the world's production and consumption of plastics, top the list of Saudi polymers. In this area, worldwide research continues in catalyst development and various aspects of polymer reaction engineering leading to process development. The present study reviews selected aspects of polymer reaction engineering applied to ethylene polymerization to emphasize the need of developing this particular discipline in the Kingdom.