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## Utilization of CO<sub>2</sub> in petrochemical plants

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Good quality CO<sub>2</sub> is produced and currently discharged to atmosphere in majority of integrated petrochemical sites. For instance, ethylene oxide facilities alone discharge more than 3 millions tons CO<sub>2</sub> annually (Both, 1.5 millions and 6.2 millions tons annual production is reported for this CO<sub>2</sub> source indicating also lack of information). Urea production is a clear example of CO<sub>2</sub> conversion where produced ammonia is reacted with CO<sub>2</sub> from the same facility. Several other processes can be identified, such as polycarbonate productions in ethylene and/or propylene oxide plants which are recently implemented. Two cheap chemicals, namely methane and CO<sub>2</sub>, can be turned to acetic acid. Production of benzoic acid from CO<sub>2</sub> and benzene is an alternative feasible route and could well be implemented. In this paper, manufacture of selected number of value-added products (acrylic acid, electrochemical ethylene, electrochemical mono-ethylene glycol, polyols and isocyanate or equivalent) will be reviewed briefly. The choice is somehow arbitrary since there are gigantic numbers of possibilities which can be envisaged by employing products of a large integrated complex.

### Biography

Ozge Yuksel Orhan obtained her Ph.D. in Chemical Engineering from Hacettepe University, Turkey, in December 2014. Her thesis is entitled "The Absorption Kinetics of CO<sub>2</sub> into Ionic Liquid-CO<sub>2</sub> Binding Organic Liquid Hybrid Solvents". Currently, she is a Research and Teaching Assistant at Chemical Engineering Department of Hacettepe University. Her research topics have dealt with the study of carbon dioxide capture by novel solvents. Erdogan Alper is a Professor at the Chemical Engineering Department of Hacettepe University in Ankara, Turkey. He obtained his BSc (Honours) (First Class) from Birmingham University, England (1968), and earned his PhD from Cambridge University (1972). In 1977–1978, he was an Alexander von Humboldt fellow at Hannover University, Germany, and received Turkish Scientific and Technological Research Council prize in Engineering in 1982. His research areas include carbon dioxide capture by innovative solvents, fuel cell modelling by CFD, petroleum refining and petrochemical technologies. He published 4 books and around 150 research papers in cited journals.

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