

DOE/PC/90291--T13

**DESIGN OF A HIGH ACTIVITY AND
SELECTIVITY ALCOHOL CATALYST**

Final Status Report and Summary of Accomplishments

**Henry C. Foley and G. Alex Mills
Coprincipal Investigators**

**Center for Catalytic Science and Technology
Department of Chemical Engineering
University of Delaware
Newark, Delaware 19716**

**Date Published:
July 15, 1994**

**Prepared for
Fossil Energy
Department of Energy**

Under Award No. DE-FG22-90PC 90291

**US/DOE Patent Clearance is not required
prior to publication of this document.**

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

JR

MASTER

*Bill
final*

DISCLAIMER

Portions of this document may be illegible in electronic image products. Images are produced from the best available original document.



DEPARTMENT OF
CHEMICAL ENGINEERING

University of Delaware
Newark, Delaware 19716-3110
Ph: 302/831-2543
Fax: 302/831-1048

July 27, 1994

Ms. Donna J. Lebetz, MS 921-118
U.S. Department of Energy
Pittsburgh energy Technology Center
Acquisition and Assistance Division
P.O. Box 10940
Pittsburgh, PA 15236-0940

COPY

Re: Grant No. ~~DE-FG22-90PC90291~~
U of d No. 3-7-21-3119-12
Principal Investigator: Dr. Henry C. Foley

Dear Ms. Lebetz:

Enclosed please find the original final technical report for the
above referenced grant for Dr. Henry C. Foley, Principal
Investigator.

If you should have any further questions, please contact me at
(302) 831-2060.

Sincerely,

Malinda Yarnell
Accountant

cc: Dr. Henry C. Foley
Principal Investigator

Susan Tkachick
Sponsored Programs Administration, UOD

Report Overview

This final DOE report for grant award number DE-FG22-90PC 90291 presents the results of our efforts to better understand the Rh-Mo/ γ -Al₂O₃ catalytic system for the hydrogenation of carbon monoxide and carbon dioxide to selectively form oxygenated products. The content of this report is divided into three major sections and a fourth, concluding section which addresses our major research accomplishments, as well as documents the most significant publications and presentations associated with this grant. The three main sections which make up the body of this report are presented in the in form of manuscripts which, in turn, summarize our progress in three areas of this project. The three body sections are organized as follows

Section I: Evidence for Site Isolation in Rh-Mo Bimetallic Catalysts Derived from Organometallic Clusters

Section II: Surface Chemistry of Rh-Mo/ γ -Al₂O₃: An Analysis of Surface Acidity

Section III: Comparative Study of Rh/Al₂O₃ and Rh-Mo/Al₂O₃ Catalysts

Again, following the main body sections, Section IV summarizes major accomplishments. The content of this final report is meant to generally highlight our progress in both characterizing the nature of the Rh-Mo/Al₂O₃ system and probing its reactivity for insight on the oxygenate synergy present in this class of catalysts.

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.