

Background

The TOPSØE CATALYSIS FORUM was created as a framework for an open exchange of views on catalysis in the fields of interest to Haldor Topsøe. The forum is conceived as a platform for discussions of new reactions and new principles of catalysis in an attempt to jointly look beyond the horizon. In order to facilitate an open debate and to enable all participants to make use of the information received during the meetings in their future work, the forum is held on a non-confidential basis. The TOPSØE CATALYSIS FORUM works through individual contacts and annual meetings focusing on a single topic.

Conversion and removal of sulphur compounds is core business to Haldor Topsøe. The topic of the 4th TOPSØE CATALYSIS FORUM is:

"Sulphur Management"

...covering future industrial challenges and technological developments responding to the demands of tomorrow.

The global sulphur demand is expected to grow over the coming years but so is the sulphur production. Most of the production is involuntary from hydrotreating oil fractions in the refineries, natural gas processing and metallurgical smelting operations. The increased focus on environmental protection has been a major driving force for the development of new catalysts and catalytic processes for conversion and removal of sulphur compounds with minimum production cost and energy consumption. In the sulphuric acid industry, more efficient, low-temperature catalysts and improved technologies must be developed to meet the increasing demands for lower emissions of SO₂. In the refineries, lower sulphur specifications for oil products call for improved hydrotreating catalysts, new H₂S separation technologies and increased efficiency of the sulphur recovery unit. Removal of low concentrations of sulphur compounds is also an important process step in power plants, coal gasification units, and natural gas sweetening. Typically, sulphur is a catalyst poison that must be removed to very low levels.

The aim of this seminar is to discuss current and future practices of sulphur management. It should be done with an open mind in order not just to review current knowledge but also to provide a basis for new innovations within the area.

TOPSØE CATALYSIS FORUM 2007

Sulphur Management



Scientific Committee

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23-24 August 2007
Havreholm Slot
Hornbæk, Denmark

Programme

The TOPSØE CATALYSIS FORUM is organised as a two-day topical meeting. The first day is devoted to overview lectures which set the scene and form the basis for the discussions. On the second day, the discussions and exchange of views will take place in three groups, each organised around a specific sub-topic.

Participation is by invitation only. Besides the presenters, representatives from industrial collaboration partners are invited, but the majority of the participants is Haldor Topsøe staff. On the first day, up to 80 participants will be present whereas about 50 individuals will take part in the discussions on day two. The meeting is held on a non-confidential basis.

Wednesday, 22 August

12:00-16:00 Visit to the Haldor Topsøe Headquarters

19:00 Buffet at Havreholm Castle

Thursday, 23 August

07:30-09:00 Breakfast and arrival of local participants

09:00-09:10 **Welcome address**, *Bjerne S. Clausen, Haldor Topsøe*

Plenary morning session - *Chairman: Jesper Nerlov, Haldor Topsøe*

09:10-10:00 **Future Supply of Sulphur; Opportunities for New Processes and Products**
Carl Mesters, RDS - Shell Global Solutions

10:00-10:50 **Sulphuric Acid: Global Supply and Demand in the Next Decade**
Joanne Peacock, British Sulphur Consultants

Coffee break

11:10-12:00 **High-Temperature Sulphur Removal in Gasification Applications**
Raghubir Gupta, RTI International

Lunch

Plenary afternoon session - *Chairman: Kim Grøn Knudsen, Haldor Topsøe*

13:30-14:20 **Fundamental and Practical Aspects of the Claus Sulphur Recovery Process**
Peter Clark, Alberta Sulphur Research Ltd.

14:20-15:10 **Desulphurisation in Petcoke Combustion**
Murray Gray, University of Alberta

Coffee break

15:30-16:20 **New Ways of Removing H₂S in Gas Streams**
Dennis Leppin, GTI

16:20-17:10 **Desulphurisation of Synthesis Gas and Natural Gas**
Daniel Kubek, Gas Processing Solutions LLC

19:00 **Conference dinner**

Friday, 24 August

07:30-08:45 Breakfast

08:45-09:00 **Introduction to group discussions**
by Henrik Guldborg Pedersen, Haldor Topsøe

09:00-12:30 **Group discussions**

Grp. 1: Sulphur Management in the Process Industry
Chairman: Kurt Christensen, Haldor Topsøe

- **Homogeneous Chemistry of Sulphur Species**
Peter Glarborg, Technical University of Denmark
- **SO₂ Gases from Non-ferrous Smelters**
Graham Lyne, Noosa Technologies Inc.
- **Optimisation of Power Plants Equipped with Topsøe Flue Gas Technology**
Peter Schoubye, Haldor Topsøe

Grp. 2: Desulphurisation Strategies in Combustion and Gasification
Chairman: Roberta Cenni, Haldor Topsøe

- **From the Mine to the Power Plant: Examples of Sulphur Management at US Power Plants in Response to Clean Air Regulations**
Jim Hower, University of Kentucky
- **Flue Gas Desulphurisation (FGD) in Power Generation**
Folmer Fogh, DONG Energy
- **Sulphur Behaviour in a Sasol-Lurgi Gasification Process**
Pat Skhonde, Sasol
- **Gasification of Black Liquor and Sulphur Cycle in the Paper Industry**
Mats Lindblom, Chemrec

Grp. 3: Future Sulphur Management
Chairman: Poul Erik Højlund Nielsen, Haldor Topsøe

- **Perspectives on Sulphur Management**
Paul Davis, Alberta Sulphur Research Ltd.
- **Biological Desulphurisation**
Murray Gray, University of Alberta
- **Hydrotreating of Heavy High Sulphur Feedstocks in Pilot Plant - Challenges and Experiences**
Anne Hoff, Statoil Research Centre

Lunch between 12:30 and 14:00

Closing session - *Chairman: Bjerne S. Clausen, Haldor Topsøe*

14:00-15:00 **The Global Sulphur Cycle**
Viney P. Aneja, North Carolina State University