



Catalysis: An Integrated Approach

*A molecular approach
to all aspects of catalysis*

Catalysis...

Catalysis contributes 20-30% of the gross domestic products of industrialized countries. Catalysts play a vital role in the production of transportation fuels, bulk and fine chemicals in a sustainable way. Many more improvements are expected for the next years.

21 – 26 November, 2010
Schiermonnikoog, NL

Annual course organized by NIOK,
Netherlands Institute for Catalysis Research

... a fascinating discipline

NIOK, the Dutch school of research in catalysis, with some 200 PhD students involved in research, offers the opportunity to gain a deeper insight into various aspects of this fascinating discipline: fundamental, theoretical, homogeneous, heterogeneous, industrial catalysis and biocatalysis. The main theme of this course is the molecular approach of catalysis in view of its applications, from catalyst preparation and characterization to reactor engineering.

Target audience

The course is designed for graduates and polytechnic (HBO) levels, either as a first introduction or as a refresher course. Especially graduates preparing a doctoral dissertation related to catalysis are potential attendants, but also those who are already working in industry and feel the need to deepen their insights into catalytic processes.

Subjects to be treated

Introductory part

- history of catalysis: homogeneous, heterogeneous and biocatalysis
- chemical and technological aspects of a number of important industrial processes
These processes will also form the framework for the subjects to be treated in the fundamental and applied parts of the course.
- chemical kinetics of catalyzed reactions

Fundamental catalysis

- chemical bonding to surfaces, in metal complexes and in enzymes
- elementary reaction steps in catalysis
- kinetic and mechanistic processes of catalysis

Applied catalysis

- catalytic reaction engineering
- preparation of catalyst supports including zeolites
- preparation of supported catalysts

Catalyst characterization

- rapid screening techniques and backgrounds
- spectroscopic techniques
- temperature programmed techniques
- adsorption methods

Modern developments seen from two angles:

- from the process technology side: more efficient and cleaner processes
- from the theoretical side: development of fundamental catalysis towards an independent science within chemistry and physics.

Course teachers

Heterogeneous Catalysis
Homogeneous Catalysis
Reaction Engineering & Kinetics
Biocatalysis
Materials & Catalyst Preparation
Characterization/Spectroscopy
Industrial Catalysis
Scientific Presenting

Prof.Dr. J.W. Niemantsverdriet, Eindhoven University of Technology
Prof.Dr. D. Vogt, Eindhoven University of Technology
Dr.ir. T.A. Nijhuis, Eindhoven University of Technology
Prof.Dr. I.W.C.E. Arends, Delft University of Technology
Dr. J.H. Bitter, Utrecht University
Dr. P.C. Thüne, Eindhoven University of Technology
to be determined
Prof.Dr. J.W. Niemantsverdriet, Eindhoven University of Technology

Place and time

The course is held on the island Schiermonnikoog. The lectures take place in "Het Dorpshuis", Torenstreek 18a. Lodging is in Hotel Van der Werff, Reeweg 2, Schiermonnikoog. Lodging for industrial participants is in Hotel Duinzicht, Badweg 19, Schiermonnikoog.

The course starts Sunday 21 November (afternoon arrival) and ends Friday 26 November after lunch.

Textbook

The text book will be '*Catalysis, an integrated approach*', edited by Van Santen, Moulijn, Van Leeuwen and Averill, with contributions from many experts.

Test

There will be a test early 2011, in Utrecht. The test is obligatory for NIOK graduates and taking it successfully is necessary for obtaining the Certificate of Proficiency. Consulting the text book during the test is permitted. ('open book test').

Certificate

A *Certificate of Attendance* is available. A *Certificate of Proficiency* is available for those who successfully take the test. The Certificate of Proficiency entitles NIOK graduates to apply for a NIOK diploma accompanying their doctor's degree certificate.

Registration

The registration form for the course can be downloaded from the NIOK website www.niok.nl. The number of participants is limited to 65.

Course fee

The course fee amounts

	Registration before Sept. 1 st 2010	Registration after Sept. 1 st 2010
Graduate students and postdocs working with NIOK members	€ 600	€ 700
All other graduate students and postdocs	€ 1000	€ 1100
All other participants*	€ 2800	€ 3000

* VIRAN members have the right to send one employee of a member company's own staff at a reduced rate of € 600/700

The fee includes:

- (full board) accommodation (21 November arrival, 26 November departure);
- a copy of the book '*Catalysis, an integrated approach*';
- other course materials and hand-outs.

Cancellation fees

Cancellation fees are applicable:

- cancellation between 22 October – 12 November: 50% of the course fee.
- cancellation after 12 November: the full fee will be charged.

Course leader

Prof.Dr. D. Vogt, Eindhoven University of Technology

Contact

Arlette Werner (course coordination)
Office of the Netherlands Institute for Catalysis Research (NIOK)
Anna v. Saksenlaan 51
P.O. Box 93223
2509 AE The Hague, The Netherlands
Tel +31 70 344 08 35
Fax +31 70 344 07 87
E-mail [courses \[@ \] niok.nl](mailto:courses[@]niok.nl)



Hotel Van der Werff, Schiermonnikoog