Catalysis from A to Z
A Concise Encyclopedia

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WILEY-VCH
Weinheim · New York · Chichester
Brisbane · Singapore · Toronto

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Library of Congress Card No. applied for

A catalogue record for this book is available from the British Library

Die Deutsche Bibliothek – CIP Cataloguing-in-Publication-Data
A catalogue record for this publication is available from Die Deutsche Bibliothek

ISBN 3-527-29855-X

Printed on acid-free and chlorine-free paper

Composition: Kühn & Weyh Software GmbH, D-79111 Freiburg
Printing: betz-druck GmbH, D-64291 Darmstadt
Bookbinding: Wilh. Osswald + Co., D-67433 Neustadt
Printed in the Federal Republic of Germany

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WILEY-VCH

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Preface

"Wir bekommen begründeten Anlaß zu vermuten, daß in lebenden Pflanzen und Tieren Tausende von katalytischen Prozessen zwischen den Geweben und Flüssigkeiten vor sich gehen."

*J.J. Berzelius (1836)**

Catalysis occurs always and everywhere. Catalysis is not a separate scientific discipline of limited scope, but rather a cross-linking science that embraces all chemistry and biology. There is hardly any scientist in these and related areas who does not encounter catalytic phenomena in his work. Beyond that, many catalytic processes are known to the educated member of the public, to the politician as well as to any other informed person. Anyone who knows about Mozart, Ravel, and Gershwin should know about catalysis as well. There is no life without the miracles of catalytic reactions in plants, animals, and human beings.

Because of this broad importance of catalysis both in science and in daily life, four scientists covering the main fields of catalysis have edited the present encyclopedia, which is the first comprehensive "Catalysis from A to Z". Approximately 3000 keywords have been explained by 165 authors and coauthors, who are all active in their respective areas. It was our aim to edit a concise handbook which is quickly at hand if one wants to know the meaning of certain catalytic or catalysis-related terminology. We hope that the present book proves a useful compendium for everyone whose occasional or permanent interest is catalysis – scholars, high-school teachers, professors, chemists, bioscientists, and physicists, both within and beyond the academic world.

We have been fortunate to have conferred on a multiplicity of topics with experts. Nevertheless we might have overlooked keywords and entries which are important for catalysis. Please keep the editors informed of any such cases.

We thank the team of Wiley-VCH, Dr. F. Sagi from Lyon (France) for supporting the French translations, and especially our freelance copyeditor, Mrs. Diana P.E. Boatman, M.A., M.R.S.C, C. Chem. from Redhill, Surrey (UK), for their endless patience and help during the difficult process of completion.

Frankfurt, München, Berlin, La Jolla
January 2000

B. Cornils
W.A. Herrmann
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* "We have good reasons to assume that thousands of catalytic processes take place in living organisms between the tissues and the body fluids" (*Ann. Chim. et Phys.* **1836**, 146–151).

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How to Use this Encyclopedia

Abbreviations Used

abbr.	abbreviation
acc.	according to, accordingly
calcn(s).	calculation(s)
calc(d)(ng).	calculat(ed)(ing)
cat(s).	catalyst(s), catalytical(ly), catalysis, catalyzing, catalyze(s)
comb(s).	combination(s)
comp(s).	component(s)
conc(s).	concentration(s)
cond(s).	condition(s)
conv(s).	conversion(s)
cpd(s).	compound(s)
3D	three dimensional
DE	German patent
ee	enantiomeric excess
EP	European patent
equ(s).	equation(s)
equil(s).	equilibrium, equilibria
equiv.	equivalent
FR	French patent
GB	British Patent
H	hydrogen
hc(s).	hydrocarbon(s)
het.	heterogen, heterogeneous(ly)
hom.	homogen, homogeneous(ly)
manuf(d)(ng).	manufacture(d)(ing)
m/m	molar ratio
N	nitrogen
O	oxygen
prep(d)(n).	prepared, preparation
press.	pressure
proc(s).	process(es)
prod(s).	production, product(s)
®	trade mark
rac.	racemic
rt	room temperature
S	sulfur
sc.	supercritical
spec(s).	specification(s)
synth.	synthesis, synthethic, synthesize, synthetically
temp(s).	temperature(s)
UHV	ultra high vacuum

US	US patent
UV	ultra violet light
w/o	with or without
wt.%	weight%
w/w	by weight (e.g., %)
→	cross reference, cf.
→	reaction

Plurals of noun abbreviations are formed by adding "s" to the singular abbr. (such as abbrs.).

References

The references at the end of most of the entries illustrate developments or important aspects of the keyword, being mainly from recent publications. References which are mentioned often are given with only the name of the author and are compiled under "General references cited" (cf. below). Other information is cited mainly from recent publications in journals; in this case we dispensed with the names of the authors. Of course, no attempt has been made to provide a complete literature review of the topics covered by each keyword.

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Translations

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