

XAFS studies of the metal-support interface in highly dispersed Rh/Al₂O₃ and Rh/TiO₂ catalysts

Citation for published version (APA):

Koningsberger, D. C., Martens, J. H. A., Prins, R., & Sayers, D. E. (1986). XAFS studies of the metal-support interface in highly dispersed Rh/Al₂O₃ and Rh/TiO₂ catalysts. *Bulletin of the American Physical Society*, 31, 681-.

Document status and date:

Published: 01/01/1986

Document Version:

Publisher's PDF, also known as Version of Record (includes final page, issue and volume numbers)

Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
- The final author version and the galley proof are versions of the publication after peer review.
- The final published version features the final layout of the paper including the volume, issue and page numbers.

[Link to publication](#)

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal.

If the publication is distributed under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license above, please follow below link for the End User Agreement:

www.tue.nl/taverne

Take down policy

If you believe that this document breaches copyright please contact us at:

openaccess@tue.nl

providing details and we will investigate your claim.

13:42

NM 2 EXAFS Studies of the Metal - Support Interface
in Highly Dispersed Rh/Al₂O₃ and Rh/TiO₂ Catalysts.

D.C. KONINGSBERGER, J.H.A. MARTENS, R. PRINS, Eindhoven University of Technology, The Netherlands; D.E. SAYERS, North Carolina State University. X-ray absorption studies on a series of highly dispersed Rh/Al₂O₃ and Rh/TiO₂ catalysts show, in addition to the expected Rh-Rh coordination, a Rh-O contribution with a coordination distance of about 2.7 Å. This long distance Rh-O contribution arises from the interaction of O²⁻ support neighbours (radius 1.4 Å) with zerovalent Rh atoms (radius 1.34 Å) present in the metal-support interface. Studies of catalysts with different average particle size show that the measured (average) number of Rh-O bonds increases with decreasing Rh-Rh coordination number and therefore particle size. This implies that all particles are three dimensional. By modelling these systems the average Rh-O coordination number was found to vary from 2 to 3. No evidence was found for the presence of Rh ions in fully reduced catalyst. This means that the metal-support interface consists of zerovalent Rh atoms interacting on two or three oxygen ions in registry with the support.