Promoted V$_2$O$_5$/TiO$_2$ catalysts for selective catalytic reduction of NO with NH$_3$ at low temperatures
The influence of varying the V$_2$O$_5$ content (3–6 wt.%) was studied for the selective catalytic reduction (SCR) of nitrogen oxides by ammonia on heteropoly acid (HPA)- and tungsten oxide (WO$_3$)-promoted V$_2$O$_5$/TiO$_2$ catalysts. The SCR activity and alkali deactivation resistance of HPA-promoted V2O5/TiO2 catalysts was found to be much higher than for WO3-promoted catalysts. By increasing the vanadium content from 3 to 5 wt.% the catalysts displayed a two fold increase in activity at 225 °C and retained their initial activity after alkali doping at a molar K/V ratio of 0.181. Furthermore, the catalysts were characterized by N$_2$ physisorption, XRPD, NH$_3$-TPD, H$_2$-TPR, Raman, FTIR and EPR spectroscopy to investigate the properties of the catalysts. XRPD, Raman and FTIR showed that promotion with 15 wt.% HPA does not cause V$_2$O$_5$ to be present in crystalline form, also at a loading of 5 wt.% V$_2$O$_5$. Hence, use of HPAs does not cause increased N$_2$O formation or unselective oxidation of NH$_3$. NH$_3$-TPD showed that promotion by HPA instead of WO$_3$ causes the catalysts to possess a higher number of acid sites, both in fresh and alkali poisoned form, which might explain their higher potassium tolerance. Ex-situ EPR spectroscopy revealed that HPA-promoted catalysts have higher V$_4^+/V_{total}$ ratios than their WO$_3$-promoted counterparts. H$_2$-TPR suggests that HPAs do not have a beneficial effect on the V$_5^+/V_{total}$ redox system, relative to WO$_3$. 

General information
State: Published
Organisations: Department of Chemistry, Department of Chemical and Biochemical Engineering, Centre for Catalysis and Sustainable Chemistry, DTU Admission Course, CHEC Research Centre, Department of Chemistry
Pages: 282-290
Publication date: 2016
Main Research Area: Technical/natural sciences

Publication information
Journal: Applied Catalysis B: Environmental
Volume: 183
ISSN (Print): 0926-3373
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Scopus rating (2017): SJR 3.152 SNIP 2.359
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 8.86 SJR 2.693 SNIP 2.185
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 2.326 SNIP 2.16 CiteScore 7.72
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 2.322 SNIP 2.206 CiteScore 6.92
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 2.391 SNIP 2.154 CiteScore 6.42
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 2.65 SNIP 2.234 CiteScore 6.08
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 2.606 SNIP 2.351 CiteScore 6.14
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 2.479 SNIP 1.904
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 2.323 SNIP 2.245
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 2.514 SNIP 2.297
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 2.536 SNIP 2.532
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 2.315 SNIP 2.272
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 2.136 SNIP 2.283
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 2.406 SNIP 2.421
Scopus rating (2003): SJR 2.132 SNIP 2.223
Scopus rating (2002): SJR 2.373 SNIP 1.851
Scopus rating (2001): SJR 2.685 SNIP 2.39
Web of Science (2001): Indexed yes
Scopus rating (2000): SJR 1.859 SNIP 2.08
Scopus rating (1999): SJR 1.921 SNIP 1.871
Original language: English
SCR of NO with NH3, V2O5, Potassium poisoning, Heteropoly acids
Electronic versions:
1_s2.0_S0926337315302253_main.pdf
DOIs:
10.1016/j.apcatb.2015.10.044
Source: Findit
Source-ID: 2287663906
Combined oxidation and absorption of nox by an ionic liquid tandem process.
The present invention relates to a new strategy for capturing NOx using a two-step process.

General information
State: Published
Organisations: Department of Chemistry, Department of Chemistry, Centre for Catalysis and Sustainable Chemistry, Organic Chemistry, DTU Admission Course, Office for Research and Relations, Risø National Laboratory for Sustainable Energy
Publication date: 22 Oct 2015

Publication information
IPC: B01D 53/ 04 A I
Patent number: WO2015158849
Date: 22/10/2015
Priority date: 16/04/2014
Priority number: EP20140164843
Original language: English
Electronic versions:
WO2015158849A1.pdf
Main Research Area: Technical/natural sciences
Source: espacenet
Source-ID: WO2015158849
Publication: Research › Patent – Annual report year: 2016

Characterization of spectral compression of OFDM symbols using optical time lenses
We present a detailed investigation of a double-time-lens subsystem for spectral compression of OFDM symbols. We derive optimized parameter settings by simulations and experimental characterization. The required chirp for OFDM spectral compression is very large.

General information
State: Published
Organisations: Department of Photonics Engineering, High-Speed Optical Communication, DTU Admission Course, National Space Institute, Department of Micro- and Nanotechnology
Authors: Røge, K. M. (Intern), Guan, P. (Intern), Kjøller, N. (Intern), Lillieholm, M. (Intern), Galili, M. (Intern), Morioka, T. (Intern), Oxenløwe, L. K. (Intern)
Pages: 303-304
Publication date: 2015

Host publication information
Title of host publication: Proceedings of 2015 IEEE Photonics Conference
Publisher: IEEE
ISBN (Print): 9781479974658
Main Research Area: Technical/natural sciences
Conference: 2015 IEEE Photonics Conference, Reston, Virginia, United States, 04/10/2015 - 04/10/2015
Photons and Electrooptics, Chirp, Lenses, Numerical simulation, ofdm, optical signal processing, Switches, time lens, Wavelength division multiplexing
DOIs: 10.1109/IPCon.2015.7323656
Source: FindIt
Source-ID: 276556050
Publication: Research - peer-review › Article in proceedings – Annual report year: 2015

Synchrotron Based Structural Investigations of Mass-Selected PtxGd Nanoparticles and a Gd/Pt(111) Single Crystal for Electrochemical Oxygen Reduction
The sluggish kinetics of the oxygen reduction reaction (ORR) hinders the commercialization of proton exchange membrane fuel cells (PEMFC). The ORR activity is enhanced by alloying Pt with late transition 3d metals (i.e. Fe, Co, Ni, and Cu)1. However, these compounds tend to degrade in a fuel cell by dealloying. An alternative approach is to alloy Pt with rare-earth elements. Their highly negative alloying energy may provide them with kinetic stability against dealloying under reaction conditions. A recent publication from our group reported the high ORR activity and stability of polycrystalline Pt5Gd2. In this work, we present the experimental results of mass-selected PtxGd nanoparticles
synthesized by gas aggregation after sputtering of an alloy target in an ultrahigh vacuum (UHV)/3. PtXGd nanoparticles with nominal sizes of 3, 5, 7, and 9 nm were selected using time-of-flight mass filtering and deposited on glassy carbon (GC) disk electrodes. Rotating ring disk electrode (RRDE) measurements in 0.1 M HClO4 were used to measure the activity in comparison to pure Pt 4. The ORR specific activity increases with the nanoparticle size; a maximum mass activity is achieved with the 7 nm sample, ~3.6 A/mg Pt at 0.9 V. X-ray absorption spectroscopy measurements suggest that the high ORR activity is due to a compressive strain exerted by the alloy core onto the Pt overlayer at the surface. The structure formed on these types of alloys/2 is further elucidated using a Gd/Pt(111) single crystal. The alloy was prepared in UHV by depositing 150 Å of Gd followed by annealing, thus simulating a bulk single crystal. It was characterized in vacuo using low energy electron diffraction, ion scattering spectroscopy, X-ray photoelectron spectroscopy and temperature programmed desorption of CO. Subsequently, the crystal was transferred to an electrochemical cell, where a 1 nm thick Pt overlayer was formed; this constitutes the active phase for oxygen reduction. Using synchrotron based grazing X-ray diffraction, we determine the structure of the alloy and the Pt overlayer. The diffraction contributions from the Pt overlayer is separated from the Pt5Gd alloy, and the analysis of both diffraction patterns are presented. By investigating such well-defined structures, we gain valuable scientific insight into the relationship between their structure and functionality. On the basis of this insight, we can develop even better catalysts for oxygen electroreduction. References 1. Chen, C. et al. Highly Crystalline Multimetallic Nanostructures with Three-Dimensional Electrocatalytic Surfaces. Science 343, 1339–1343 (2014). 2. Escudero-Escribano, M. et al. Pt5Gd as a Highly Active and Stable Catalyst for Oxygen Electroreduction. J. Am. Chem. Soc. 134, 16476–16479 (2012). 3. Velazquez-Palenzuela, A. et al. The enhanced activity of mass-selected PtXGd nanoparticles for oxygen electroreduction. J. Catal. [in press] (2015). doi:10.1016/j.jcat.2014.12.012 4. Perez-Alonso, F. J. et al. The Effect of Size on the Oxygen Electroreduction Activity of Mass-Selected Platinum Nanoparticles. Angew. Chem. Int. Ed. 51, 4641–4643 (2012).

Mapping the Complex Morphology of Cell Interactions with Nanowire Substrates Using FIB-SEM

Using high resolution focused ion beam scanning electron microscopy (FIB-SEM) we study the details of cell-nanostructure interactions using serial block face imaging. 3T3 Fibroblast cellular monolayers are cultured on flat glass as a control surface and on two types of nanostructured scaffold substrates made from silicon black (Nanograss) with low- and high nanowire density. After culturing for 72 hours the cells were fixed, heavy metal stained, embedded in resin, and processed with FIB-SEM block face imaging without removing the substrate. The sample preparation procedure, image acquisition and image post-processing were specifically optimised for cellular monolayers cultured on nanostructured substrates. Cells display a wide range of interactions with the nanostructures depending on the surface morphology, but also greatly varying from one cell to another on the same substrate, illustrating a wide phenotypic variability. Depending on the substrate and cell, we observe that cells could for instance: break the nanowires and engulf them, flatten the nanowires or simply reside on top of them. Given the complexity of interactions, we have categorised our observations and created an overview map. The results demonstrate that detailed nanoscale resolution images are required to begin understanding the wide variety of individual cells’ interactions with a structured substrate. The map will provide a framework for light microscopy studies of such interactions indicating what modes of interactions must be considered.
Publication information
Journal: P L o S One
Volume: 8
Issue number: 1
ISSN (Print): 1932-6203
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): SJR 1.164 SNIP 1.111
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 3.11 SJR 1.236 SNIP 1.101
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.427 SNIP 1.136 CiteScore 3.32
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.559 SNIP 1.148 CiteScore 3.54
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.772 SNIP 1.153 CiteScore 3.94
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 1.982 SNIP 1.156 CiteScore 4.15
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 2.425 SNIP 1.233 CiteScore 4.58
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 2.705 SNIP 1.178
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 2.614 SNIP 1.046
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 2.506 SNIP 1.006
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 1.379 SNIP 0.537
Web of Science (2006): Indexed yes
Original language: English
Electronic versions:
journal.pone.0053307.pdf
DOIs:
10.1371/journal.pone.0053307

Bibliographical note
This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.
Mini-chromosomes among Danish Candida glabrata isolates originated through two different mechanisms

We analyzed 201 strains of the pathogenic yeast Candida glabrata from patients, mainly suffering from systemic infection, at Danish hospitals during 1985 – 1999. Our analysis showed that these strains were closely related but exhibited large karyotype polymorphism. Nine strains contained mini-chromosomes, which were smaller than 0.5 Mb. Regarding the year, patient and hospital, C. glabrata strains had independent origin and the analyzed mini-chromosomes were structurally not related to each other (i.e., they contained different sets of genes). We inferred two mechanisms involved in their origin: (i) through a segmental duplication which covered the centromeric region, and (ii) by a translocation event moving a larger chromosome arm to another chromosome that leaves the centromere part with the shorter arm. The first type of mini-chromosomes carrying duplicated genes exhibited mitotic instability, while the second type, which contained the corresponding genes in only one copy in the genome, was mitotically stable. Apparently, in patients C. glabrata chromosomes are frequently reshuffled resulting in various genetic configurations, including appearance of mini-chromosomes. Such new combinations could have increased fitness in a certain patient "environment"
Temaer i Dansk

General information
State: Published
Organisations: DTU Admission Course
Authors: Knudsen, J. S. (Intern)
Number of pages: 200
Publication date: 2008

Publication information
Place of publication: Ballerup
Publisher: Ingeniørhøjskolen i København
Original language: Danish
Main Research Area: Technical/natural sciences
Publication: Education › Compendium/lecture notes – Annual report year: 2008

Idéhistoriske noter

General information
State: Published
Organisations: DTU Admission Course
Authors: Kristensen, J. Ø. (Intern)
Number of pages: 100
Publication date: 2001

Publication information
Place of publication: Ballerup
Publisher: Ingeniørhøjskolen i København
Edition: 2
Original language: Danish
Main Research Area: Technical/natural sciences
Publication: Education › Compendium/lecture notes – Annual report year: 2001

Projects:

Mechanical and microstructural transients after strain path changes in metal forming
Department of Mechanical Engineering
Materials and Surface Engineering
DTU Admission Course
Manufacturing Engineering
Period: 01/03/2014 → 06/06/2017
Number of participants: 3
Project participant:
Jensen, Mikkel Ravn Boye (Intern)
Winther, Grethe (Intern)
Bay, Niels Oluf (Intern)

Relations
Multi-scale material models for smart metal forming

Analysis of deformation-induced intragranular orientation spread in IF-steel by a combination of 3DXRD and crystal plasticity

Department of Mechanical Engineering
Materials and Surface Engineering
Department of Physics
Neutrons and X-rays for Materials Physics
Manufacturing Engineering

DTU Admission Course

University of Illinois
Period: 01/02/2014 → 31/07/2017
Number of participants: 5
Acronym: MulMatMod
Number of related Ph.D. students: 2
Project participant:
Winther, Grethe (Intern)
Oddershede, Jette (Intern)
Bay, Niels Oluf (Intern)
Juul, Nicolai Ytterdal (Intern)
Jensen, Mikkel Ravn Boye (Intern)

Related projects:
Characterisation and modelling of crystallographic orientation changes at the grain scale during plastic deformation
Mechanical and microstructural transients after strain path changes in metal forming

Activities:
Analysis of deformation-induced intragranular orientation spread in IF-steel by a combination of 3DXRD and crystal plasticity
Intragranular orientation spread induced by grain interaction
Grain-scale investigations of deformation and surface treatment of stainless steel
Deformation-induced intragranular orientation spread in ferrite investigated by 3DXRD and forward modeling
Combining crystal plasticity and dislocation theory to model dislocation boundary characteristics
Intragranular orientation spread induced by grain interaction
Analysis of grain-scale experimental data in a crystal plasticity framework
Measured Resolved Shear Stresses on Slip Systems in Austenitic Steel Grains
Parallel evolution of deformation textures and dislocation boundaries
Hierarchical microstructures in metals due to dislocation-mediated plasticity

Publications:
Analysis of deformation-induced intragranular orientation spread in IF-steel by a combination of 3DXRD and crystal plasticity
Deformation-induced orientation spread in individual bulk grains of an interstitial-free steel

Rekruttering af unge (mænd) til ingeniøruddannelse i Region Sjælland: Knudepunkter til overvejelse og diskussion
Period: 17 Nov 2011
Jesper Stensbo Knudsen (Speaker)
Diskussion af centrale problemstillinger i forbindelse med rekrutteringsprojekt i Region Sjælland, IMODUS. København, Danmark.

Documents:
abstract

Related external organisation

Unknown external organisation
Activity: Talks and presentations › Conference presentations

Faggruppesekretær
Period: 26 Aug 2010 → …
Hanne Lindgreen Frimurer (Other)
DTU Admission Course

Related external organisation

Ingeniørhøjskolen i København
Denmark
Activity: Other

Lektorbedømmelse (External organisation)
Period: 26 Apr 2009 → 24 May 2009
Jesper Stensbo Knudsen (Participant)
DTU Admission Course

Description
Bedømmelsesudvalg

Body type: Andet

Related external organisation

Lektorbedømmelse
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

AK-iederforsamlingen (External organisation)
Period: 22 Mar 2009 → …
Jesper Stensbo Knudsen (Chairman)
DTU Admission Course

Description
Forening af studieledere ved Adgangskurser til ingenieruddannelserne i Danmark

Related external organisation

AK-iederforsamlingen
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

Fra Tolerance til Respekt
Period: 26 Apr 2008
Jesper Stensbo Knudsen (Speaker)
DTU Admission Course

Description
Diskussion af centrale begreber inden for interkulturel kommunikation med L. Wittgenstein og H-G. Gadamer som baggrund. Malmö, Sverige
En filosofisk fantasi over Rafæls "Skolen i Athen": Diltheys "Drøm" (1903)

Period: 28 Sep 2007
Jens Østergaard Kristensen (Lecturer)
DTU Admission Course

Description
Den tyske filosof og åndshistoriker Wilhelm Dilthey (1833-1911) holdt ved sin 70 års fødselsdag en tale, "Drøm", hvor han med udgangspunkt i en drøm, han engang havde haft om Rafæls fresko "Skolen i Athen", prøvede at sammendrage det vigtigste i sin filosofi. Ebeltoft, Danmark