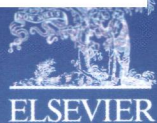


Volume 38

Issue 18

18 June 2013

ISSN 0360-3199



International Journal of **HYDROGEN ENERGY**

Editor-in-Chief:

Emre A. Veziroğlu

Senior Associate Editor:

J.W. Sheffield

Associate Editors:

**A. Basile, M.B. Goresek,
E.C. Kumbur, M.M. Mench,
and N.Z. Muradov**

Assistant Editors:

**S.L. Garrison, J. Gong, M.D. Mat,
D.P. Mishra and F. Chen**

includes SPECIAL SECTION

Hypothesis IX

Guest Editors: Stephen L. Garrison, Carlos Roldán and Giuseppe Spazzafumo

Available online at www.sciencedirect.com

SciVerse ScienceDirect



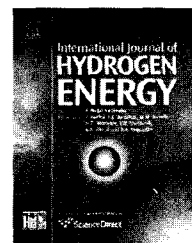


ELSEVIER

Available online at www.sciencedirect.com

SciVerse ScienceDirect

International Journal of Hydrogen Energy 38 (2013) v–viii



www.elsevier.com/locate/ijhydene

Contents

Regular Articles

Hydrogen Economy Implementation

- P.E. DODDS and S. DEMOULLIN 7189 Conversion of the UK gas system to transport hydrogen

Electrolysis/Electrolyzers

- T.H.J.A. SLEUTELS, A.T. HEIJNE, C.J.N. BUISMAN and H.V.M. HAMELERS 7201 Steady-state performance and chemical efficiency of Microbial Electrolysis Cells

Chemical/Thermochemical Hydrogen

- S. MERCATI, M. MILANI, L. MONTORSI and F. PALTRINIERI 7209 Optimization of the working cycle for a hydrogen production and power generation plant based on aluminum combustion with water

Solar Hydrogen

- Y.-P. YUAN, S.-W. CAO, L.-S. YIN, L. XU and C. XUE 7218 NiS₂ Co-catalyst decoration on CdLa₂S₄ nanocrystals for efficient photocatalytic hydrogen generation under visible light irradiation

- B. ZHANG, W. YAO, C. HUANG, Q. XU and Q. WU 7224 Shape effects of CdS photocatalysts on hydrogen production

- B. WANG, Q. SUN, S. LIU and Y. LI 7232 Synergetic catalysis of CuO and graphene additives on TiO₂ for photocatalytic water splitting

- S. ZHANG, H. WANG, M. YEUNG, Y. FANG, H. YU and F. PENG 7241 Cu(OH)₂-modified TiO₂ nanotube arrays for efficient photocatalytic hydrogen production

Bio Hydrogen

- C. LIU, W. SHI, M. KIM, Y. YANG, Z. LEI and Z. ZHANG 7246 Photocatalytic pretreatment for the redox conversion of waste activated sludge to enhance biohydrogen production

- K.-W. JUNG, D.-H. KIM and H.-S. SHIN 7253 Application of a simple method to reduce the start-up period in a H₂-producing UASB reactor using xylose

- S.I. GADOW, H. JIANG, T. HOJO and Y.-Y. LI 7259 Cellulosic hydrogen production and microbial community characterization in hyper-thermophilic continuous bioreactor

Catalysts/Electrocatalysts

- L. YAO, J. ZHU, X. PENG, D. TONG and C. HU 7268 Comparative study on the promotion effect of Mn and Zr on the stability of Ni/SiO₂ catalyst for CO₂ reforming of methane

- Y.-C. LUO, Y.-H. LIU, Y. HUNG, X.-Y. LIU and C.-Y. MOU 7280 Mesoporous silica supported cobalt catalysts for hydrogen generation in hydrolysis of ammonia borane

- F. QIU, L. LI, G. LIU, Y. WANG, C. AN, C. XU, Y. XU, Y. WANG, L. JIAO and H. YUAN 7291 Synthesis of Fe_{0.3}Co_{0.7}/rGO nanoparticles as a high performance catalyst for the hydrolytic dehydrogenation of ammonia borane

- Y. KARAKUŞ, F. AYNACI, E. KIPÇAK and M. AKGÜN 7298 Hydrogen production from 2-propanol over Pt/Al₂O₃ and Ru/Al₂O₃ catalysts in supercritical water

L. XU, H. SONG and L. CHOU

7307 Ordered mesoporous MgO–Al₂O₃ composite oxides supported Ni based catalysts for CO₂ reforming of CH₄: Effects of basic modifier and mesopore structure**Semi-Hydrates**A.T. TRUEBA, I.R. RADOVIĆ,
J.F. ZEVENBERGEN, C.J. PETERS and
M.C. KROON7326 Kinetic measurements and *in situ* Raman spectroscopy study of the formation of TBAF semi-hydrates with hydrogen and carbon dioxide**Storage**E.M. BORZONE, A. BARUI, M.V. BLANCO
and G.O. MEYER7335 Dynamic measurements of hydrogen reaction with LaNi_{5-x}Sn_x alloys

W.J. PASCHOALINO and E.A. TICIANELLI

7344 An investigation of the borohydride oxidation reaction on La–Ni-based hydrogen storage alloys

T. SADHASIVAM, M. STERLIN LEO HUDSON,
S.K. PANDEY, A. BHATNAGAR, M.K. SINGH,
K. GURUNATHAN and O.N. SRIVASTAVA7353 Effects of nano size mischmetal and its oxide on improving the hydrogen sorption behaviour of MgH₂

T.G. VOSKUILEN and T.L. POURPOINT

7363 Phase field modeling of hydrogen transport and reaction in metal hydrides

S. SEENITHURAI, R. KODI PANDYAN,
S. VINODH KUMAR and M. MAHENDRAN7376 H₂ adsorption in Ni and passivated Ni doped 4 Å single walled carbon nanotube**Purification/Membranes**B. MALVOISIN, F. BRUNET, J. CARLUT,
G. MONTES-HERNANDEZ, N. FINDLING,
M. LANSON, O. VIDAL, J.-Y. BOTTERO and
B. GOFFÉ

7382 High-purity hydrogen gas from the reaction between BOF steel slag and water in the 473–673 K range

D.K. WANG, J. MOTUZAS,
J.C. DINIZ DA COSTA and S. SMART

7394 Rapid thermal processing of tubular cobalt oxide silica membranes

PE Fuel Cells

X. ZHAO, Y. FU, W. LI and A. MANTHIRAM

7400 Effect of non-active area on the performance of subgasketed MEAs in PEMFC

C. DAMOUR, M. BENNE, J.-J. KADJO,
S. ROSINI and B. GRONDIN-PEREZ

7407 Fast NMPC scheme of a 10 kW commercial PEMFC

T.J. MASON, J. MILLICHAMP, P.R. SHEARING
and D.J.L. BRETT

7414 A study of the effect of compression on the performance of polymer electrolyte fuel cells using electrochemical impedance spectroscopy and dimensional change analysis

SO Fuel CellsI. PARK, J. KIM, J. CHOI, H. LEE, J. PARK
and D. SHIN7423 Enhanced sintering behavior mechanism of nanocrystalline BaCe_{0.8}Sm_{0.2}O_{3-δ} by Cu dopingY. LING, J. CHEN, Z. WANG, C. XIA,
R. PENG and Y. LU7430 New ionic diffusion strategy to fabricate proton-conducting solid oxide fuel cells based on a stable La₂Ce₂O₇ electrolyte**Fuel Cells - General**N.A.M. BARAKAT, M.A. ABDELKAREEM,
G. SHIN and H.Y. KIM

7438 Pd-doped Co nanofibers immobilized on a chemically stable metallic bipolar plate as novel strategy for direct formic acid fuel cells

X. ZHAO, W. LI, A. MURTHY, Z. JIANG,
Z. ZUO and A. MANTHIRAM

7448 A DMFC stack operating with hydrocarbon blend membranes and Pt–Ru–Sn–Ce/C and Pd–Co/C electrocatalysts

J.A. GÓMEZ-CUASPUD and M. SCHMAL

7458 Nanostructured metal oxides obtained by means polymerization-combustion at low temperature for CO selective oxidation

MH Heat Pumps

- N. YASUDA, T. TSUCHIYA, N. OKINAKA and T. AKIYAMA 7469 Application of metal hydride sheet to thermally driven cooling system

I.C. Engines

- G.M. KOSMADAKIS, E.G. PARIOTIS and C.D. RAKOPOULOS 7477 Heat transfer and crevice flow in a hydrogen-fueled spark-ignition engine: Effect on the engine performance and NO exhaust emissions
- C. Ji, B. ZHANG and S. WANG 7490 Enhancing the performance of a spark-ignition methanol engine with hydrogen addition

Combustion

- Z. AL-HAMAMRE and J. YAMIN 7499 The effect of hydrogen addition on premixed laminar acetylene–hydrogen–air and ethanol–hydrogen–air flames
- V. DI SARLI and A. DI BENEDETTO 7510 Effects of non-equidiffusion on unsteady propagation of hydrogen-enriched methane/air premixed flames
- H.A. YEPES and A.A. AMELL 7519 Laminar burning velocity with oxygen-enriched air of syngas produced from biomass gasification
- J. AN, Y. JIANG, M. YE and R. QIU 7528 One-dimensional turbulence simulations and chemical explosive mode analysis for flame suppression mechanism of hydrogen/air flames

Embrittlement/Properties

- A. ALVARO, V. OLDEN and O.M. AKSELSEN 7539 3D cohesive modelling of hydrogen embrittlement in the heat affected zone of an X70 pipeline steel
- G. ZHANG, X. WANG, F. YANG, Y. SHI, J. SONG and X. LAI 7550 Energetics and diffusion of hydrogen in hydrogen permeation barrier of α -Al₂O₃/FeAl with two different interfaces
- M. TAXAK, S. KUMAR, B.B. KALEKAR and N. KRISHNAMURTHY 7561 Effect of nickel addition on the solubility of hydrogen in tantalum
- S. AKAMARU, M. HARA, N. NUNOMURA and M. MATSUYAMA 7569 Effect of substituting elements on hydrogen uptake for Pd–Rh–H and Pd–Ag–H systems evaluated by magnetic susceptibility measurement

Corrigendum

- T.-Y. MUN and J.-S. KIM 7576 Corrigendum to “Air gasification of dried sewage sludge in a two-stage gasifier. Part 2: calcined dolomite as a bed material and effect of moisture content of dried sewage sludge for the hydrogen production and tar removal” [Int J Hydrogen Energy 38 (2013) 5235–5242]

Special Section Papers

Hypothesis IX

Guest Editors: Stephen L. Garrison, Carlos Roldán and Giuseppe Spazzafumo

- C. ROLDÁN VILLALOBOS and G. SPAZZAFUMO 7577 Editorial
- B. SØRENSEN 7578 Fuel cells: Optimism gone – Hard work still there
- S.C. WEINER, L.L. FASSBENDER, C. BLAKE, S.M. ACEVES, B.P. SOMERDAY and A. RUIZ 7583 Web-based resources enhance hydrogen safety knowledge
- T.R. FERNANDES, R. PIMENTA, L. CORREAS, J.M. GARCÍA-CAMÚS, A.M. CABRAL, F.D. REYES, B. GRANO, R. GUERRA, C. COUHERT and E. CHACÓN 7594 Platform for promoting a hydrogen economy in Southwest Europe: The HYRREG project
- G. SPAZZAFUMO 7599 South Patagonia: Wind/hydrogen/coal system with reduced CO₂ emissions

- S.-K. RYI, J.-S. PARK, K.-R. HWANG,
C.-B. LEE and S.-W. LEE 7605 The property of hydrogen separation from CO₂ mixture using Pd-based membranes for carbon capture and storage (CCS)
- A. DI BLASI, L. ANDALORO, S. SIRACUSANO,
N. BRIGUGLIO, G. BRUNACCINI, A. STASSI,
A.S. ARICÒ and V. ANTONUCCI 7612 Evaluation of materials and components degradation of a PEM electrolyzer for marine applications
- J. MORENO and J. DUFOUR 7616 Life cycle assessment of hydrogen production from biomass gasification. Evaluation of different Spanish feedstocks
- U. IZQUIERDO, V.L. BARRIO, J. REQUIES,
J.F. CAMBRA, M.B. GÜEMEZ and P.L. ARIAS 7623 Tri-reforming: A new biogas process for synthesis gas and hydrogen production
- R. ZAGRODNIK, M. THIEL, K. SEIFERT,
M. WŁODARCZAK and M. ŁANIECKI 7632 Application of immobilized *Rhodobacter sphaeroides* bacteria in hydrogen generation process under semi-continuous conditions
- V.M. GARCÍA, M. SERRA, J. LLORCA and
J. RIERA 7640 Design of linear controllers applied to an ethanol steam reformer for PEM fuel cell applications
- J. DUFOUR, C. MARTOS, A. RUIZ and
F.J. AYUELA 7647 Effect of the precursor on the activity of high temperature water gas shift catalysts
- N.-R. LEE, S.-S. LEE, K.-I. KIM, W.-G. KIM,
H. JU, D.M. KIM and T.-W. HONG 7654 Fabrications and evaluations of hydrogen permeation on Al₂O₃/CeO₂/graphene (ACG) composites membrane by Hot Press Sintering (HPS)
- E. ACHA, J. REQUIES, V.L. BARRIO,
J.F. CAMBRA, M.B. GÜEMEZ, P.L. ARIAS and
Y. VAN DELFT 7659 PdCu membrane integration and lifetime in the production of hydrogen from methane
- Y.-D. LIM, D.-W. SEO, S.-H. LEE, H.-H. JU,
T.-W. HONG, D.-M. KIM, H.-C. JU and
W.-G. KIM 7667 Synthesis and properties of cis/trans mixtures of bis(4-hydroxyphenyl)-1,2-diphenylethylene containing sulfonated poly(ethersulfone)s proton exchange membranes
- H.M. HERNÁNDEZ-HERNÁNDEZ,
J.M. OLIVARES-RAMÍREZ and
O. JIMÉNEZ-SANDOVAL 7674 Performance of novel bimetallic carbonyl clusters as PEM fuel cell anodes, a comparative study
- J. URIBE-GODÍNEZ, V. GARCÍA-MONTALVO
and O. JIMÉNEZ-SANDOVAL 7680 Development of Ir-based and Rh-based catalyst electrodes for PEM fuel cell applications
- M.A. TRAVASSOS, V.V. LOPES, R.A. SILVA,
A.Q. NOVAIS and C.M. RANGEL 7684 Assessing cell polarity reversal degradation phenomena in PEM fuel cells by electrochemical impedance spectroscopy
- H. YOO, J. KO and H. JU 7697 A numerical investigation of hydrogen absorption phenomena in thin double-layered annulus ZrCo beds
- P. CHIPPAR and H. JU 7704 Numerical modeling and investigation of gas crossover effects in high temperature proton exchange membrane (PEM) fuel cells
- P. CHIPPAR, K. OH, D. KIM, T.-W. HONG,
W. KIM and H. JU 7715 Coupled mechanical stress and multi-dimensional CFD analysis for high temperature proton exchange membrane fuel cells (HT-PEMFCs)
- L. ANDALORO, G. NAPOLI, F. SERGI,
G. DISPENZA and V. ANTONUCCI 7725 Design of a hybrid electric fuel cell power train for an urban bus