

21st World Hydrogen Energy Conference 2016 (WHEC 2016)

Zaragoza, Spain
13 - 16 June 2016

Volume 1 of 2

ISBN: 978-1-5108-3835-2

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2016) by Spanish Hydrogen Association (AeH2)
All rights reserved.

Printed by Curran Associates, Inc. (2017)

For permission requests, please contact Spanish Hydrogen Association (AeH2)
at the address below.

Spanish Hydrogen Association (AeH2)
Sector Embarcaciones 24, local 5. Tres
Cantos, 28760 Madrid
Spain

Phone: 91.241.95.31 / 91.804.53.72

info@neh2.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

VOLUME 1

USING CRYOGENIC SEPARATION OF ANODE OFF GASES FOR HIGH TEMPERATURE FUEL CELL APPLICATIONS	1
<i>J. Mile, R. Bernat</i>	
TRANSPORT SIMULATIONS OF GAS FLOW IN COMPRESSED MICROSTRUCTURES OF HT-PEFC GAS DIFFUSION LAYERS	3
<i>D. Froning, J. Yu, U. Reimer, I. Manke, V. Schmidt, W. Lehnert</i>	
MODELING OF PARTIAL OXIDATION OF NATURAL GAS IN A POROUS CATALYTIC BED	4
<i>A. Al-Musa, S. Shabunya, M. Al-Johani, V. Marynenko, M. Al-Saleh, A. Al-Zahrani, V. Kalinin</i>	
CATALYTIC EFFECT OF ZRCL₄ ON DEHYDROGENATION OF LIBH₄	6
<i>S. Kumar, H. Miyaoka, T. Ichikawa, Y. Kojima</i>	
HIGHLY EFFICIENT SOLAR HYDROGEN GENERATION	9
<i>A. Fallisch, P. Forster, M. Zedda, J. Ohlmann</i>	
ACCOMPANYING RESEARCH PROJECT FOR THE 50 HRS PROGRAMME	11
<i>R. Wurster, J. Burkhardt, M. Huttmacher, T. Elliger, M. Wietschel</i>	
HYDROGEN GENERATION FROM (BIO)ALCOHOLS, SUGARS AND BIOMASS	13
<i>H. Junge, M. Beller</i>	
COUNTRY UPDATE—CANADA’S LEADERSHIP IN HYDROGEN AND FUEL CELL COMMERCIALIZATION	15
<i>E. Denhoff</i>	
POWER-TO-SNG TECHNOLOGY FOR ENERGY STORAGE AT LARGE SCALES	17
<i>F. Gutierrez-Martin, L. Rodriguez-Anton</i>	
COMMERCIAL POTENTIAL FOR RENEWABLE HYDROGEN IN CALIFORNIA	20
<i>S. Schoenung, J. Keller</i>	
PULSE ELECTRODEPOSITED CATHODE CATALYST LAYERS FOR PEM FUEL CELLS	22
<i>A. Egetenmeyer, M. Baumgartner, D. Durneata, H. Natter, I. Radev, V. Peinecke</i>	
HYDROGEN PRODUCTION BY COUPLING PRESSURIZED HIGH TEMPERATURE ELECTROLYSER WITH SOLAR TOWER TECHNOLOGY	23
<i>N. Monnerie, A. Houaijia, M. Roeb, C. Sattler</i>	
METHANE/STEAM GLOBAL REFORMING KINETICS IN NI/YSZ-CONTAINING PLANAR PRE-REFORMERS FOR SOFC SYSTEMS	26
<i>V. Nguyen, R. Deja, R. Peters, L. Blum, D. Stolten</i>	
ALL JAPAN HYDROGEN PROJECT TO REALIZE HYDROGEN ECONOMY	28
<i>Y. Kojima, H. Takagi, M. Harada, N. Kuriyama, K. Sakata, H. Kameyama, H. Uchida</i>	
MODELING, ANALYSIS AND CONTROL OF HYDROGEN-BASED MICROGRIDS WITH HYBRID STORAGE UNDER MINIMUM DEGRADATION CRITERIA	30
<i>F. Garcia-Torres, L. Valverde, C. Bordons</i>	
FOSSIL FUEL-BASED PRODUCTION OF HYDROGEN WITH LOW-TO-ZERO CO₂ EMISSIONS: OVERVIEW OF TECHNOLOGIES	32
<i>N. Muradov</i>	
RISKS AND SAFETY LEVEL OF COMPOSITE CYLINDERS	34
<i>B. Becker, G. Mair</i>	
FUEL CELLS IN THE AERONAUTICAL SECTOR	36
<i>M. Argumosa</i>	
REGIONAL NETWORKING AS A SUCCESS FACTOR FOR THE IMPLEMENTATION OF HYDROGEN AND FUEL CELLS	37
<i>T. Kattenstein, M. Weber</i>	
LCA OF POWER TO TRANSPORT CHAINS AND THE DIFFERENT ROLE OF HYDROGEN	39
<i>J. Koj, J. Linssen, A. Schreiber, C. Wulf, P. Zapp</i>	
EXPERIMENTAL STUDY ON TOTALIZED HYDROGEN ENERGY UTILIZATION SYSTEM USING WIND POWER DATA	40
<i>S. Bhogilla, H. Ito, A. Kato, A. Nakano</i>	
DEGRADATION OF ATMOSPHERIC PLASMA SPRAYED MCF PROTECTION COATINGS IN PLANAR SOFCS	43
<i>N. Grunwald, N. Menzler, O. Guillon, R. Vaben</i>	
STUDY OF THE INFLUENCE OF THE BALANCE OF PLANT AND KEY PARAMETERS ON THE PERFORMANCE OF AN ALKALINE WATER ELECTROLYZER	44
<i>M. Sanchez, E. Amores, B. Oraa</i>	
DEVELOPMENT OF FUEL CELL ELECTRIC HEAVY DUTY TRUCKS	47
<i>J. Goldman, P. Scott, M. Simon</i>	
RENOVAGAS: PROCESS FOR THE PRODUCTION OF RENEWABLE NATURAL GAS	48
<i>J. Rubio, P. Cortes, M. Escudero, I. Godos, J. Lana, R. Navarro, S. Perez, M. Sanchez</i>	
USE OF HYDROGEN FOR METHANE PRODUCTION: STUDY OF ACIDIC SUPPORTS	51
<i>I. Garcia-Garcia, U. Izquierdo, V. Barrio, J. Cambra, P. Arias</i>	

HYDROGEN SYSTEMS: A WIDE PANEL OF SERVICES TO HELP MANAGE THE ELECTRIC SYSTEMS	53
<i>B. Guinot, C. Mansilla</i>	
MOLTEN METAL CAPILLARY AND FALLING FILM REACTORS FOR THE HIGH TEMPERATURE PYROLYSIS OF METHANE	55
<i>A. Parra, D. Agar</i>	
COMPOSITE OVERWRAPPED PRESSURE VESSELS RESISTANCE TO MECHANICAL IMPACT – HYPACTOR PROJECT (FCH JU 2014-2017)	57
<i>F. Nony, N. Alexandre, O. Bardoux, P. Breuer, F. Dahmene, M. Barcikowski, K. Lasn, P. Lenain</i>	
CCVD SYNTHESIS OF GRAPHENE AND HYDROGEN PRODUCTION USING BIOMORPHIC CARBON DERIVED CATALYSTS	59
<i>F. Cazana, N. Latorre, V. Sebastian, E. Romeo, C. Royo, A. Monzon</i>	
IMPROVEMENT OF ENERGY RECOVERY FROM ORGANIC WASTES BY THE BIOHYDROGEN FOLLOWED BY BIOBUTANOL FERMENTATION USING CLOSTRIDIUM ACETOBUTYLICUM MTCC 11276	62
<i>R. Mitra, D. Das</i>	
SCENARIO STUDY FOR FULL-FLEDGED HYDROGEN UTILIZATION WITH CO₂-FREE HYDROGEN GLOBAL SUPPLY CHAINS	64
<i>M. Sasakura, Y. Ishimoto, K. Sakata</i>	
NITROGEN-BASED FUELS: ALTERNATIVE HYDROGEN CARRIERS	66
<i>G. Grader, O. Elishav, A. Dana, B. Mosevitzky, G. Tvil, M. Epstein, G. Shter</i>	
NI-CAO COMBINED SORBENT-CATALYST MATERIALS USAGE FOR SORPTION ENHANCED STEAM METHANE REFORMING	68
<i>A. Giuliano, C. Courson, K. Gallucci, A. Kiennemann</i>	
SIMULATING THE IMPACT OF INFRASTRUCTURE SUPPORT ON THE MARKET PENETRATION OF HYDROGEN VEHICLES IN NEW ZEALAND	71
<i>J. Leaver, E. Shafiei, B. Davidsdottir</i>	
LOW TEMPERATURE-HIGH SELECTIVITY CARBON MONOXIDE METHANATION OVER YTTRIA-STABILIZED ZIRCONIA-SUPPORTED PT NANOPARTICLES	74
<i>R. Isaijan, M. Couillard, E. Baranova</i>	
THE HI CATALYTIC DECOMPOSITION IN THE BENCH SCALE H₂ PRODUCTION APPARATUS OF THE IODINE-SULFUR THERMOCHEMICAL CYCLE	76
<i>L. Wang, L. Xu, S. Hu, S. Chen, A. Cao, P. Zhang</i>	
A PORE SCALE STUDY ON WATER DISTRIBUTION IN POROUS MEDIA: EFFECTS OF HYDROPHOBIC AND HYDROPHILIC PROPERTIES ON FLUID FLOW STATES	77
<i>G. Yuan</i>	
ADVANCED M-CHP FUEL CELL SYSTEM BASED ON A NOVEL BIO-ETHANOL FLUIDIZED BED MEMBRANE REFORMER	78
<i>J. Viviente</i>	
WATER BUILDUP AND EVOLUTION DURING THE STARTUP OF A PEMFC: VISUALIZATION BY MEANS OF NEUTRON IMAGING	80
<i>A. Iranzo, P. Boillat, J. Salva, J. Biesdorf, E. Tapia, F. Rosa</i>	
CHARACTERIZATION OF EXHAUST PARTICLE EMISSION FROM A PASSENGER CAR BIFUEL ENGINE RUNNING ON HCNG	83
<i>A. Ramadhas, P. Singh, R. Mathai, A. Sehgal</i>	
DEVELOPMENT OF CERIA-ALUMINA SUPPORTED NICKEL CATALYSTS FOR STEAM REFORMING OF DIESEL	85
<i>A. Arslan, A. Kaynar, N. Sezgi, T. Dogu</i>	
A FLEXIBLE AND REVERSIBLE SOFC/SOEC SYSTEM DEMONSTRATOR	88
<i>S. Iorio, A. Chatroux, G. Roux, C. Bernard, J. Mouglin, M. Petitjean, M. Reyrier</i>	
COST EVALUATIONS FOR HYDROGEN PRODUCED VIA WATER ELECTROLYSIS USING SURPLUS RENEWABLES	89
<i>M. Shiraki, T. Takahashi</i>	
HYDROGEN PRODUCTION FROM SOLAR-DRIVEN BIOMASS GASIFICATION IN A HIGH-TEMPERATURE CONTINUOUSLY-FED SOLAR REACTOR	90
<i>S. Rodat, Q. Bellouard, S. Abandes, K. Froment, M. Grateau, N. Dupassieux</i>	
MARKET PREPARATION IN GERMANY - PRACTICAL TOOLS TO RAISE SOCIETAL AWARENESS AND ACCEPTANCE	92
<i>T. Wilhelm</i>	
CHEMICAL UTILIZATION OF HYDROGEN FROM FLUCTUATING ENERGY SOURCES - CATALYTIC TRANSFER HYDROGENATION FROM CHARGED LIQUID ORGANIC HYDROGEN CARRIER SYSTEMS	94
<i>D. Geburtig, A. Bosmann, P. Preuster, P. Wasserscheid</i>	
OPTIMIZATION OF DEHYDROGENATION CATALYSTS FOR LOHC SYSTEMS	96
<i>A. Seidel, W. Peters, A. Bosmann, P. Wasserscheid</i>	
SMR INTEGRATION AND INCREASE OF CO₂ PRODUCTION - STAGE 2 -	97
<i>M. Tagliabue</i>	
AN ELECTRONICALLY MODIFIED PD/N-C CATALYST FOR FORMIC ACID DEHYDROGENATION: FUNDAMENTALS AND APPLICATION TO PEMFC	97
<i>M. Jeon, D. Han, C. Yoon</i>	

NITROGEN-DOPED RUTILE-SHELL ON TIN-CORE NANOPARTICLE AS CATHODE CATALYST FOR POLYMER ELECTROLYTE FUEL CELLS	100
<i>M. Chisaka, Y. Ando, Y. Yamamoto</i>	
THE VULNERABLE HYDROGEN	102
<i>I. Iordache, I. Stefanescu, M. Buga, D. Schitea, A. Marinoiu</i>	
COMMERCIALISATION OF HYDROGEN ENERGY IN THE STATE OF BADEN-WÜRTTEMBERG – FRAMEWORK AND PERSPECTIVES	104
<i>F. Borggrefe, U. Bunger, H.-C. Gils, F. Kleiner, J. Michalski, J. Pagenkopf, T. Pregger, S. Schmid, J. Zerhusen</i>	
REDEFINITION OF STACK EFFICIENCY AND OPTIMIZATION OF STACK PERFORMANCE FOR PEMFCs	106
<i>J. Mitzel, P. Piela</i>	
GRAPHENE OXIDE BASED MATERIALS AS TUNABLE STORAGE MEDIA FOR HYDROGEN STORAGE	108
<i>W. Hong, S. Lee, J. Lee, B. Kim, H. Kim</i>	
H₂ ABERDEEN	109
<i>E. Anderson, A. Smith</i>	
SORPTION ENHANCED STEAM METHANE REFORMING: EXPERIMENTAL DATA AND SIMULATIONS DESCRIBING THE BEHAVIOUR OF BI-FUNCTIONAL PARTICLES	111
<i>A. Giuliano, I. Aloisi, N. Jand, P. Foscolo, C. Courson, K. Gallucci</i>	
A NEW SIMULATOR FOR HYBRID RENEWABLE GENERATION SYSTEMS. A NEW SOLUTION FOR TECHNOLOGICAL AND ECONOMIC ANALYSIS AND ENERGY/HYDROGEN MANAGEMENT STRATEGIES	114
<i>F. Vivas, A. Heras, F. Segura, J. Andujar</i>	
KINETICS FOR HYDROGEN PRODUCTION FROM GLYCEROL STEAM REFORMING REACTION USING NI-Fe-CE/AL₂O₃	116
<i>Y. Cho, S. Jo, N. Park, Y. Kim</i>	
HYDROGEN PURIFICATION USING METALLIC HYDRIDES	118
<i>E. Borzone, A. Baruj, G. Meyer</i>	
HYDROGEN COMPRESSION USING METALLIC HYDRIDES	120
<i>N. Villa, G. Meyer, A. Baruj</i>	
HYDROGEN SEPARATION AT LOW PRESSURE USING THIN Pd-AU MEMBRANES	122
<i>M. Blanco, A. Tarditi, L. Cornaglia, A. Baruj, G. Meyer</i>	
HYDROGEN ENHANCED FATIGUE RESULTS FROM FULL SCALE METALLIC VESSEL TESTS WITHIN THE MATHRYCE PROJECT	124
<i>N. Miguel, B. Acosta, P. Moretto, F. Harskamp, K. Goblet, L. Briottet, P. Bortot, E. Mecozzi, G. Tamponi</i>	
EFFECT OF ANODE FLOW FIELD DESIGN ON THE PERFORMANCE OF FLOWING ELECTROLYTE-DIRECT METHANOL FUEL CELL STACK	126
<i>U. Gencalp, C. Colpan</i>	
DESIGN OF THERMOLYSIS / ELECTROLYSIS REACTOR INTEGRATION IN THE COPPER-CHLORINE CYCLE FOR HYDROGEN PRODUCTION	128
<i>O. Jianu, Z. Wang, M. Rosen, G. Naterer</i>	
A GENERIC FPGA BASED PWM GENERATOR WITH AUTOMATIC DEVICE FAULT RECOVERY FOR FUEL CELL, INTERLEAVED, MULTI-PHASE AND MULTI-SWITCH DC/DC BOOST CONVERTERS	130
<i>F. Sobrino-Manzanares, A. Garrigos</i>	
EFFECTS OF HYDROGEN PRESSURE IN COAL GAS ON FATIGUE LIFE AND FATIGUE CRACK GROWTH OF X80 PIPELINE STEEL	132
<i>T. An, S. Zheng, H. Pent, P. Bai, J. Zhou</i>	
JAPAN'S ENERGY POLICY AND PROSPECTS FOR HYDROGEN SOCIETY	133
<i>H. Uchida</i>	
NUCLEAR AND RENEWABLE SYNERGIES: TOWARD MASSIVE LOW-CARBON HYDROGEN PRODUCTION? THE CASE OF THE FRENCH ENERGY MIX	135
<i>C. Cany, C. Mansilla, P. Costa, G. Mathonniere</i>	
STABILITY AND BOUNDEDNESS CRITERIA FOR THREE-DIMENSIONAL COMPUTATIONAL FUEL CELL MODELS AT HIGH CURRENT DENSITIES	137
<i>S. Beale, D. Froning, U. Reimer, H. Jasak, J. Pharoah, W. Lehnert</i>	
OPTIMIZED DESIGN AND OPERATION STRATEGY OF A CA-CU CHEMICAL LOOPING PROCESS FOR HYDROGEN PRODUCTION	139
<i>J. Fernandez, J. Alarcon, J. Abanades</i>	
THERMAL HYDROGEN COMPRESSOR (HYMEHC)	141
<i>J. Eriksen, C. Kloed, J. Skulason, R. Denys</i>	
COMPACT, COMBINED DIMETHYL ETHER REFORMER PRODUCING HYDROGEN FOR AUTOMOTIVE APPLICATIONS	143
<i>S. Jung, B. Choi, S. Park, D. Lee, Y. Kim</i>	
ADIABATIC REACTOR FOR METAL HYDRIDES USING A THERMOCHEMICAL STORAGE MATERIAL FOR H₂ ABSORPTION HEAT	145
<i>M. Bhourri, I. Burger, M. Linder</i>	
AMMONIA-FIRED GAS TURBINE POWER GENERATION SYSTEM	147
<i>O. Kurata, N. Iki, T. Matsunuma, T. Inoue, T. Tsujimura, H. Furutani, H. Kobayashi, A. Hayakawa</i>	
COATINGS FOR PEM ELECTROLYSER BIPOLAR PLATES AND CURRENT COLLECTORS DEPOSITED BY CLOSED FIELD MAGNETRON SPUTTERING	149
<i>X. Zhang, P. Hamilton</i>	

MODELING AND SIMULATION OF A HYDROGEN PRODUCTION AND STORAGE SYSTEM POWERED WITH INTERMITTENT ELECTRICITY	150
<i>P. Olivier, C. Bourasseau, B. Bouamama</i>	
CHALLENGES OF GROUP 4 AND 5 METAL OXIDE CATHODE FOR PEFCs	152
<i>A. Ishihara, K. Matsuzawa, S. Mitsushima, K. Ota</i>	
A STUDY ON IMPURITIES EFFECT OF SINGLE CELL FOR PROTON EXCHANGE MEMBRANE FUEL CELLS	153
<i>G.-J. Lyu, S.-K. Lee, T.-H. Nam, J.-H. Jung, J.-S. Han, D.-G. Lee, J.-W. Lee, Y.-J. Lee</i>	
FORMIC ACID-BASED HYDROGEN STORAGE FOR FUEL CELLS	154
<i>C. Yoon, M. Jeon, D. Han, S. Choi, H. Park, J. Han, S. Nam, S. Jang</i>	
COMPREHENSIVE STRUCTURAL AND FLUIDIC ANALYSES FOR OPTIMAL CHANNEL DESIGN OF METALLIC BIPOLAR PLATES IN POLYMER ELECTROLYTE FUEL CELLS	155
<i>A.-R. Kim, S.-J. Chung, S. Um</i>	
OPTIMIZATION OF REACTION CONDITIONS FOR AMMONIA SYNTHESIS USING RU/CS/MGO CATALYST	156
<i>R. Javaid, T. Nanba</i>	
CHEMICAL LOOPING REFORMING OF RENEWAL AND FOSSIL LIQUID FUELS	158
<i>E. Garcia-Diez, F. Garcia-Labiano, L. Diego, A. Abad, P. Gayan, J. Adanez, J. Nascimento</i>	
ULTRA-LOW DEGRADATION IN HIGH-TEMPERATURE PEM FUEL CELLS	160
<i>H. Garcia, T. Steenberg, H. Hjuler, P. Wagner, F. Pinar, M. Rastedt, K. Bouzek, M. Paidar</i>	
STABLE AND LOW COST MANUFACTURED BIPOLAR PLATES FOR PEM FUEL CELLS	162
<i>A. Odegard, P. Hamilton, E. Wahlmuller, S. Sharma, M. Gotz, R. Alink</i>	
EVOLUTION OF H₂ FROM AMMONIA AS THE HYDROGEN CARRIER: N-DOPING EFFECT ON CATALYTIC ACTIVITY OF RUTHENIUM NANOCOMPOSITE	163
<i>M. Jeon, H. Park, S. Choi, S. Jang, C. Yoon</i>	
STUDY OF THE FEASIBILITY OF NON CONVENTIONAL MATERIALS AS CATALYTIC SUPPORTS FOR STEAM REFORMING OF BIO-OILS	165
<i>K. Bizkarra, V. Barrio, P. Arias, J. Cambra</i>	
EXPERIMENTAL VALIDATION OF THE POLARIZATION CURVE AND THE TEMPERATURE DISTRIBUTION IN A PEM FUEL CELL STACK USING A ONE DIMENSIONAL ANALYTICAL MODEL	167
<i>J. Salva, A. Iranzo, F. Rosa, E. Tapia, E. Lopez, F. Isorna</i>	
IMPROVEMENT IN HYDROGEN STORAGE PROPERTIES OF MG-BASED METAL HYDRIDES BY DOUBLY DOPING NONMETALS: A FIRST-PRINCIPLE STUDY	170
<i>Z. Wu, L. Zhu, P. Feng, F. Yang, Z. Zhang</i>	
ASSESSING HYDROGEN PRODUCTION FROM WIND AND SOLAR POWER WITH AN LCA	171
<i>C. Wulf, M. Kaltschmitt</i>	
INVESTIGATION OF ACID LEACHING AND PROTON CONDUCTIVITY OF PBI COMPOSITE MEMBRANES FOR HIGH TEMPERATURE PEM FUEL CELLS	172
<i>Y. Ozdemir, N. Uregen, Y. Devrim</i>	
FABRICATION AND PERFORMANCE EVALUATION OF POLYBENZIMIDAZOLE/GRAPHENE OXIDE COMPOSITE MEMBRANE FOR HIGH TEMPERATURE PROTON EXCHANGE MEMBRANE FUEL CELL	174
<i>N. Uregen, Y. Ozdemir, Y. Devrim</i>	
DEVELOPMENT OF GRAPHENE OXIDE SUPPORTED PLATINUM CATALYST FOR HIGH TEMPERATURE PEM FUEL CELL	176
<i>Y. Devrim, K. Pehlivanoglu, A. Albostan, I. Eroglu</i>	
SrTiO₃-TiO₂ EUTECTIC LIGHT ABSORBER AS A CHEMICALLY STABLE CANDIDATE FOR SOLAR-DRIVEN WATER SPLITTING	178
<i>K. Wyszumek, J. Sar, K. Kolodziejak, P. Osewski, K. Orlinski, D. Pawlak</i>	
DEVELOPING HYDROGEN PRODUCTION BIOTECHNOLOGY: CHEAP SUBSTRATES, EFFECTIVE BACTERIAL STRAINS AND OPTIMIZED FERMENTATIVE CONDITIONS	179
<i>K. Trchounian, A. Poladyan, L. Gabrielyan, A. Trchounian</i>	
INITIAL HYDROGEN INFRASTRUCTURE IN SWEDEN	181
<i>E. Wiberg</i>	
PEM ELECTROLYSER-PROJECT ARZBERG (GERMANY) AND MODULAR LOHC-ENERGY STORAGE SYSTEM	182
<i>C. Krause, K. Gemmer-Berkbilek, B. Schrod</i>	
OPTIMIZATION OF THE LARGE SCALE SYNTHESIS OF THE LSF-20 CATHODE MATERIAL FOR SOFCs	184
<i>I. Perez-Fernandez, A. Wain, A. Moran-Ruiz, K. Vidal, A. Larranaga, M. Arriortua</i>	
INVESTIGATION OF THE ECONOMIC POTENTIAL OF A HYDROGEN PRODUCTION AND COGENERATION (ELECTRICITY AND HEAT) SYSTEM	185
<i>A. Roussos, B. Guinot, G. Roux, M. Reyrier, N. Bardi</i>	
TRNSYS MODEL OF THE HYBRID ENERGY SYSTEM IN LABDER	187
<i>A. Belen, S.-D. Carlos, A. David, V. Carlos</i>	
DIESEL FUEL PROCESSOR ON A 10 kW_e SCALE FOR FUEL-CELL-BASED APU APPLICATIONS	189
<i>R. Samsun, D. Krekel, J. Pasel, R. Peters, D. Stolten</i>	
BIOHYDROGEN PRODUCTION PERFORMANCE AND HYDRODYNAMIC PROPERTIES IN A PILOT-SCALE OF BIOREACTOR FROM FOOD INDUSTRY WASTEWATER	191
<i>Y. Lan, C. Chu, C. Lin</i>	

PEM FUEL CELL SOLUTIONS FOR AN OFF GRID LOHC SYSTEM	193
<i>A. Sklarow, J. Gulden, T. Luschtinetz</i>	
INET'S STUDY ON BASIC PROPERTIES OF HIX FOR IODINE-SULFUR CYCLE	195
<i>S. Chen, P. Zhang, L. Wang, J. Xu</i>	
BOUND4BLUE AS A SOLUTION FOR SUSTAINABLE AND COST-EFFECTIVE HYDROGEN GENERATION	196
<i>C. Munoz, J. Miquel, D. Desclaux, F. Saenz, C. Guerra</i>	
ON THE EVALUATION OF AST PROTOCOLS FOR PEM WATER ELECTROLYSIS	198
<i>F. Fouda-Onana, D. Thoby, S. Chelghoum, A. Georg</i>	
BEHAVIOR AND PERFORMANCE OF A WATER PERMEABLE ANODE FOR PEM FUEL CELLS	200
<i>P. Aparicio, M. Folgado, A. Chaparro</i>	
CLEAN HYDROGEN IN EUROPEAN CITIES (CHIC), A ROLL-OUT OF ZERO EMISSION FUEL CELL BUSES AND THEIR HYDROGEN REFUELING STATIONS	202
<i>F. Koch, S. Skiker</i>	
ENERGIEPARK MAINZ (II): OPERATING EXPERIENCE FROM THE WORLDWIDE LARGEST POWER-TO-GAS PLANT WITH PEM ELECTROLYSIS	204
<i>C. Stiller, M. Kopp, K. Scheffer, J. Aichinger, B. Scheppat</i>	
ENERGIEPARK MAINZ (I): ECONOMICAL ANALYSIS OF THE WORLDWIDE LARGEST POWER-TO-GAS PLANT WITH PEM ELECTROLYSIS	205
<i>M. Kopp, C. Stiller, K. Scheffer, J. Aichinger, B. Scheppat</i>	
EFFECTIVE HYDROGEN PRODUCTION FROM PROPANE STEAM REFORMING OVER 30(Fe_{0.05}Cu_{0.05}Ni_{0.9}Ox)/70γ-Al₂O₃ CATALYST	206
<i>K. Kim, S. Kang, S. Jo, N. Park, T. Lee, S. Lee, M. Kang</i>	
EFFECT OF TRANSITION METAL (A = FE, CO, NI) IN MN BASED METAL OXIDE STRUCTURE TO PRODUCE HYDROGEN BY PROPANE STEAM REFORMING	208
<i>B. Kwak, J. Do, N. Park, T. Lee, S. Lee, M. Kang</i>	
STATISTICAL ANALYSIS OF VERTICALLY ALIGNED CARBON NANOTUBE CATALYST LAYER FOR FUEL CELLS: EFFECTS OF A HIGHLY ORDERED CATALYST LAYER NANOSTRUCTURE	210
<i>S. Shin, A. Kim, S. Um</i>	
EFFECT OF SURFACE COATING ON HYDROGEN ENVIRONMENT EMBRITTLEMENT IN FE-8CR MODEL ALLOY	212
<i>P. Punyaporn, N. Hashimoto, S. Ohnuki, S. Isobe</i>	
EFFECT OF LARGE TEMPERATURE VARIATION OF HEAT TRANSFER FLUID ON METAL HYDRIDE THERMAL ENERGY STORAGE REACTORS	213
<i>P. Feng, Z. Wu, F. Yang, Z. Zhang</i>	
INFLUENCE OF CARBON MONOXIDE ON PEFC PERFORMANCE UNDER LOAD CYCLE OPERATION	215
<i>Y. Matsuda, T. Shimizu, Y. Hashimasa</i>	
CHARACTERIZATION AND SYNTHESIS FOR HYDROGEN STORAGE BASED ON MANGANESE SILICATE/GRAPHENE OXIDE HYBRID	217
<i>J. Lee, W. Hong, S. Lee, H. Kim</i>	
HIGH PERFORMANCE FUEL CELL APPLICATION FOR LONG RANGE ZERO EMISSION CARS	218
<i>M. Bauer, F. Fergg, I. Falkenberg, M. Jung</i>	
ENHANCED HYDROGEN STORAGE CHARACTERISTICS OF MGH₂ CATALYZED BY GRAPHENE /Fe₃O₄	220
<i>A. Bhatnagar, S. Pandey, V. Shukla, S. Singh, M. Shaz, O. Srivastava</i>	
SIMULTANEOUS PASSIVE THERMAL MANAGEMENT OF PEM FUEL CELL AND METAL HYDROGEN STORAGE SYSTEM USING HEAT PIPES	221
<i>A. Tetuko, B. Shabani</i>	
INFLUENCE OF PTFE NANOPARTICLES ON MASS TRANSPORT IN HIGH-PERFORMANCE PEM FUEL CELL ELECTRODES	223
<i>G. Avcioglu, B. Ficcilar, I. Eroglu</i>	
ADSORPTION AND DESORPTION CHARACTERISTICS OF AMMONIA IN A FIXED-BED OF METAL CHLORIDE	224
<i>Y. Kim, H. Choi, J. Baek, S. Park, S. Jung, T. Kim, H. Song, J. Kim, K. Lee</i>	
HYDROGEN PRODUCTION FROM NORWAY'S VAST, UNEXPLOITED RENEWABLE ENERGY SOURCES - PROSPECTS FOR LARGE SCALE HYDROGEN EXPORT	226
<i>S. Moller-Holst, M. Schulz, A. Odegard</i>	
BMW HYDROGEN STORAGE TECHNOLOGY – FIRST CRYO-COMPRESSED STORAGE SYSTEM ON PUBLIC ROADS	228
<i>M. Tolosa, K. Kunze</i>	
TiO₂-WO₃ SELF-ORGANIZED EUTECTIC MATERIAL FOR PHOTOELECTROCHEMICAL WATER SPLITTING	230
<i>K. Kolodziejek, J. Sar, K. Wysmulek, M. Bartsch, M. Niederberg, D. Pawlak</i>	
BLACK Ta₂O₅ SYNTHESIZED BY SURFACE DISORDER ENGINEERING FOR WATER SPLITTING	231
<i>W.-S. Liu, M. Mishra, V. Gurylev, T.-P. Perng</i>	
PULSED LASER DEPOSITION OF PLATINUM NANOPARTICLES AS CATALYST FOR HIGH-PERFORMANCE PEM FUEL CELL	232
<i>H. Qayyum, T.-W. Huang, C.-J. Tseng, S.-Y. Chen</i>	

DEVELOPMENT AND DEMONSTRATION OF HYDROGEN AND COMPRESSED NATURAL GAS (HCNG) BLEND IN TRANSIT BUSES	234
<i>S. Singh, S. Mishra, R. Mathai, A. Sehgal, R. Suresh, N. Tyagi, J. Mohite, N. Chougule</i>	
ACCELERATING THE ENERGY TRANSITION THROUGH A FOCUS ON POLICY ORIENTED ACTIONS, THE ROLE OF THE INTERNATIONAL PARTNERSHIP FOR HYDROGEN AND FUEL CELLS IN THE ECONOMY (IPHE)	236
<i>T. Karlsson</i>	
IMPROVED PERFORMANCE OF SOFC ELECTROLYTES PROCESSED BY LASER MACHINING	237
<i>J. Cebollero, R. Lahoz, M. Laguna-Bercero, J. Pena, A. Larrea, V. Orera</i>	
CATALYTIC ACTIVITY OF LEACHED AL-CU-FE ICOSAHEDRAL QUASICRYSTAL FOR DE/REHYDROGENATION IN MAGNESIUM HYDRIDE	239
<i>S. Pandey, A. Bhatnagar, T. Yadav, O. Srivastava</i>	
INSIDE – IN-SITU DIAGNOSTICS IN WATER ELECTROLYSERS	240
<i>T. Ruiu, J. Mitzel, R. Reissner, M. Schulze, I. Biswas, E. Gulzow</i>	
OPTIMIZATION OF HYDROGEN VEHICLE REFUELING REQUIREMENTS	242
<i>T. Brachmann, F. Barth, T. Bourgeois, A. Ammouri, B. Acosta-Iborra, B. Ravinel, H. Londer, M. Herr, R. Wurster, R. Dey, D. Saury</i>	
ADVANCED ALKALINE WATER ELECTROLYZER FOR RENEWABLE HYDROGEN PRODUCTION	244
<i>T. Hirano, N. Fujimoto, S. Hasegawa, T. Ustii</i>	
NICKEL AND TUNGSTEN COMBINED WITH CERIUM OXIDE CATALYST: A SUITABLE SOFC ANODE FOR DIRECT REFORMING OF BIOGAS	246
<i>M. Escudero, J. Serrano, A. Fuerte</i>	
EFFICIENCY OF ELECTROLYSIS – HOW TRANSPORT PROCESSES IN MICRO SCALE INFLUENCE THE PERFORMANCE OF WHOLE SYSTEMS	248
<i>M. Muller, G. Tjarks, M. Schalenbach</i>	
TOWARDS HIGHLY EFFICIENT SOLID OXIDE FUEL CELLS. EFFECT OF THE OPERATION MODE	250
<i>A. Hornes, M. Torrell, A. Morata, J. Newton, K. Kendall, A. Tarancon</i>	
AN ANALYSIS OF DOMESTIC AND FOREIGN CODES & STANDARDS FOR AN IMPROVEMENT OF SAFETY GUIDELINE OF A HYDROGEN TOWN IN KOREA	252
<i>J.-W. Lee, T.-H. Nam, J.-S. Han, J.-H. Jung, D.-G. Lee, G.-J. Lyu, Y.-J. Lee</i>	
THE ROLE OF HYDROGEN IN AN ENVIRONMENTAL AND ECONOMICAL SYNTHESIS OF ORGANIC CHEMICALS	253
<i>A. Otto, M. Robinius, T. Grube, D. Stolten</i>	
ALKALINE PRESSURE ELECTROLYSIS – ADVANTAGES AND DISADVANTAGES	256
<i>U. Fischer, A. Voigt, D. Tannert, C. Ziems, H. Krautz</i>	
DEFINITION OF REPRESENTATIVE SAMPLES TO STUDY HYDROGEN TYPE IV PRESSURE VESSELS LINER COLLAPSE PHENOMENON	258
<i>P. Blanc-Vannet, P. Papin, M. Weber, J. Pepin, E. Laine, J.-C. Grandidier, C. Langlois</i>	
GAS AND WALL TEMPERATURE DISPARITIES WHILE FUELING AND DEFUELING TANKS	260
<i>T. Bourgeois, F. Ammouri, D. Baraldi, D. Melideo, D. Zaepffel, F. Mathey, T. Brachmann, F. Barth, H. Londer, M. Herr, R. Wurster, R. Dey, D. Saury</i>	
STACK FLOW CONFIGURATIONS FOR SO₂ DEPOLARIZED ELECTROLYSER (SDE)	263
<i>A. Santasalo-Aarnio, J. Virtanen, M. Gasik</i>	
NORWEGIAN STAKEHOLDERS' KEY ROLE IN HYDROGEN TECHNOLOGY DEVELOPMENT AND IMPLEMENTATION IN AN INTERNATIONAL CONTEXT	265
<i>S. Moller-Holst, J. Eriksen, K. Vik</i>	
NONLINEAR MODEL PREDICTIVE CONTROL METHODOLOGY FOR EFFICIENCY AND DURABILITY IMPROVEMENT IN A FUEL CELL POWER SYSTEM	267
<i>J. Luna, S. Jemei, N. Yousfi-Steiner, A. Husar, M. Serra</i>	
LONG-TERM DEFORMATION-DIFFUSION COUPLED ANALYSIS OF HYDROGEN ABSORPTION IN NANOMATERIALS	270
<i>X. Sun, P. Ariza, K. Wang</i>	
CRITICAL SLOT SIZE FOR DEFLAGRATION INITIATION BY HOT-PRODUCTS DISCHARGE INTO HYDROGEN-AIR ATMOSPHERES	272
<i>J. Carpio, I. Iglesias, M. Vera, A. Sanchez</i>	
ESTABLISHING A HYDROGEN INFRASTRUCTURE IN GERMANY UNDER THE ROOF OF THE CLEAN ENERGY PARTNERSHIP	275
<i>T. Bystry, C. Fried, T. Herbert, M. Huttmacher, P. Braunsdorf</i>	
H₂ PRODUCTION BY ESCHERICHIA COLI DURING UTILIZATION OF ACETATE AND MIXTURE OF GLYCEROL AND ACETATE	277
<i>K. Trchounian, A. Trchounian</i>	
CHARACTERIZATION OF MCLYZER ALKALINE ELECTROLYSIS SYSTEM FOR INTEGRATION WITH RENEWABLE ENERGY	279
<i>C. Bourasseau, F. Massari, D. Varisano, T. Natale, A. Chabert</i>	
HYDROGEN HYBRIDATION WITH BATTERIES FOR AUTONOMOUS APPLICATIONS: CHARACTERIZATION, MODELING AND SIMULATION OF ATAWAY'S SYSTEM	282
<i>C. Bourasseau, P. Bonnefond, B. Guinot</i>	
A BENCHMARK STUDY ON ELECTROLYTE MATERIALS FOR PEM WATER ELECTROLYSIS	284
<i>M. Carmo, W. Lueke, S. Pan, W. Lehnert, D. Stolten</i>	

REACTOR DESIGN FOR METAL HYDRIDE BASED COOLING SYSTEMS	285
<i>C. Weckerle, I. Burger, M. Linder</i>	
INDUSTRIAL-SCALE HYDROGEN DISTRIBUTION VIA LIQUID ORGANIC HYDROGEN CARRIERS (LOHC)	287
<i>D. Teichmann, C. Heydt, W. Arlt, P. Wasserscheid</i>	
LARGE-SCALE HYDROGEN STORAGE IN LIQUID ORGANIC HYDROGEN CARRIERS (LOHC)	289
<i>D. Teichmann, B. Melcher, W. Arlt, P. Wasserscheid</i>	
IMPROVED ELECTRODES AND GAS IMPURITY INVESTIGATIONS ON ALKALINE ELECTROLYSERS	291
<i>R. Reissner, G. Schiller, T. Knoeri, W. Doyen, Y. Alvarez-Gallego, J. Vaes, J. Bowen</i>	
STUDIES ON STEAM CO₂ REFORMING OF METHANE OVER Ni⁰/LA₂O₃ – C CATALYST : EFFECT OF CALCINATION ATMOSPHERE	292
<i>E.-H. Yang, Y. Noh, S. Lim, J.-S. Jung, J. Lee, G. Hong, S. Kim, J. Chung, D. Moon</i>	
NICKEL SUPPORTED ON MESOPOROUS ALUMINA FOR DRY REFORMING OF METHANE : COMBUSTION METHOD	295
<i>Y. Noh, E.-H. Yang, S. Lim, J.-S. Lee, J.-S. Jung, G. Hong, K. Lee, D. Moon</i>	
SAFETY EVALUATION OF PIPES AND COMPONENTS IN HYDROGEN ENVIRONMENT	297
<i>B. Choe, Y. Park, W. Jeon, J. Lim, J. Lee, G. Lyu, W. Kim</i>	
ON-BOARD HYDROGEN PRODUCTION FOR AUXILIARY POWER IN PASSENGER AIRCRAFT	299
<i>S. Elitzur, V. Rosenband, A. Gany</i>	
HYBRIDIZATION STRATEGIES OF POWER-TO-GAS IN A RENEWABLE ENERGY SYSTEM	301
<i>B. Gillissen, H. Heinrichs, P. Stenzel, W. Hennings</i>	
ENHANCING FLOW UNIFORMITY IN GAS FLOW FIELD OF PEMFCs	303
<i>M. Hossain, B. Shabani, C. Cheung, M. Islam</i>	
STEAM REFORMING OF ACETIC ACID OVER ALUMINA BASED CATALYSTS	306
<i>B. Pekmezci, N. Cakiryilmaz, H. Arbag, N. Oktar, G. Dogu, T. Dogu</i>	
INTERDIFFUSION STUDIES OF CATHODE-INTERLAYER-ELECTROLYTE REGION IN ANODE SUPPORTED PLANAR SOLID OXIDE FUEL CELL (SOFC) SHORT STACK	308
<i>V. Miguel-Perez, A. Tarancon, M. Torrel, J. Ouweltjes, V. Bongiorno, D. Montinaro, A. Morata</i>	
A EUROPEAN APPROACH FOR THE COMMERCIALISATION OF FUEL CELL BUSES IN PUBLIC TRANSPORT	310
<i>F. Koch, B. Madden</i>	
KEYS FOR THE BEST SELECTION OF THE BALANCE OF PLANT CONFIGURATION IN A FUEL CELL SYSTEM BASED ON A PE STACK	312
<i>A. Heras, F. Vivas, F. Seguro, J. Andujar</i>	
H₂ PRODUCTION VIA SORPTION ENHANCED STEAM REFORMING OF BIOMASS-DERIVED PHENOL IN FLUIDIZED BED REACTOR	314
<i>G. Esteban-Diez, M. Gil, C. Pevida, D. Chen, F. Rubiera</i>	
HYDROGEN FROM MUNICIPAL SOLID WASTED IN ECUADOR: POTENTIAL AND FEASIBLE USES	316
<i>F. Posso, R. Narvaez, J. Siguencia, J. Sanchez</i>	
CFD THERMAL MODEL VALIDATION OF A LAB-SCALE SOLAR REACTOR	318
<i>E. Tapia, S. Bellan, A. Iranzo, J. Gonzalez-Aguilar, F. Pino, F. Rosa, J. Salva</i>	
FUELING INFRASTRUCTURE RAMP UP ON BASE OF BYPRODUCT HYDROGEN IN THE GREATER COLOGNE AREA – EXPERIENCES AND LESSONS LEARNED	321
<i>B. Jermer, C. Krause, A. Moellmann</i>	
CFD ANALYSIS OF THE DIFFERENT FLOW REGIMES OCCURRING DURING THE FILLING OF A HYDROGEN VEHICLE TANK	322
<i>D. Zaepffel, F. Mathey, B. Ravinel, T. Bourgeois, F. Ammouri</i>	
HYDROGEN-LITHIUM ENERGY STORAGE FOR A STAND-ALONE MICROGRID	324
<i>A. Berrueta, I. Martin, P. Sachis, A. Ursua</i>	
HYDROGEN EDUCATIONAL ACTIVITIES DEVELOPED BY APERNA: A RENEWABLE-ENERGY STUDENT ASSOCIATION	327
<i>A. Berrueta, I. Martin, J. Samanes, J. Pascual, E. Barrios, I. Parra, A. Urtasun, P. Sanchis, A. Ursua</i>	
A BILEVEL MODEL FOR THE LOCATION OF HYDROGEN REFUELING STATION. APPLICATION TO SPANISH CASE	330
<i>C. Guerra, E. Sanchez-Herrera, D. Rayo, R. Rodenas, C. Jul, L. Bozo</i>	
STUDY OF THE EFFECT OF A REAL REFORMATE COMPOSITION ON A HIGH TEMPERATURE POLYMER ELECTROLYTE MEMBRANE FUEL CELL	332
<i>F. Pinar, M. Rastedt, N. Pilinski, P. Wagner, A. Dyck</i>	
ROADMAP TO ECONOMICALLY VIABLE HYDROGEN LIQUEFACTION	335
<i>L. Decker, U. Cardella, H. Klein</i>	
CLEAN COMMERCIAL TRANSPORTATION: MEDIUM AND HEAVY DUTY FUEL CELL ELECTRIC TRUCK TARGETS	336
<i>J. Kast, J. Gangloff, R. Vijayagopal, G. Morrison, A. Duran, J. Marcinkoski</i>	
CHARACTERIZATION OF HYDROGEN LEAN COMBUSTION IN A SI ENGINE THROUGH THE BURNING VELOCITY	337
<i>M. Reyes, F. Tinaut, A. Horrillo, A. Perez</i>	
FUEL CELL FORKLIFT UTILIZING METAL HYDRIDES FOR HYDROGEN STORAGE AND REFUELLING	340
<i>M. Lototskyy, A. Parsons, Y. Klochko, N. Hendricks, C. Sita, V. Linkov, I. Tolj, D. Swanepoel, I. Khan, F. Smith</i>	

MODELLING THE THERMO-MECHANICAL BEHAVIOR OF HIGH PRESSURE COMPOSITE MATERIALS VESSELS WHEN EXPOSED TO FIRE CONDITIONS	341
<i>P. Breuer, B. Furstner, E. Kiener, S. Hawksworth, D. Halm, P. Boulet, T. Eekelen, F. Fouillen, S. Welch</i>	
PREPARATION AND ELECTROCHEMICAL CHARACTERISTICS OF SINGLE-PHASE RE–MG–NI-BASED (RE = LA, PR, ND, SM) ALLOYS WITH SUPER-STACKING STRUCTURES	343
<i>Y. Li, Y. Du, L. Zhang, J. Liu, S. Han</i>	
ENHANCED DEHYDROGEN/HYDROGEN PROPERTIES OF LIBH4 BY POROUS MATERIALS DERIVED FROM PYROLYSIS POLYANILINE	345
<i>S. Han, Y. Li, Y. Ma, L. Guo, Y. Du</i>	
SCANNING PHOTOEMISSION IMAGING AND SPECTROMICROSCOPY, A POWERFUL TOOL FOR IN SITU AND IN OPERANDO CHARACTERIZATION OF FUEL CELL COMPONENTS	347
<i>M. Amati, H. Sezen, B. Bozzini, L. Gregoratti</i>	
FLUIDIZED BED GASIFICATION FOR SUSTAINABLE PRODUCTION OF H₂ WITHOUT CO₂ EMISSIONS: BIOH2 PROJECT	349
<i>M. Marono, G. Molina, Y. Torreiro, J. Sanchez-Hervas</i>	
METALLIC BIPOLAR PLATES FOR PEM ELECTROLYZERS	351
<i>S. Laedre, O. Kongstein, A. Oedegaard, H. Karoliussen, F. Seland</i>	
DESIGN AND PARAMETER OPTIMIZATION OF CONTINUOUS HYDROGEN STORAGE DEVICE	353
<i>Y. Wang, C. He, S. Li, F. Yang, Z. Zhang, K. Kim</i>	
COST & PERFORMANCES IMPROVEMENT FOR COMPRESSED GASEOUS HYDROGEN COMPOSITE TANKS	355
<i>S. Villalonga, A. Seifert, A. Baron, P. Gasior, B. Guicherd, J. Andreas, M. Sloth, F. Nony</i>	
CONTROL-ORIENTED DYNAMIC MODEL OF A 1 KW-CLASS SOFC STACK FOR SIMULATION OF FAILURE MODES	357
<i>K. Motylinski, J. Kupecki, J. Milewski, M. Stefanski, M. Bonja</i>	
OPTIMIZATION OF THE ADHESION OF HIGHLY THERMAL STABLE NANOCOMPOSITE MESOPOROUS ELECTRODES FOR SOLID OXIDE CELLS	359
<i>E. Hernandez, M. Torrell, A. Morata, A. Tarancon</i>	
BIOCATALYTIC METHANATION OF RAW BIOGAS BY HYDROGEN INJECTION TO EXTERNAL TRICKLE-BED REACTOR	360
<i>L. Rachbauer, G. Bochmann, W. Fuchs</i>	
RISK ANALYSIS OF HYDROGEN ACCIDENTS AT LOW-PRESSURE HYDROGEN FACILITIES	362
<i>S. Cho, I. Moon</i>	
HYDROGEN AND FUEL CELLS IN THE CONTEXT OF CLOSED LOOP MOBILITY	364
<i>J. Jostins, C. Quillivic</i>	
EFFECTS OF BIO-HYDROGEN PRODUCTION FROM RICE STRAW HYDROLYZATE ON PRETREATMENT TECHNOLOGY	365
<i>C. Lin, Y. Shih, C. Lay, C. Chu, C. Chen</i>	
THREE DIMENSIONAL TWO-PHASE MODELING OF A FLOWING ELECTROLYTE – DIRECT METHANOL FUEL CELL WITH EXPERIMENTAL VALIDATION	367
<i>F. Atacan, D. Ouellette, C. Colpan</i>	
HYDROGEN PRODUCTION WITH A MICROCHANNEL HEAT-EXCHANGER REACTOR BY SINGLE STAGE WATER-GAS SHIFT; CATALYST DEVELOPMENT	369
<i>U. Izquierdo, H. Penemmann, R. Zapf, S. Neuberg, I. Garcia-Garcia, V. Barrio, J. Cambra, G. Kolb</i>	
SSEBS/40SiO₂-40P₂O₅-20ZrO₂ SOL-GEL COMPOSITE MEMBRANES FOR PEMFCs	371
<i>P. Escribano, C. Rio, E. Morales, J. Mosa, M. Aparicio</i>	
EXERGETIC SUSTAINABILITY ANALYSIS OF A HIGH ALTITUDE UNMANNED AIR VEHICLE POWERED WITH A SOLID OXIDE FUEL CELL STACK AND HYDROGEN FUEL, FOR 0 TO 100 PERCENT HYDROGEN STORAGE CAPACITIES BY MASS	373
<i>N. Kaya, O. Turan, A. Midilli, T. Karakoc</i>	
ELECTROCHEMICAL PERFORMANCES OF SPSU/ZN,AL-HEPTAMOLIBDATE LDH HYBRID MEMBRANES FOR PROTON EXCHANGE MEMBRANE FUEL CELLS	375
<i>A. Martos, C. Rio, A. Varez, B. Levenfeld</i>	
BALANCING NATIONAL ELECTRICITY AND TRANSPORT SYSTEMS WITH FUEL CELL CARS AND HYDROGEN	377
<i>V. Oldenbroek, A. Wijk, L. Verhoef</i>	
CAR AS POWER PLANT: INTEGRATED TRANSPORT AND ELECTRICITY SYSTEM DESIGNS	380
<i>V. Oldenbroek, A. Wijk, L. Verhoef</i>	
SMALL SCALE DEMONSTRATION PROJECT FOR THE PRODUCTION AND USE OF HYDROGEN FROM RENEWABLE ENERGY SOURCES IN THE WINE SECTOR	383
<i>R. Mustata, V. Roda, A. Nueno, L. Valino, A. Lozano, F. Barreras, J. Bernal, J. Carroquino</i>	
MODELLING AND OPTIMISATION OF RENEWABLE HYDROGEN VALUE CHAINS AND INTEGRATED NETWORKS IN GREAT BRITAIN	385
<i>S. Samsatli, N. Shah, N. Samsatli</i>	
NEXT GENERATION PROTON CERAMIC ELECTROLYZER	387
<i>T. Guerrero, J. Brey, T. Norby</i>	
AN ENERGY CONCEPT FOR SUPPLYING THE TRANSPORT SECTOR WITH HYDROGEN FROM RENEWABLE ENERGY SOURCES	389
<i>M. Robinius, T. Grube, D. Stolten</i>	

DEVELOPMENT OF A MODEL TO ANALYZE THE BEHAVIOR OF HYDROGEN LEAKS INSIDE AN EXPERIMENTAL FACILITY USING CFD SIMULATIONS	392
<i>E. Amores, G. Manjavacas</i>	
HT-PEM FUEL CELL MANUFACTURING, MATERIAL STORAGE AND QUALITY CONTROL	395
<i>C. Terkelsen, T. Steenberg, H. Hjuler, F. Hennersberger, M. Nadherna</i>	
THERMALLY ACCELERATED LIFE TEST AND METHOD FOR THE PEMFC COMPONENTS BY USING INERT GAS	397
<i>H.-S. Shin, O.-J. Kwon, B. Oh</i>	
STORAGE OF HYDROGEN FROM TCR® - PROCESSING WITHIN THE BIOBATTERY CONCEPT	399
<i>D. Dommel, A. Hornung, S. Binder, J. Gasson</i>	
POWER-TO-GAS ROADMAP FOR FLANDERS	401
<i>D. Thomas, W. Laak, M. Meeus, D. Mertens</i>	
HYDROGEN OXIDATION REACTION UNDER HT-PEMFCs CONDITIONS: INHIBITION DUE TO FUEL CONTAMINANTS	403
<i>M. Rau, F. Jung, C. Cremers</i>	
EXPERIMENTAL AND MODELLING STUDY OF CO₂ SORBENT FOR CA-CU CHEMICAL LOOPING PROCESS	405
<i>M. Martini, F. Gallucci, M. Annaland</i>	
TOWARDS IMPROVING THE CATALYTIC ACTIVITY OF CERIA-BASED ANODES IN BIOGAS-FUELED SOFCs	407
<i>A. Fuerte, M. Escudero</i>	
SOLID CARBON GASIFICATION FOR SYNGAS PRODUCTION IN A FLUIDIZED BED REACTOR USING CEO₂ OR MOO₂ AS CATALYSTS	409
<i>I. Diaz, M. Colet-Lagrange, F. Gracia, F. Diaz</i>	
INFLUENCE OF ELECTROLYTE MANAGEMENT ON GAS PURITY IN ALKALINE WATER ELECTROLYSIS	411
<i>P. Haug, M. Koj, L. Lueke, J. Kuhlmann, T. Turek</i>	
DEVELOPMENT, CONSTRUCTION AND TESTING OF A COMBINED HEAT AND POWER PLANT BASED ON MOLTEN CARBONATE FUEL CELL TECHNOLOGY	413
<i>J. Garcia, E. Leon, S. Tyagi, R. Marin, M. Lopez, G. Garcia, M. Pozo, M. Perez, N. Lirio</i>	
HYDROGEN DESORPTION KINETICS OF TITANIUM HYDRIDE UNDER DIFFERENT HEAT TREATMENTS	415
<i>M. Ma, B. Tang, L. Liang, X. Tan</i>	
PALLADIUM BASED MEMBRANES AND MEMBRANE REACTORS FOR HYDROGEN PRODUCTION AND PURIFICATION	417
<i>E. Fernandez, A. Helmi, J. Medrano, K. Coenen, A. Arratibel, J. Melendez, V. Spallina, J. Viviente, J. Zuniga, M. Annaland, D. Tanaka, F. Gallucci</i>	
COMPARISON OF ALKALINE AND POLYMER ELECTROLYTE MEMBRANE ELECTROLYZERS FOR HYDROGEN PRODUCTION – TECHNOLOGY STUDY AND SYSTEM ANALYSIS OF INTERMITTENT OPERATION	420
<i>S. Mardaneh, S. Belz, S. Fasoulas</i>	
DEVELOPMENT OF THE HYBRID SULFUR CYCLE FOR USE WITH CONCENTRATED SOLAR HEAT INPUT	421
<i>H. Colon-Mercado, C. Corgnale, M. Elvington, M. Gorenssek, W. Summers</i>	
PROCESS OPTIMIZATION FOR LARGE-SCALE HYDROGEN LIQUEFACTION	423
<i>U. Cardella, L. Decker, H. Klein, J. Fendt</i>	
ENHANCED HYDROGEN PRODUCTION FROM WASTE ACTIVATED SLUDGE DISINTEGRATED BY LOW PRESSURE WET OXIDATION	424
<i>Y. Yin, J. Wang</i>	
FERMENTATIVE HYDROGEN PRODUCTION BY A NOVEL STRAIN OF ENTEROCOCCUS FAECIUM INET2 ISOLATED FROM GAMMA IRRADIATED SLUDGE	426
<i>Y. Yin, J. Wang</i>	
MODELING OF 2-MW CO-GENERATIVE PEM FUEL CELL FOR HYDROGEN RECOVERING FROM CHLORINE INDUSTRY	428
<i>G. Guandalini, S. Foresti, S. Campanari, J. Coolegem, J. Have</i>	
EFFECTS OF CO₂ TREATMENT ON PROPERTIES OF PROTON-CONDUCTING ELECTROLYTES	431
<i>J.-W. Jhuang, Y.-H. Lee, S.-W. Lee, C.-J. Tseng</i>	
OPTIMIZATION OF WATER MANAGEMENT IN HYDROGEN ALKALINE MEMBRANE FUEL CELL	433
<i>H. Deng, D. Wang, K. Jiao</i>	
THE ENHANCEMENT OF HYDROGEN ADSORPTION CAPACITY OF GRAPHENE BY VANADIUM DECORATION	435
<i>P. Pei, M. Whitwick, G. Quan, M. Cannon, W. Sun, E. Kjeang</i>	
COMPARATIVE LIFE CYCLE ASSESSMENT OF A FUEL CELL ELECTRIC VEHICLE REPLACING A BATTERY ELECTRIC VEHICLE FOR GOLF COURSES	437
<i>D. Iribarren, M. Martin-Gamboa, C. Ramos-Lopez, J. Dufour</i>	
TECHNO-ECONOMIC AND ENVIRONMENTAL ASSESSMENT OF HYDROGEN PRODUCTION THROUGH INDIRECT BIOMASS GASIFICATION	439
<i>A. Susmozas, D. Iribarren, J. Dufour</i>	

ENGINEERED WATER HIGHWAYS IN FUEL CELLS: AN IN-SITU STUDY COMBINING ELECTROCHEMICAL CHARACTERIZATION WITH NEUTRON IMAGING	441
<i>A. Fornier-Cuenca, J. Biesdorf, V. Manzi, L. Gubler, A. Lamibrac, F. Buchi, T. Schmidt, P. Boillat</i>	
RECENT PROGRESS IN HYDROGEN STORAGE IN NANOPOROUS MATERIALS IEA-HIA TASK 32 “HYDROGEN-BASED ENERGY STORAGE”	443
<i>M. Hirscher</i>	
TOWARDS A EUROPEAN HYDROGEN MOBILITY NETWORK: HYDROGEN MOBILITY EUROPE	444
<i>B. Madden, R. Zaetta, L. Ruf</i>	
HARMONISED LIFE-CYCLE IMPACTS OF RENEWABLE HYDROGEN	446
<i>A. Valente, D. Iribarren, J. Dufour</i>	
THE POTENTIAL OF USING HYDROGEN TO FUEL INTERNATIONAL SHIPPING	447
<i>C. Raucci, T. Smith, P. Dodds</i>	
FUEL CELLS FOR HEAVY DUTY TRUCKS: VEHICLE MODELING AND FLEET ADOPTION	449
<i>C. Yang, H. Zhao, D. Meroux, A. Burke, M. Miller, L. Fulton</i>	
ROLE OF HYDROGEN AND FUEL CELL VEHICLES IN DECARBONIZATION SCENARIOS FOR CALIFORNIA, USA	451
<i>C. Yang, J. Ogden</i>	
DARK FERMENTATIVE HYDROGEN PRODUCTION FROM CRUDE GLYCEROL USING PVA-ALGINATE IMMOBILIZED DIGESTED SLUDGE	453
<i>Y. Yin, J. Wang</i>	
TWO-STEP ANAEROBIC DIGESTION PROCESS FOR HYDROGEN AND METHANE PRODUCTION FROM FOOD WASTE	455
<i>I. Moreno-Andrade, S. Santiago</i>	
BIOHYDROGEN PRODUCTION FROM ORGANIC SOLID WASTE IN A SEQUENCING BATCH REACTOR OPERATED BY A CONTROL STRATEGY	457
<i>S. Santiago, A. Vargas, I. Moreno-Andrade</i>	
PHOTOCATALYTIC PRODUCTION OF HYDROGEN FROM AQUEOUS SOLUTIONS OF A REGENERABLE DONOR	459
<i>N. Muradov, K. Kakosimos, A. Vagia, A. T-Raissi, A. Srinivasa</i>	
MODELING AND ANALYZING NEAR TERM TRANSITIONS TO ALTERNATIVE FUELLED VEHICLES USING A SPATIAL REGIONAL CONSUMER CHOICE AND FUELLING INFRASTRUCTURE MODEL	462
<i>K. Ramea, C. Yang, M. Nicholas</i>	
STABILITY OF ELECTRODEPOSITED RHODIUM ON SILVER ALLOY IN ACIDIC AND BASIC WATER ELECTROLYSIS	464
<i>R. Bonifacio, M. Mena</i>	
HYDROGEN ADSORPTION ONTO DEFECTIVE SINGLE-WALLED CARBON NANOTUBE: DOPED WITH TITANIUM	467
<i>S. Ghosh, V. Padmanabhan</i>	
CHARACTERIZATION OF A NOVEL SPUTTERED COATING BASED ON TANTALUM AND ITO LAYERS FOR BIPOLAR PLATE’S PROTECTION IN PEM ELECTROLYZERS	469
<i>L. Mendizabal, S. Laedre, A. Oedegaard, O. Kongstein, J. Barriga</i>	
INVESTIGATION OF DYNAMIC OPERATION OF TWO SOFC STACKS IN SERIAL CONNECTION WITH COMMON FUEL LINE	470
<i>J. Kupecki, K. Motylinski, M. Skrzypkiewicz, M. Wierzbicki, M. Stepień</i>	
DEGRADATION STUDY OF CERAMIC VS METALLIC HALF-CELLS FOR SOFCs	472
<i>A. Moran-Ruiz, A. Wain, K. Vidal, A. Larranaga, M. Laguna-Bercero, M. Arriortua</i>	
EFFECT OF MGO ON THE PARTIAL OXIDATION OF METHANE OVER NiAl_2O_4-DERIVED CATALYSTS	473
<i>C. Jimenez-Gonzalez, M. Gil-Calvo, B. Rivas, J. Gonzalez-Velasco, J. Gutierrez-Ortiz, R. Lopez-Fonseca</i>	
MARKET STUDY FOR THE IMPLEMENTATION OF PEM STATIONARY FUEL CELLS IN NICHE MARKETS IN THE WORLD	475
<i>A. Ferriz, J. Simon, J. Arnedo, L. Castrillo</i>	
INCREASING AWARENESS ON FUEL CELLS AND HYDROGEN TECHNOLOGIES ACROSS THE EU: THE HY4ALL EXPERIENCE	477
<i>J. Simon, A. Ferriz, G. Figueruelo, G. Matute</i>	
THE AXIAL SLOSHING OF LIQUID HYDROGEN IN CYLINDRICAL CONTAINERS WITH SUPERHEATED WALLS IN WEIGHTLESSNESS	479
<i>P. Friese, M. Dreyer</i>	
ONLINE TRAINING METHODOLOGY IN FUEL CELLS AND HYDROGEN TECHNOLOGIES FOR EUROPE	482
<i>A. Ferriz, J. Simon, L. Castrillo, G. Figueruelo</i>	
THE INFLUENCE OF ELECTRICITY MIX ON ENVIRONMENTAL IMPACTS OF A FUEL CELL UNINTERRUPTABLE POWER SUPPLY (UPS) SYSTEM	484
<i>M. Mori, L. Castrillo, J. Simon</i>	
APPLICATION OF MAYENITE SUPPORTED NI-CATALYSTS SUITABLE FOR SORPTION-ENHANCED REFORMING PROCESSES	487
<i>M. Aznar, G. Grasa, R. Murillo, J. Meyer, A. Aranda, S. Kazi, G. Kalantzopoulos</i>	
STUDY OF REFORMING CATALYST WITH CA-SORBENTS FOR SORPTION ENHANCED REFORMING COUPLED TO CA/CU CHEMICAL LOOP	490
<i>M. Navarro, J. Lopez, R. Murillo, G. Grasa, A. Scullard, G. Williams</i>	

HYDROGEN AND BATTERIES FOR PROPULSION OF FREIGHT TRAINS IN NORWAY	492
<i>F. Zenith, S. Moller-Holst, M. Thomassen</i>	
PASSIVE COOLED METAL HYDRIDE HYDROGEN STORAGE MODULE FOR STATIONARY APPLICATIONS	495
<i>M. Dieterich, I. Burger, F. Heubner, L. Rontzsch, M. Linder</i>	
CROSS-IMPACT OF INITIAL SUGARS TYPE AND MICROBIAL COMMUNITY ORIGIN AND HISTORY ON FERMENTATIVE PRODUCTION OF BIOHYDROGEN AND BIOMOLECULES FROM LIGNOCELLULOSIC BIOMASS	497
<i>L. Chatellard, E. Trably, H. Carrere</i>	
TEST PERFORMANCE OF A FUEL CELL BASED POWER PLANT FOR A HIGH ALTITUDE LIGHT UNMANNED AERIAL VEHICLE	499
<i>J. Renau, J. Barroso, F. Sanchez, J. Martin, V. Roda, A. Lozano, F. Barreras</i>	
MAPPING THE HYDROGEN ENERGY POTENTIAL FOR THE STATE OF MISSOURI, AND ITS USE IN THE REDUCTION OF GREENHOUSE GAS EMISSIONS	501
<i>Y. Hamad, T. Hamad, A. Agll, S. Bapat, J. Sheffield</i>	
LOCALIZED DEGRADATION OF MEMBRANE-ELECTRODE ASSEMBLIES BY USING “IN-SITU” REFERENCE ELECTRODE ARRAY FUEL CELL	502
<i>A. Chaparro, P. Ferreira-Aparicio, M. Folgado, E. Brightman, G. Hinds</i>	
FUTURE APPLICATIONS OF HYDROGEN PRODUCTION AND CO₂ CAPTURE FOR ENERGY STORAGE	504
<i>M. Bailera, L. Romeo, S. Espatolero, P. Lisbona</i>	
HYDROGEN PRODUCTION BY PARTIAL OXIDATION OF METHANE AT LOW TEMPERATURE OVER SUBSTOICHIOMETRIC NICKEL ALUMINATE SPINELS	506
<i>M. Gil-Calvo, C. Jimenez-Gonzalez, B. Rivas, J. Gonzalez-Velasco, J. Gutierrez-Ortiz, R. Lopez-Fonseca</i>	
STUDY ON ON-BOARD FUEL REFORMING FOR HYDROGEN PRODUCTION USING EXHAUST GAS WITH ME/CGO CATALYST (ME=PT, RH, RU)	508
<i>S. Choi, J. Bae, J. Lee, J. Cha</i>	
FCV AND HYDROGEN INFRASTRUCTURE DEVELOPMENT ACTIVITIES IN JAPAN	510
<i>T. Ikeda, Y. Sone, F. Yamanashi, S. Kaneko, K. Matsuda, I. Nakanishi, H. Ito, M. Hirose, T. Abe, A. Okamoto, Y. Nagai</i>	
SOLID STATE HYDROGEN STORAGE TECHNOLOGY FOR FCV IN KOREA	512
<i>M.-S. Chung, J.-W. Kim</i>	
DEVELOPMENT OF NOVEL MANUFACTURING METHODS FOR SUPPORTED PD-BASED MEMBRANES	514
<i>J. Conde, M. Marono, A. Morales, J. Sanchez</i>	
DEVELOPMENT OF HYDROGEN REFUELING STATIONS INFRASTRUCTURE	516
<i>T. Guerrero, E. Trillo, J. Garcia, J. Brey</i>	
VARIABLE TEMPERATURE FLOW FIELD FOR PROTON EXCHANGE MEMBRANE FUEL CELLS	518
<i>I. Pivac, I. Tolj, F. Barbir</i>	
ULTRAHIGH FLUX ZEOLITE MEMBRANES FOR HYDROGEN SEPARATION	520
<i>M. Nomura, K. Oura, A. Ikeda, T. Saito, H. Tawarayama, S. Ishikawa, K. Kuwahara</i>	
ROLE OF HYDROGEN IN A COUNTRY’S 100% RENEWABLE ENERGY FUTURE	523
<i>N. Goles, F. Barbir</i>	
FUEL CELL PROTECTION-ORIENTED POWER MANAGEMENT STRATEGY BASED ON SLIDING-MODE CONTROL FOR HYBRID FUEL CELL/BATTERY SYSTEM	525
<i>Y.-X. Wang, K. Ou, Y.-B. Kim</i>	
LONG-TERM POWER-TO-GAS POTENTIAL FOR RECOVERING EXCESS ENERGY FROM RENEWABLES: ITALIAN CASE	528
<i>G. Guandalini, T. Grube, S. Campanari, D. Stolten</i>	
PEM FUEL CELL POWERED BICYCLE	531
<i>A. Dukic, M. Firak, P. Filipovic</i>	
OXYGEN REDUCTION AND EVOLUTION IN ALKALINE MEDIA ON PD NANOPARTICLES SUPPORTED ON TI-BASED MATERIALS	533
<i>C. Alegre, S. Siracusano, E. Modica, A. Arico, V. Baglio</i>	
DEVELOPMENT AND SIMULATION OF A FUEL CELL MODEL FOR ITS USE ON BACK-UP APPLICATIONS	534
<i>R. Canalejas, E. Albertin</i>	
DEVELOPMENT OF CYLINDRICAL POLYMER ELECTROLYTE FUEL CELLS (PEFC) USING COTS COMPONENTS	536
<i>E. Lopez, A. Heras, J. Saenz, F. Isorna, C. Jose, J. Salva</i>	
OPERATION CHARACTERISTICS OF COMBINED HEAT AND POWER SYSTEM BASED ON HIGH TEMPERATURE PEM FUEL CELL TECHNOLOGY	538
<i>P. Bujlo, E. Reddy, C. Sita, S. Pasupathi</i>	
CHEMICAL AND MECHANICAL STABILITY OF CUO-BASED MATERIALS FOR CA/CU REFORMING PROCESS AND KINETIC STUDY OF A CUO-BASED PROMISING MATERIAL	540
<i>L. Diez, G. Grasa, R. Murillo, J. Fernandez</i>	
CONCENTRATION MODEL FOR SINGLE ENTRANCE FUEL CELL AND ITS APPLICATION TO A GLUCOSE FUEL CELL	542
<i>O. Santiago, T. Leo, E. Navarro, M. Raso</i>	
MECHANISM OF THE AQUEOUS-PHASE REFORMING OF METHANOL – UNDERSTANDING THE ROLE OF THE BASE	544
<i>L. Neumann, E. Alberico, A. Lennox, H. Junge, M. Beller</i>	

PD-BASED MEMBRANES AS KEY-ENABLING TECHNOLOGY FOR H₂ PRODUCTION, RECOVERY AND PURIFICATION	545
<i>T. Peters, M. Stange, R. Bredesen</i>	
GENETIC ALGORITHM APPLIED TO THE OPTIMUM DESIGN OF A DMFC STACK FROM CERTAIN INITIAL REQUIREMENTS	547
<i>O. Santiago, E. Navarro, T. Leo, M. Raso, J. Moran, E. Mora</i>	
HYDROGEN FUELLING STATIONS AS A COMMERCIALIZED PRODUCT – PRODUCTION TRANSFER AND ITS CHALLENGES	549
<i>M. Stefan</i>	
COMBINED PRODUCTION AND PURIFICATION OF HYDROGEN FROM BIOGAS: STEAM-IRON PROCESS WITH COBALT FERRITES AT HIGH TEMPERATURE	550
<i>J. Lachen, P. Duran, J. Herguido, J. Pena</i>	
COMPARABILITY OF DEVELOPED TEST PROCEDURES AT NORMAL OPERATING CONDITIONS FOR PEM FUEL CELL STACKS AND MODULES ANALYZED IN ROUND-ROBIN-TESTS	552
<i>T. Jungmann, K. Nurnberg, C. Harms</i>	
DEVELOPMENT OF A TYPE IV HYBRID TANK BASED ON COMPRESSED HYDROGEN AND METAL HYDRIDE FOR HEAVY VEHICLES APPLICATION	553
<i>A. Chaise, V. Iosub, O. Gillia</i>	
SYNGAS PRODUCTION VIA THE BIOGAS DRY REFORMING REACTION OVER NI SUPPORTED ON ZIRCONIA MODIFIED WITH CeO₂ OR La₂O₃ CATALYSTS	555
<i>M. Goula, G. Siakavelas, K. Papageridis, N. Charisiou, P. Panagiotopoulou, I. Yentekakis</i>	
HYDROGEN PRODUCTION VIA THE GLYCEROL STEAM REFORMING REACTION OVER NI/ZRO₂ AND NI/SIO₂-ZRO₂ CATALYSTS	558
<i>M. Goula, G. Siakavelas, K. Papageridis, N. Charisiou, K. Kousi, D. Kondarides</i>	
BIOGAS MEMBRANE REFORMER FOR DECENTRALIZED H₂ PRODUCTION	560
<i>M. Binotti, G. Marcoberardino</i>	
COGENERATION OF POWER AND SUBSTITUTE OF NATURAL GAS USING AN INTERNAL COMBUSTION ENGINE	562
<i>S. Frigo, G. Spazzafumo</i>	

VOLUME 2

SENSORS FOR HYDROGEN CONCENTRATION MEASUREMENTS IN NATURAL GAS	564
<i>E. Weidner, R. Cebolla, C. Bonato, L. Wooninck, W. Buttner</i>	
PEM WATER ELECTROLYSIS FOR RENEWABLE ENERGY INTEGRATION: THE DON QUICHOTE PROJECT CASE	566
<i>J. Vaes, J. Seykens, W. Laak, S. Neis, D. Vandenborre, J. Cautaerts</i>	
PD-BASED NANOALLOYS WITH TRANSITION METALS (CO, NI, PT) CONFINED IN ORDERED MESOPOROUS CARBON FOR HYDROGEN STORAGE	568
<i>A. Yuso, C. Ghimbeu, Y. Oumellal, C. Zlotea, M. Latroche, C. Vix-Guterl</i>	
INVESTIGATION OF A 5 KW MICRO-CHP PEM FUEL CELL BASED SYSTEM INTEGRATED WITH MEMBRANE REACTOR UNDER DIVERSE EUROPEAN NATURAL GAS QUALITY	571
<i>G. Marcoberardino, G. Manzolini</i>	
THE ELECTROCHEMICAL ACTIVITY OF POROUS ELECTRODES FOR THE ALKALINE ELECTROLYSIS OF WATER	574
<i>C. Muller, T. Rauscher, B. Kieback, L. Rontzsch</i>	
HIGH PURITY HYDROGEN FROM BIOGAS: STEAM IRON PROCESS WITH IRON OXIDE ORES	576
<i>A. Maicas, J. Plou, J. Lachen, P. Duran, J. Herguido, J. Pena</i>	
MEAS PREPARED WITH TITANIUM CERAMICS AS ALTERNATIVE SUPPORTS FOR PEMFC CATALYSTS	579
<i>B. Moreno, C. Garcia, G. Gomez, J. Maellas, E. Chinarro</i>	
HYDROGEN STREAMS PURIFICATION WITH STEAM-IRON USING FREEZE-CASTING IRON OXIDES	581
<i>J. Lachen, P. Duran, J. Herguido, J. Pena</i>	
PERFORMANCE OF OPTIMIZED CO₂ SOLID SORBENTS FOR HYDROGEN PRODUCTION BY SORPTION-ENHANCED REFORMING (SER) IN FLUIDISED BED REACTOR	583
<i>A. Aranda, M. Aznar, J. Meyer, S. Kazi, R. Murillo, G. Grasa, L. Felice</i>	
CATALYTIC LAYER BASED ON PT-CERAMIC CATALYSTS FOR DAFC	585
<i>B. Moreno, I. Preciado, E. Chinarro</i>	
HYDROGEN PRODUCTION FROM METHANOL STEAM REFORMING OVER AL₂O₃-AND ZRO₂-MODIFIED CUOZNOGA₂O₃ CATALYSTS	586
<i>X. Liu, J. Toyir, P. Piscina, N. Homs</i>	
HIGH-THROUGHPUT FABRICATION AND ELECTROCHEMICAL CHARACTERIZATION OF SOFC CATHODES BY COMBINATORIAL PLD	588
<i>A. Hornes, A. Saranya, A. Morata, A. Tarancon</i>	
PREDICTION OF CO₂/H₂ SEPARATION PROPERTIES OF NAY ZEOLITE MEMBRANES UNDER MULTICOMPONENT MIXTURE CONDITIONS	589
<i>A. Caravella, P. Zito, A. Brunetti, E. Drioli, G. Barbieri</i>	
POST-MORTEM CHARACTERIZATION OF MEAS AFTER DIFFERENT FAILURE MODES	591
<i>B. Moreno, E. Martin, M. Garcia-Alegre, D. Guinea, E. Chinarro</i>	

HYDROGEN ROADMAPS - MODELLING OF THE DEVELOPMENT OF HYDROGEN MOBILITY IN GERMANY, BASED ON CURRENT INITIATIVES	593
<i>T. Bielmeier</i>	
THE NREL AND JRC SENSOR TEST LABORATORIES INSTRUMENTATION AND METHODS FOR HYDROGEN SENSOR PERFORMANCE VERIFICATION	595
<i>W. Butner, M. Post, L. Brett-Boon, G. Black, V. Palmisano, C. Rivkin, R. Burgess</i>	
ANALYZER FOR FCEV TAILPIPE HYDROGEN EMISSIONS AS SPECIFIED IN THE GLOBAL TECHNICAL REGULATION NUMBER 13	597
<i>W. Butner, M. Bubar, K. Hartmann, C. Rivkin, R. Burgess, E. Weidner</i>	
IMPACT OF ENVIRONMENTAL PARAMETERS ON H2 SENSOR PERFORMANCE	600
<i>W. Butner, M. Bubar, K. Hartmann, C. Rivkin, R. Burgess, E. Weidner</i>	
HYPEP THE MODEL EVALUATION PROTOCOL FOR CFD ANALYSIS OF HYDROGEN SAFETY ISSUES	603
<i>D. Baraldi, D. Melideo, A. Kotchourko, K. Ren, J. Yanez, O. Jedicke, J. Keenan, D. Makarov, V. Molokov, S. Giannissi, I. Tolias, A. Venetsanos, S. Coldrick, S. Slater, F. Verbecke, A. Duclos</i>	
NUMERICAL INVESTIGATION OF THE GAS CONCENTRATION FIELD DURING ACCIDENTAL RELEASE IN A ONE VENT SMALL ENCLOSURE: EFFECT OF VENT CONFIGURATIONS	605
<i>D. Melideo, D. Baraldi</i>	
PREPARATION OF MICROPOROUS LAYER FOR PEM WATER ELECTROLYSER ANODE	607
<i>K. Bouzek, J. Polonsky, T. Bystro</i>	
HYDROGEN STORAGE IN IRON-OXIDE DECORATED GRAPHENE	609
<i>M. Whitwick, P. Pei, M. Cannon, G. Quan, W. Sun, E. Kjeang</i>	
OPTIMIZATION OF THE NANOSTRUCTURE AND CRYSTALLINITY OF HEMATITE FILMS GROWN BY PULSED LASER DEPOSITION FOR SOLAR HYDROGEN PRODUCTION	611
<i>Y.-J. Li, C.-P. Yen, S.-J. Luo, S.-Y. Chen, C.-J. Tseng</i>	
ANALYSIS OF HYDROGEN PENETRATION IN PAKISTAN MARKET FOR USE AS AN ALTERNATIVE FUEL	613
<i>S. Ilyas, T. Veziroglu</i>	
HYDROGEN STORAGE PROPERTY OF THREE-COMPONENT $\text{LiNH}_2\text{-Mg}(\text{NH}_2)_2\text{-LiH}$ COMPOSITES	614
<i>H.-J. Lin, H.-W. Li, B. Paik, J. Wang, E. Akiba</i>	
INVESTIGATION OF WATER DROPLET EMERGENCE AND REMOVAL IN BENT GAS CHANNEL OF PEMFC	616
<i>Y. Xu, P. Yi, L. Peng</i>	
GENERATION AND STORAGE OF HYDROGEN FROM NABH_4 SOLUTION USING METAL-BORIDE CATALYSTS	617
<i>T. Das, A. Jain, P. Singh</i>	
HIGH-EFFICIENT BIOGAS REFORMING IN A COMPACT WARM PLASMA REACTOR	619
<i>J.-L. Liu, X. Zhu, K. Li, X.-S. Li, A.-M. Zhu</i>	
TECHNICAL PLATFORM FOR RESEARCH AND DEVELOPMENT OF INTEGRATED HYDROGEN SUPPORTED MICRO-GRIDS	620
<i>T. Muller, K. Klug</i>	
EVALUATION OF CERIA MODIFIED FERRATE CATHODES AND THEIR COFIRING ON CERIA-BASED SOFC	622
<i>H.-Y. Chang, Y.-M. Wang, C.-H. Lin, C.-I. Sheu</i>	
NEW OPPORTUNITIES FOR FUEL CELL APPLICATIONS AND DEVELOPMENT IN CHINA	623
<i>H. Li, H. Wang</i>	
PROMISING PHOTOCATHODES BASED ON NON-NOBLE METAL CATALYSTS OF COSE_2 OR COS_2 WITH HETEROSTRUCTURE OF SI FOR PHOTOELECTROCHEMICAL HYDROGEN EVOLUTION	624
<i>R.-S. Liu, S.-F. Hu</i>	
STABILIZATION AND EMISSION CHARACTERISTICS OF AMMONIA/AIR PREMIXED FLAMES IN SWIRLING FLOWS	626
<i>A. Hayakawa, Y. Arakawa, R. Mimoto, K. Somarathne, T. Kudo, H. Kobayashi</i>	
PEMFC OPERATING UNDER REFORMATE FOR μCHP APPLICATION: IMPACT OF FUEL COMPOSITION AND LOAD CYCLES ON STACK PERFORMANCE	628
<i>S. Escibano</i>	
UNDERSTANDING CARBON METABOLISM IN HYDROGEN PRODUCTION BY PNS BACTERIA	630
<i>H. Koku</i>	
RECENT PROGRESS ON HIGH TEMPERATURE ELECTROLYSIS FOR HYDROGEN AND SYNGAS PRODUCTION AT INET	632
<i>B. Yu, W. Zhang, J. Xu, J. Chen</i>	
SIMULATION, STATISTICS AND EXPERIMENTS COUPLED TO DEVELOP OPTIMIZED AND DURABLE μCHP SYSTEMS USING ACCELERATED TESTS	633
<i>S. Escibano</i>	
MICROSTRUCTURE AND ELECTROCHEMICAL PROPERTIES OF GADOLINIA-DOPED CERIA CATHODES FOR SOEC APPLICATION	635
<i>W. Zhang, B. Yu, J. Chen</i>	
REVIEW ON PHOTO-ELECTROCHEMICAL WATER SPLITTING REACTORS FOR HYDROGEN PRODUCTION	636
<i>S. Sachdev, V. Tiwari, U. Srivastava, A. Sharma, G. Acharya, B. Das</i>	

MODEL PREDICTIVE CONTROL FOR WATER BALANCE IN AN EVAPORATIVELY COOLED PEM FUEL CELL SYSTEM	638
<i>M. Sarmiento-Carnevali, A. Fly, C. Batlle, M. Serra, R. Thring</i>	
FINDING A SUITABLE CATALYST FOR ON-BOARD ETHANOL REFORMING USING EXCESS HEAT FROM AN INTERNAL COMBUSTION ENGINE	641
<i>A. Casanovas, A. Rejas, R. Bosch, J. Llorca</i>	
GRID INTEGRATED MULTI MEGAWATT HIGH PRESSURE ALKALINE ELECTROLYSERS FOR ENERGY APPLICATIONS: ELYNTEGRATION	643
<i>E. Albertin, D. Embid, R. Canalejas</i>	
BULK IMMISCIBLE SUPPORTED RH-PD NANOALLOYS FOR HYDROGEN STORAGE	645
<i>Y. Oumellal, C. Zlotea, C. Ghimbeu, A. Izquierdo, K. Provost, J.-M. Meins, M. Latroche, C. Vix-Guterl</i>	
HYDROGEN AND ORGANIC ACIDS PRODUCTION FROM SUGARCANE JUICE AND SUCROSE IN THERMOPHILIC ANAEROBIC FLUIDIZED BED REACTOR	647
<i>T. Ferreira, G. Rego, A. Paranhos, L. Ramos, E. Silva</i>	
ON THE OPTIMIZATION OF (MN,CO)₃O₄ SUSPENSIONS FOR ELECTROPHORETIC DEPOSITION	649
<i>S. Labonnote-Weber, G. Syvertsen-Wiig, H. Lein, A. Richter</i>	
ORGANIC LOADING RATE EFFECT IN HYDROGEN PRODUCTION FROM CRUDE GLYCEROL IN ANAEROBIC FLUIDIZED BED REACTOR	650
<i>A. Paranhos, L. Ramos, T. Ferreira, G. Rego, E. Silva</i>	
SOUTH AFRICAN HYDROGEN INFRASTRUCTURE (HYSA INFRASTRUCTURE) FOR FUEL CELLS AND ENERGY STORAGE: RECENT DEVELOPMENTS AND ROAD MAP	652
<i>D. Bessarabov</i>	
HYDROGEN GENERATION AND STORAGE FOR SMALL PORTABLE APPLICATIONS: THE EFFECT OF SUCCESSIVE LOADS OF FUEL	654
<i>H. Nunes, M. Ferreira, C. Rangel, A. Pinto</i>	
DEVELOPMENT OF HYDROGEN PERMSELECTIVE MEMBRANES FOR THE THERMOCHEMICAL WATER SPLITTING IS PROCESS	656
<i>A. Ikeda, K. Oura, M. Nomura, O. Myagmarjav, N. Tanaka, S. Kubo</i>	
AMMONIA BORANE – METAL HYDRIDE MIXTURE MATERIALS	659
<i>S. Isobe, Y. Nakagawa</i>	
PT-LOADING OPTIMIZATION OF A PEMFC CATALYTIC LAYER PREPARED BY ELECTROSPRAY: REACTION-DIFFUSION MODEL	661
<i>B. Martínez-Vazquez, S. Martín, J. Castillo, P. García-Ybarra</i>	
THERMOPHILIC AND HYPERTHERMOPHILIC HYDROGEN PRODUCTION FROM SUGARCANE STILLAGE IN AN ANAEROBIC FLUIDIZED BED REACTOR	664
<i>L. Ramos, A. Paranhos, G. Rego, T. Ferreira, E. Silva</i>	
RESEARCH ON OPERATION FOR LOW-COST METAL HYDRIDE HYDROGEN STORAGE IN STATIONARY HYDROGEN ENERGY SYSTEM	667
<i>N. Endo, S. Suzuki, T. Maeda</i>	
A SERIES OF GRAPHENE BASED PD AND MN ALLOYED NANOPARTICLES FOR ANODIC ETHANOL OXIDATION IN ALKALINE FUEL CELLS	669
<i>M. Ahmed, Y.-B. Kim</i>	
SIGNIFICANCE OF CO₂-FREE HYDROGEN IN A LONG-TERM GLOBAL ENERGY SYSTEM ANALYSIS	672
<i>Y. Ishimoto, A. Kurasawa, M. Sasakura, K. Sakata</i>	
DESIGN OF CONTROLLABLE HYDROGEN GENERATION SYSTEM BY OXIDATION REACTION OF ALUMINUM FOIL IN THE PRESENCE OF CA(OH)₂ AND WATER	674
<i>K. Nagashima, H. Visbal, S. Kanehira, T. Saeki, R. Chinzaka, H. Ishizaka, M. Aizawa, M. Shimizu, M. Nishi, K. Hirao</i>	
SYSTEM MITIGATED STRATEGIES ON FUEL CELL DEGRADATION OF START/STOP PROCEDURE	677
<i>F. Weng, T. Kuo, M. Jung</i>	
POLYMER ELECTROLYTE MEMBRANE FUEL CELL OXYGEN EXCESS RATIO REGULATION BY USING NON-LINEAR SLIDING-MODE CONTROLLER	679
<i>Y.-X. Wang, K. Ou, Y.-B. Kim, D.-J. Xuan</i>	
HYDROGEN SORPTION BY CARBON BLACK, BORON NITRIDE AND CARBON NITRIDE WITH HIGH SPECIFIC SURFACE AREAS	682
<i>N. Nishimiya, Y. Watanuki, T. Toyama, Y. Kojima</i>	
CORROSION BEHAVIOR OF CRN COATING WITH THE STS304, STS316 AND STS430 ALLOYS ON THE PEMFC CONDITIONS	684
<i>M. Moon, M. Yoo, S. Kang, J. Song, J. Oh, S. Yang, K. Woo</i>	
CURRENT R&D STATUS OF THERMOCHEMICAL WATER SPLITTING IODINE-SULFUR PROCESS IN JAPAN ATOMIC ENERGY AGENCY	686
<i>S. Kasahara, J. Iwatsuki, H. Takegami, N. Tanaka, N. Noguchi, Y. Kamiji, K. Onuki, S. Kubo</i>	
ON-BOARD HYDROGEN PRODUCTION FROM METHANOL REFORMING BY WARM PLASMA CATALYSIS	688
<i>H.-Y. Lian, X. Zhu, X.-S. Li, J.-L. Liu, A.-M. Zhu</i>	
OPTIMA PI CONTROL OF AN OPEN CATHODE PEM FUEL CELL SYSTEM THROUGH FUZZY-LOGIC RULES	689
<i>K. Ou, Y.-X. Wang, Y.-B. Kim</i>	
FABRICATION OF ANODE SUPPORTED MULTILAYERED TAPE-CAST SOLID OXIDE FUEL CELLS: MECHANICAL, ELECTROCHEMICAL AND LONG TERM CHARACTERIZATION	692
<i>D. Rodriguez, M. Torrell, B. Colldeforns, M. Blanes, A. Morata, F. Ramos, A. Tarancon</i>	

MASSIVE HYDROGEN STORAGE AND TRANSPORTATION TECHNOLOGY “SPERA HYDROGEN®” SYSTEM AND ITS PROSPECTS	694
<i>Y. Okada, K. Imagawa, T. Mikuriya, M. Yasui</i>	
DEVELOPMENT OF LARGE SCALE UNIFIED SYSTEM FOR HYDROGEN ENERGY CARRIER PRODUCTION AND UTILIZATION: ANALYSIS OF DYNAMIC BEHAVIOR OF METHYLCYCLOHEXANE PRODUCTION IN A RECYCLE LOOP	697
<i>H. Matsumoto, H. Kojima, T. Nanba, T. Tsujimura</i>	
HYDROGEN QUALITY ASSURANCE – FROM HYDROGEN SAMPLING TO ANALYSIS	700
<i>B. Gozlan, M. Riviere, P. Mauvais, D. Carteau, L. Allidieres, G. Dang-Nhu</i>	
DEVELOPMENT OF PRACTICAL MEMBRANE REACTORS FOR DEHYDROGENATING METHYLCYCLOHEXANE TO SUPPLY HIGH-PURITY HYDROGEN	701
<i>R. Nishida, E. Matsuyama, R. Numaguchi, H. Urai, S. Nakao</i>	
COMPARISON OF BATTERY AND HYDROGEN FUEL CELL VEHICLES FOR FREIGHT TRANSPORTATION THROUGH WTW DRIVING CYCLE SIMULATIONS	703
<i>S. Campanari, G. Guandalini, F. Beretta, G. Manzolini</i>	
POWER-TO-HYDROGEN AND HYDROGEN-TO-X: SYSTEM ANALYSIS OF THE TECHNO-ECONOMIC, LEGAL AND REGULATORY CONDITIONS: A NEW TASK OF THE IEA HYDROGEN IMPLEMENTING AGREEMENT	706
<i>P. Lucchese, A. Duigou, C. Mansilla</i>	
BIOMIMETIC HYDROGEN PRODUCTION FROM FORMIC ACID WITH PLATINUM NANO-PARTICLE	708
<i>Y. Amao, A. Kai</i>	
PANI-DERIVED 3D HIERARCHICAL POROUS URCHIN-LIKE FE-N-C NANOSTRUCTURES AS AN OUTSTANDING ELECTROCATALYSTS FOR THE OXYGEN REDUCTION REACTION	711
<i>M. Park, S. Yoo, J. Jang, H. Kim, S. Nam, J. Kim</i>	
HYDROGEN ECONOMY REDUX	713
<i>D. Wilson, R. Harvey</i>	
THE UTILIZATION OF HYDROGEN IN HYDROGEN/DIESEL DUAL FUEL ENGINE	714
<i>Y. Suzuki, T. Tsujimura</i>	
THINK BIG: FEASIBILITY OF HYDROGEN REFUELLING INFRASTRUCTURE FOR LARGE FUEL CELL BUS FLEETS	716
<i>T. Zorn</i>	
A NEW REACTOR CONCEPT FOR THE DEHYDROGENATION OF LOHC	718
<i>R. Benker, A. Bosmann, P. Preuster, P. Wasserscheid</i>	
WETTABILITY CONTROL OF LIQUID ELECTROLYTE ON CATHODES FOR MOLTEN CARBONATE FUEL CELLS	720
<i>C. Lee, B. Kwon, H. Ham, S. Choi, J. Han, S. Nam, S. Yoon</i>	
EVALUATION OF A NOVEL REACTOR CONCEPT FOR THE PROCESS INTENSIFICATION AND INTELLIGENT HEAT MANAGEMENT IN THE HYDROGENATION AND DEHYDROGENATION OF LIQUID ORGANIC HYDROGEN CARRIERS	722
<i>P. Preuster, L. Wagner, A. Nub, J. Geiling, M. Steinberger, A. Bosmann, P. Wasserscheid</i>	
GLYCEROL VALORIZATION TO OBTAIN HYDROGEN IN DIFFERENT KINDS OF REACTORS	724
<i>M. Yus, J. Soler, J. Herguido, M. Menendez</i>	
HYDROGEN FROM BIOGAS: CATALYTIC DRY REFORMING IN A TWO ZONE FLUIDIZED BED REACTOR WITH MEMBRANES	726
<i>P. Ugarte, P. Duran, J. Lasobras, J. Soler, J. Herguido, M. Menendez</i>	
LOHC* TECHNOLOGY DEVELOPMENT AT AREVA GMBH - A PRACTICAL EXPERIENCE REPORT	729
<i>K. Gemmer-Berkbilek, B. Schrod, A. Stahl, C. Krause</i>	
A DIFFERENT CONDUCTION MECHANISM FOR HIGH TEMPERATURE PROTON EXCHANGE MEMBRANE	731
<i>H. Zhu, Z. Sun, Q. Li, F. Wang, K. Han</i>	
HIGH-DYNAMIC FILLING LEVEL INDICATION IN METAL HYDRIDE STORAGE SYSTEMS	732
<i>F. Heubner, C. Pohlmann, S. Mauermann, B. Kieback, L. Rontzsch</i>	
FORECAST FOR HYDROGEN-FUELLED VEHICLES IN THE MADRID REGION FOR THE 2020-2040 PERIOD	734
<i>E. Guervos, A. Contreras, F. Posso</i>	
ALKALINE VS PEM ELECTROLYSERS: LESSONS LEARNT FROM FALKENHAGEN AND WINDGAS HAMBURG	736
<i>F. Smeets, J. Vaes, D. Thomas</i>	
HYDRIDE STORAGE TANK COUPLED WITH AN URBAN CONCEPT FUEL CELL VEHICLE	738
<i>G. Capurso, B. Schiavo, J. Jepsen, G. Lozano, O. Metz, M. Robler, N. Keller, J. Colbe, T. Klassen, M. Dornheim</i>	
STUDYING PRESSURIZED REFORMING SYSTEM FOR THE APPLICATION OF PD MEMBRANE APPLYING TO PEFC	740
<i>K. Lee, G. Han, H. Shin, J. Bae</i>	
HYDROGEN-BASED ENERGY STORAGE FOR A DISTRIBUTED GENERATION SYSTEM	742
<i>I. Martin, A. Berrueta, A. Ursua, P. Sanchis</i>	
HYDROGEN SORPTION CHARACTERISTICS OF ORDERED NANOPOROUS CARBONS	745
<i>P. Selvam, B. Kuppan</i>	
NITROGEN-CONTAINING ORDERED MESOPOROUS CARBONS AS METAL-FREE CATALYSTS FOR OXYGEN REDUCTION REACTION	747
<i>P. Selvam, T. Mohan</i>	

PREPARATION OF CO-TOLERANT ANODE ELECTROCATALYSTS FOR POLYMER ELECTROLYTE MEMBRANE FUEL CELLS	749
<i>D. Guban, A. Tompos, A. Vass, Z. Paszti, E. Szabo, P. Nemeth, I. Borbath</i>	
ELECTROCHEMICAL REFORMING OF ALCOHOLS: A NOVEL ROUTE FOR PURE HYDROGEN PRODUCTION	751
<i>A. Calcarrada, A. Osa, F. Dorado, H. Dole, E. Baranova, J. Valverde, A. Lucas-Consuegra</i>	
EXPLORING HIGH HYDROGEN STORAGE PERFORMANCES OF LITHIUM ALANATE BY ADDING DIFFERENT NITRIDES	754
<i>Y. Wang, L. Li</i>	
PEM FUEL CELLS STACK PROTECTION FROM CO-POISONING IN A M-CHP SYSTEM WITH MEMBRANE REFORMER	755
<i>S. Foresti, G. Manzolini</i>	
CONTROLLED SYNTHESIS OF CO-TOLERANT PT_3SN/C ANODE ELECTROCATALYSTS FOR POLYMER ELECTROLYTE MEMBRANE FUEL CELLS	757
<i>D. Guban, A. Tompos, Z. Paszti, S. Balint, P. Nemeth, I. Borbath</i>	
POWER TO GAS TECHNOLOGY IMPLEMENTATION IN THE ARAGONESE PYRENEES	760
<i>M. Bailera, L. Romeo, S. Espatolero, P. Lisbona, A. Ferriz, J. Simon, A. Bandres, P. Marco</i>	
DEVELOPMENT OF LARGE SCALE UNIFIED SYSTEM FOR HYDROGEN ENERGY CARRIER PRODUCTION AND UTILIZATION: EXPERIMENTAL ANALYSIS AND SYSTEMS MODELING	762
<i>H. Kojima, H. Matsumoto, T. Tsujimura</i>	
TESTING OF METAL-HYDRIDE BASED HYDROGEN STORAGE TANKS	765
<i>J. Colbe, G. Capurso, A. Strauch, J. Hapke, O. Metz, C. Pistidda, S. Borries, K. Taube, T. Klassen, M. Dornheim</i>	
INVESTIGATION OF PROTECTIVE COATINGS ON FERRITIC STAINLESS STEEL SOLID OXIDE FUEL CELLS INTERCONNECTS FABRICATED BY POWDER METALLURGY (SOFCS)	767
<i>V. Miguel-Perez, M. Torrell, B. Colldeforns, A. Morata, M. Monterde, J. Calero, A. Tarancon</i>	
INVESTIGATION OF MATERIALS CORROSION IN HIGH TEMPERATURE MOLTEN SALTS FOR HYDROGEN PRODUCTION PROCESSES	769
<i>O. Jianu, B. Ikeda</i>	
BIOLOGICAL CONVERSION OF CARBOHYDRATE-RICH FOOD WASTE TO HYDROGEN AND METHANE	772
<i>M.-S. Kim, M.-K. Lee, H.-N. Son, D.-H. Kim, J. Triolo</i>	
STRATEGIES FOR STABLE ANAEROBIC DIGESTION OF FOOD WASTE UNDER HIGH ORGANIC LOADING RATE	774
<i>M.-S. Kim, M.-K. Lee, H.-N. Son, D.-H. Kim, J. Triolo</i>	
COMPOSITE NAFION-TITANIA MEMBRANES FOR LOW RELATIVE HUMIDITY APPLICATIONS IN A PEFC	776
<i>A. Sacca, A. Carbone, I. Gatto, R. Pedicini, A. Freni, A. Patti, E. Passalacqua</i>	
NANOCRYSTALLINE BLUE TITANIA : VISIBLE-LIGHT PHOTOCATLYST FOR SOLAR HYDROGEN PRODUCTION	778
<i>P. Selvam, S. Gupta</i>	
ELECTROCHEMICAL ACTIVITY OF FEMTOSECOND-LASERSTRUCTURED NI ELECTRODES FOR THE HYDROGEN EVOLUTION REACTION	781
<i>T. Rauscher, C. Muller, A. Gabler, M. Kohring, B. Kieback, W. Schade, L. Rontzsch</i>	
COAL DIRECT CHEMICAL LOOPING FOR HYDROGEN AND POWER CO-PRODUCTION AND ITS COMBINATION WITH HYDROGEN STORAGE	783
<i>M. Aziz, T. Oda, A. Morihara</i>	
STUDY ON OPTIMUM OPERATING PARAMETERS FOR LT-PEM FUEL CELL STACK AND THE EFFECT OF EXTERNAL HUMIDIFICATION ON OVERALL SYSTEM EFFICIENCY W. R. T. OPERATING TEMPERATURE	785
<i>V. Posina, S. Chugh, A. Sharma, U. Srivastava, U. Srivastava, G. Acharya</i>	
HYBRID ENERGY STORAGE SYSTEM BASED ON HYDROGEN AND COMPRESSED AIR	786
<i>A. Schastlivtsev, V. Borzenko</i>	
LIQUEFIED HYDROGEN IN THE SUPPLY CHAIN FOR HYDROGEN BASED MOBILITY	788
<i>T. Gruber, M. Kampitsch</i>	
NEW CARBON SUPPORTS WITH IMPROVED ELECTROCHEMICAL RESISTANCE FOR PROTON EXCHANGE MEMBRANE FUEL CELLS	789
<i>V. Golovin, N. Maltseva, E. Gribov, A. Okunev</i>	
INVESTIGATION OF THE THERMOCHEMICAL STEPS OF THE HYBRID PHOTOTHERMAL SULFUR-AMMONIA WATER SPLITTING CYCLE	791
<i>A. Kalyva, E. Vagia, A. Konstandopoulos, A. Srinivasa, A. T-Raissi, N. Muradov, K. Kakosimos</i>	
PATAGONIA WIND - HYDROGEN PROJECT: UNDERGROUND STORAGE AND METHANATION	794
<i>A. Perez, E. Perez, S. Dupraz, J. Bolcich</i>	
OPTIMAL ENERGY MANAGEMENT STRATEGY OF A HYBRID RENEWABLE ENERGY SYSTEM WITH HYDROGEN GENERATION AND STORAGE	796
<i>F. Vivas, A. Heras, F. Segura, J. Andujar</i>	
INFLUENCE OF $CAMN_2O_4$ CO-CATALYST ON GAN FOR OXYGEN EVOLUTION ELECTRODE OF WATER SPLITTING	798
<i>H. Bae, E. Kim, K. Kayo, K. Fujii, S.-W. Ryu, H.-J. Lee, J.-S. Ha</i>	

STUDY OF SYNTHESIS OF CATALYSTS FOR HIGH TEMPERATURE WGS REACTION BY NANOCASTING USING SBA-16 AS HARD TEMPLATE	800
<i>C. Martos, J. Dufour, A. Ruiz, A. Lameiro</i>	
STUDIES ON MG+LANI₅ BASED COMPOSITES WITH RESPECT TO THEIR SUITABILITY TOWARDS THERMAL ENERGY STORAGE	802
<i>E. AnilKumar, Y. Madaria</i>	
LONG-TERM STEAM ELECTROLYSIS WITH SOLID OXIDE CELLS: APPROACHING 20 000 H DEMONSTRATION TIME	804
<i>J. Schefold, A. Brisse</i>	
NAFION-METALLIC OXIDES MEMBRANES FOR INTERMEDIATE TEMPERATURE PEMFC	806
<i>L. Gonzalez-Rodriguez, J. Ridriguez, N. Rojas, M. Sanchez-Molina, R. Campana, L. Rodriguez</i>	
INTEGRATION OF AN ELECTROLYZER INTO A HYBRID SYSTEM	809
<i>T. Ayuso, J. Serrano, D. Corral, J. Santiago</i>	
ENABLING LOCAL RENEWABLES WITH HYDROGEN AND FUEL CELLS IN SCOTLAND	811
<i>N. Holmes, E. Buck, F. Palacin</i>	
THREE-DIMENSIONAL MODELING OF LIQUID WATER TRANSPORT AND CO POISONING IN A PEMFC OPERATING ON REFORMATE	814
<i>M. Abdollahzadeh, M. Boaventura, A. Mendes</i>	
FACING THE EU DIRECTIVE ON ALTERNATIVE FUELS: HYDROGEN INFRASTRUCTURE IN SPAIN	817
<i>J. Brey, R. Brey, A. Carazo</i>	
EXPLOSION PROTECTION FOR MIXTURES OF HYDROGEN AND NATURAL GAS	818
<i>E. Askar, V. Schroder, T. Tashqin, K. Habib, S. Schutz, A. Seemann</i>	
ELICITING PREFERENCES ON THE DESIGN OF HYDROGEN REFUELING INFRASTRUCTURE	820
<i>J. Brey, R. Brey, A. Carazo</i>	
PD-CU-M (M= Y, TI, ZR, V, NB, AND NI) ALLOYS FOR HYDROGEN SEPARATION MEMBRANE	822
<i>S. Nayebossadri, J. Speight, D. Book</i>	
ULTRA-THIN CERAMIC DIFFUSION BARRIER FORMATION USING NEWLY DEVELOPED BLOWING COATING METHOD FOR TUBULAR PD-BASED COMPOSITE MEMBRANE	823
<i>R. Shin-Kun, H. Jae-Yun, S. Beom-Seok</i>	
DEVELOPMENT OF TUBULAR PROTON CONDUCTING ELECTROLYSERS	825
<i>M. Fontaine, C. Denonville, R. Strandbakke, E. Vollestad, J. Serra, D. Beeaff, C. Vigen, T. Norby</i>	
ELECTROCATALYSTS AND ANION EXCHANGE COMPOSITE MEMBRANES FOR ALCOHOL ALKALINE FUEL CELLS	828
<i>A. Nonjola, B. Modibedi, C. Mutangwa, D. Ozoemena, E. Mathe, F. Zeng, G. Tembu, H. Mhlongo</i>	
LCA ANALYSIS OF LANDFILL GAS UTILIZATION TECHNOLOGIES: REFORMING AND FUEL CELL VERSUS COGENERATION	829
<i>C. Friesenehan, I. Agirre, P. Arias</i>	
THE CAPITAL REGION AS A DRIVER FOR THE INTRODUCTION OF HYDROGEN BASED TRANSPORT IN NORWAY	832
<i>A. Solli, E. Boe</i>	
FUNCTIONALISED HYBRID POLY(ETHER ETHER KETONE) CONTAINING MnO₂: INVESTIGATION OF OPERATIVE CONDITIONS FOR HYDROGEN SORPTION	833
<i>R. Pedicini, A. Carbone, A. Sacca, F. Matera, I. Gatto, E. Passalacqua</i>	
DEMONSTRATION OF MG₂FEH₆ AS HEAT AND HYDROGEN STORAGE MATERIAL AT TEMPERATURES UP TO 550°C	836
<i>K. Peinecke, M. Felderhoff, R. Urbanczyk</i>	
INFLUENCE OF THE CHEMICAL REDUCTION OF GRAPHENE OXIDE ON THE STRUCTURE AND PHOTOACTIVITY OF CDS-RGO HYBRID SYSTEMS	838
<i>I. Leo, E. Soto, F. Vaquero, R. Navarro, J. Fierro</i>	
RENEWABLE HYDROGEN FOR METHANE PRODUCTION FROM BIO-ETHANOL IN A PD-MEMBRANE REACTOR	840
<i>D. Alique, S. Tosti, J. Calles, G. Buceti, R. Sanz, L. Pontoni</i>	
CONNECTED HYDROGEN STORAGE FOR ENERGY EFFICIENT BUILDINGS	842
<i>C. Rozain, N. Bardi</i>	
ELECTROLYSIS ASSISTED BY ORGANIC COMPOUNDS ON HYDROGEN PRODUCTION AT ROOM TEMPERATURE	844
<i>E. Martin, B. Moreno, E. Chinarro, M. Garcia-Alegre, D. Guinea</i>	
DEVELOPMENT OF CATALYSTS FOR CO₂ METHANATION: EFFECT OF ADDITION OF MG, LA OR K ON THE STRUCTURE AND ACTIVITY OF Ni/γ-AL₂O₃ CATALYSTS	845
<i>M. Campos, D. Liuzzi, J. Fierro, R. Navarro</i>	
HYDROGEN EVOLUTION UNDER VISIBLE LIGHT OVER NANOSTRUCTURED CDSZNS PHOTOCATALYSTS PREPARED BY ONE-STEP SOLVOTHERMAL METHOD	848
<i>F. Vaquero, R. Navarro, J. Fierro</i>	
INFLUENCE OF SULFUR AND CADMIUM SOURCES ON THE NANOSTRUCTURE AND PHOTOACTIVITY OF SOLVOTHERMAL CDS	851
<i>E. Soto, F. Vaquero, I. Murillo, R. Navarro, J. Fierro</i>	
PEMFC HYBRID POWERTRAIN FOR RAILWAY VEHICLES	853
<i>F. Tinaut, D. Sopena, A. Horrillo, A. Melgar, A. Buitrago</i>	
REVERSIBLE AND IRREVERSIBLE DEGRADATION PHENOMENA IN PEMFCs	855
<i>J. Mitzel, P. Gazdzicki, I. Biswas, M. Schulze, K. Friedrich</i>	

DEVELOPMENT OF METAL SUPPORTED PROTON CERAMIC ELECTROLYSER CELLS (PCEC) FOR RENEWABLE HYDROGEN PRODUCTION	857
<i>M. Stange, E. Stefan, C. Denonville, Y. Larring, M. Fontaine, R. Haugsrud</i>	
SYNTHESIS AND CHARACTERIZATION OF CUO-ZNO-AL₂O₃ WITH BETA-/Y-TYPE ZEOLITIC SUPPORTERS FOR DIMETHYL ESTER PRODUCTION	859
<i>C.-L. Chiang, K.-S. Lin, A. Adhikari</i>	
HYDROGEN TRANSPORT IN POLYMER PIPES FOR NATURAL GAS DISTRIBUTION	862
<i>H. Iskov, S. Kneck</i>	
MANUFACTURING OF COPVS FOR HYDROGEN STORAGE WITH INTEGRATED OPTICAL FIBER SENSORS	864
<i>J. Kaleta, S. Villalonga, F. Nony</i>	
PERFORMANCE OPTIMIZATION OF A SINGLE CHAMBER MICROBIAL FUEL CELL USING LACTOBACILLUS PENTOSUS	867
<i>J. Boas, V. Oliveira, L. Marcon, M. Simoes, A. Pinto</i>	
FUEL CELLS FOR HEAVY DUTY APPLICATIONS	868
<i>M. Kammerer, M. Troger</i>	
IMPROVING HYDROGEN STORAGE CAPACITY BY SPILLOVER AND FINE STRUCTURAL CHARACTERIZATION OF MIL-47(V) METAL ORGANIC FRAMEWORKS	870
<i>A. Adhikari, K.-S. Lin, C.-L. Chiang</i>	
STRUCTURED REACTORS FOR H₂ PRODUCTION FROM SOLAR REDOX THERMOCHEMICAL WATER SPLITTING	872
<i>S. Lorentzou, A. Zygogianni, C. Pagkoura, G. Karagiannakis, A. Konstadopoulos</i>	
THE FUEL CELL INDUSTRY 2015: A RECORD YEAR FOR SHIPMENTS	874
<i>D. Hart, F. Lehner</i>	
ECONOMIC AND SITE SELECTION REQUIREMENTS FOR 'POWER TO GAS'	877
<i>K. Hyde</i>	
TECHNICAL REQUIREMENTS FOR HYDROGEN REFUELLING STATIONS	879
<i>K. Hyde</i>	
GREEN HYDROGEN – THE MISSING LINK?	881
<i>S. Petters, K. Tse, K. Mauthner</i>	
FLATTENING PRESSURE-REDUCING REGULATOR FLOW CURVES IN HIGH-FLOW SYSTEMS	882
<i>J. Albiach</i>	
PROSPECTION OF ARGON POWER CYCLE TO IMPROVE THERMAL EFFICIENCY OF HYDROGEN FUELED STATIONARY ENGINES	883
<i>T. Tsujimura, Y. Suzuki, H. Kojima, Y. Tokunaga</i>	
CHARACTERIZATION AND PERFORMANCE ANALYSIS OF AN INNOVATIVE NI/MAYENITE CATALYST FOR THE STEAM REFORMING OF RAW SYNGAS	886
<i>E. Savuto, K. Gallucci, S. Natali, E. Bocci, A. Carlo</i>	
KINETIC PARAMETERS OF FERMENTATIVE H₂ PRODUCTION FROM DIFFERENT GALACTOSE CONCENTRATIONS BY A NEWLY ISOLATE CLOSTRIDIUM BEIJERINCKII BR 21	888
<i>B. Fonseca, M. Guarazzoni, V. Reginatto</i>	
SACCHARIFICATION OF ALGAE BIOMASS FOR FERMENTATIVE HYDROGEN PRODUCTION	891
<i>G. Dalbello, A. Zimbardi, B. Fonseca, R. Furriel, V. Gelli, D. Tapia, V. Reginatto</i>	
GAS SENSORS FOR SUSTAINABLE AND SAFE BIOENERGY PRODUCTION FROM AN INTEGRATED GASIFICATION-FC SYSTEM	893
<i>V. Pallozzi, F. Zaza, E. Serra, A. Carlo, M. Villarini, M. Carlini</i>	
ENHANCED FERMENTATIVE HYDROGEN PRODUCTION FROM SUGARCANE PROCESSING DERIVATIVES USING LANDFILL LEACHATE AS A CO-SUBSTRATE	895
<i>I. Silva, S. Lima, M. Siqueira, M. Veiga, V. Reginatto</i>	
TECHNO-ECONOMICAL ANALYSIS OF POWER-TO-HYDROGEN WITH ALKALINE OR PEM ELECTROLYSIS: RESULTS OF THE STUDY PLAN-DELYKAD	898
<i>K. Friedrich, F. Burggraf, T. Smolinka, C. Voglstatter, U. Bunger, J. Michalski, F. Crotogino, S. Donadei, D. Heide, T. Pregger, K.-K. Cao, S. Kolb</i>	
STEAM REFORMING OF FURFURAL AND PHENOL FOR HYDROGEN PRODUCTION USING BIMETALLIC NI-M/SBA-15 (M: CO, CU, CR) CATALYSTS	901
<i>J. Calles, A. Carrero, A. Vizcaino, L. Garcia-Moreno</i>	
A PLATINUM-FREE OXYGEN REDUCTION CATALYST BY A ONE-STEP PYROLYSIS PROCESS	904
<i>J. Jensen, Y. Hu, L. Zhong, C. Pan, L. Cleemann, Q. Li</i>	
SOLAR-DRIVEN PYROLYSIS AND GASIFICATION OF LOW-GRADE CARBONACEOUS MATERIALS	905
<i>L. Arribas, N. Arconada, C. Gonzalez-Fernandez, C. Lohrl, J. Gonzalez-Aguilar, M. Kaltschmitt, M. Romero</i>	
USING HYDROGEN TO REDUCE INDUSTRY SECTOR CO₂ EMISSIONS: A CASE STUDY OF THE UK	907
<i>N. Sabio, P. Dodds</i>	
INFLUENCE OF FLUID DYNAMIC BEHAVIOR IN THE OHMIC OVERPOTENTIALS OF AN ALKALINE WATER ELECTROLYSIS CELL	910
<i>E. Amores, J. Rodriguez, J. Oviedo, A. Lucas-Consuegra</i>	
A SINGLE DOMAIN APPROACH TO RESOLVING LIQUID SATURATION JUMPS WITHIN A FLOWING ELECTROLYTE – DIRECT METHANOL FUEL CELL	913
<i>D. Ouellette, E. Matida, C. Cruickshank</i>	
DEVELOPMENT OF CU-BASED SPINELS AS COATINGS FOR SOLID OXIDE FUEL CELLS	915
<i>R. Spotorno, S. Anelli, V. Bongiorno, P. Piccardo</i>	

MODELING OF SENSITIVITY ANALYSIS OF A HIGH TEMPERATURE PEM FUEL CELL WITH PBI COMPOSITE MEMBRANES	916
<i>B. Sezgin, D. Caglayan, Y. Devrim, I. Eroglu</i>	
ELECTROCHEMICAL HYDROGEN COMPRESSOR PERFORMANCE BASED ON SPEEK COMPOSITED MEMBRANES	918
<i>J. Pineda, P. Hernandez-Munoz, S. Rivas, J. Ledesma-Garcia, L. Arriaga, A. Chavez-Ramirez</i>	
PERFORMANCE AND STABILITY OF A PEM WATER ELECTROLYSER BASED ON DIFFERENT CATALYST LOADINGS AND AN AQUIVION MEMBRANE	921
<i>S. Siracusano, V. Baglio, N. Dijk, L. Merlo, A. Arico</i>	
HYDROGEN PRODUCTION BY PEM ELECTROLYZER	922
<i>E. Trillo, J. Fernandez, S. Tiagy, M. Maynar</i>	
TESTING OF METAL HYDRIDE HYDROGEN STORAGE SYSTEMS	924
<i>F. Saiz-Sevilla</i>	
DEGRADATION OF Pt/C CATALYST IN HIGH TEMPERATURE PEM FUEL CELL	927
<i>M. Prokop, T. Bystron, K. Bouzek</i>	
ECO-EFFICIENT TECHNOLOGIES DEVELOPMENT FOR ENVIRONMENTAL IMPROVEMENT OF AQUACULTURE - AQUASEF	928
<i>M. Olmo, R. Berruero, R. Baquero, D. Rico, S. Montalva, M. Herrero, A. Gonzalez, C. Bermudez</i>	
BIO-ELECTROLYTIC CONVERSION OF ACIDOGENIC EFFLUENTS FROM WASTEWATER FERMENTATION TO BIOHYDROGEN: AN INTEGRATION STRATEGY FOR HIGHER SUBSTRATE CONVERSION INTO HYDROGEN	930
<i>A. Marone, O. Ayala, A. Carmona, R. Moscoviz, E. Latrille, V. Alcaraz-Gonzalez, N. Bernet, E. Trably</i>	
MODELLING OF AUTOTHERMAL BIOGAS REFORMING OVER NI-BASED CATALYSTS SUPPORTED ON SIC FOAMS FOR FUEL CELL APPLICATIONS	932
<i>M. Luneau, E. Gianotti, F. Meunier, N. Guilhaume, Y. Schuurman</i>	
MULTIFUNCTIONAL SOFC ANODES FOR THE ELECTROCHEMICAL CONVERSION OF METHANE INTO C2-TYPE HYDROCARBONS AND FOR ELECTRICITY GENERATION WITH THE DIRECT UTILIZATION OF ETHANOL	934
<i>S. Venancio, P. Miranda</i>	
THERMAL INTEGRATION OF CELLULAR METHANOL STEAM REFORMER WITH A HIGH-TEMPERATURE PEMFC	936
<i>P. Ribeirinha, G. Schuller, S. Auvinen, M. Boaventura, M. Mendes</i>	
HYDROGEN PERMEABILITY OF PERFLUORINATED SULPHONATED MEMBRANES IN PEM WATER ELECTROLYSIS	938
<i>J. Malis, M. Paidar, K. Bouzek</i>	
TAILORING THE MICROSTRUCTURE OF ANODE SUPPORTED MICROTUBULAR CELLS FOR FUEL CELL AND HIGH TEMPERATURE ELECTROLYSIS APPLICATIONS	940
<i>A. Hanifi, M. Laguna-Bercero, N. Sandhu, T. Etsell, P. Sarkar</i>	
DEVELOPMENT OF THE MOBILE APU SYSTEM BASED ON THE PEM FUEL CELL STACK	942
<i>J. Malis, M. Paidar, K. Bouzek</i>	
COMBINED CYCLE GAS TURBINE AND ENGINE SYSTEMS OPERATING ON HYDROGEN RICH FUELS	944
<i>S. Hawksworth, K. Moodie, J. Gummer, B. Ewan, H. Michels, P. Linstedt, P. Winstanley, A. Pekalski</i>	
NOVEL OXYGEN ELECTRODE MATERIALS BASED ON CERIUM AND PRASEODYMIUM OXIDES FOR SOLID OXIDE FUEL CELL AND ELECTROLYSIS APPLICATIONS	946
<i>M. Laguna-Bercero, H. Monzon, A. Larrea, V. Orea</i>	
A HYDRIDE HYDROGEN TANK ADAPTED TO LOW HYDROGEN PRESSURE PRODUCTION WITH THE ABILITY TO COMPRESS HYDROGEN FOR USAGE	948
<i>M. Ponthieu, A. Chaise, L. Mayoussier, D. Reynaud, O. Gillia</i>	
SYSTEMS ANALYSIS AND TECHNO-ECONOMIC ASSESSMENT OF HYDROGEN ENERGY STORAGE VIA ELECTROLYSIS FROM CURTAILED RENEWABLES: A CALIFORNIA CASE STUDY	950
<i>Z. McDonald, C. Yang, A. Jenn, J. Ogden</i>	
EFFECT OF GAS COMPOSITION AND OPERATIVE TEMPERATURE INTO SOFC/SOE TRANSITION	952
<i>L. Barelli, G. Bidini, G. Cinti</i>	
THREE-DIMENSIONAL MODELING OF A HIGH TEMPERATURE PEM FUEL CELL FOR DIFFERENT FLOW CHANNEL GEOMETRIES	953
<i>D. Caglayan, B. Sezgin, Y. Devrim, I. Eroglu</i>	
STEAM REFORMING OF BIOMASS TAR OVER TYRE CHAR FOR HYDROGEN PRODUCTION	955
<i>A. Al-Rahbi, P. Williams</i>	
ELECTRICITY-BASED FUELS AT NOW GMBH	957
<i>O. Ehret</i>	
CERIA-BASED MATERIALS FOR HYDROGEN PRODUCTION BY THERMOCHEMICAL SPLITTING OF H₂O	959
<i>R. Sanz, J. Marugan, J. Botas, R. Molina, M. Linares, M. Orfila</i>	
SYNTHESIS AND CHARACTERIZATION OF MODIFIED S-PEEK PROTON EXCHANGE MEMBRANES WITH ZRO₂-PWA AND THEIR APPLICATION IN FUEL CELLS	961
<i>P. Hernandez-Munoz, S. Rivas, J. Pineda, J. Ledesma-Garcia, A. Chavez-Ramirez, L. Arriaga</i>	
INCLUSION OF 18-CROWN-6 ETHER IN MOF MATERIALS FOR INCREASING H₂ STORAGE CAPACITY	964
<i>G. Orcajo, J. Villajos, C. Martos, J. Botas, G. Calleja</i>	

MODELING PLATFORM FOR DESIGN AND SIMULATION OF SOLID-STATE HYDROGEN STORAGE TANKS	966
<i>A. Mazzucco, M. Rokni</i>	
ANALYSIS OF THE INSTALLATION OF A PEM FUEL CELL IN A HARBOR TUGBOAT	968
<i>T. Leo, J. Moran, J. Rodriguez-Romeral, O. Santiago, E. Navarro, M. Raso</i>	
EVALUATION OF DIFFERENT STYLES OF SILICA MEMBRANE PROCESSES FOR HYDROGEN SEPARATION FROM REFORMING PRODUCTS	970
<i>K. Ghasemzadeh, M. Jafari, A. Basile</i>	
SYNTHESIS AND CHARACTERIZATION OF DIFFERENT MN/CO SPINELS FOR H₂ PRODUCTION BY SOLAR THERMOCHEMICAL CYCLES	973
<i>R. Sanz, J. Marugan, J. Botas, R. Molina, M. Linares, M. Orfila</i>	
TERNARY ALKALINE POLYBENZIMIDAZOLE-BASED ELECTROLYTES	976
<i>D. Aili, M. Kraglund, J. Jensen</i>	
NOVEL MATERIALS AND SYSTEM DESIGNS FOR LOW COST, EFFICIENT AND DURABLE PEM ELECTROLYSERS – THE NOVEL PROJECT	977
<i>M. Thomassen</i>	
HYDROGEN AND FUEL CELLS DEPLOYMENT IN FRANCE: STRATEGY, PERSPECTIVES AND INTEGRATION IN THE EUROPEAN LANDSCAPE	979
<i>P. Lucchese, P. Mauberger</i>	
UTILIZATION OF MOLASSES IN A PILOT SCALE PHOTOBIOREACTOR IN OUTDOOR CONDITIONS	980
<i>E. Kayahan, H. Koku</i>	
PERFORMANCE OF HYDROGEN PRODUCTION BY DIRECT COUPLING 5NM3/HOUR CLASS PEM ELECTROLYZER AND 20KW PHOTOVOLTAIC SYSTEM	982
<i>T. Maeda, N. Endo, S. Suzuki</i>	
DEMONSTRATING HYDROGEN PRODUCTION FROM AMMONIA – IDENTIFYING A PEM FUEL CELL PURGE STRATEGY	984
<i>H. Hunter, B. David, T. Okedi, Q. Meyer, D. Brett</i>	
SUPPORTED IR AND IRRU NANOPARTICLES AS HIGHLY ACTIVE OXYGEN EVOLUTION CATALYSTS FOR PEM WATER ELECTROLYSERS	986
<i>M. Thomassen, T. Mokkelbost, A. Oyarce</i>	
COMPARISON STUDIES BETWEEN FIBERS AND CARBON NANOTUBES DOPED WITH NITROGEN	988
<i>Y. Verde-Gomez, D. Lardizabal, I. Zeferino-Gonzalez, G. Nunez, A. Muniz</i>	
SIMULATION-BASED ASSESSMENT OF HYDROGEN PRODUCTION OF AN ALKALINE ELECTROLYSER UTILIZING RENEWABLE POWER FROM WIND	989
<i>T. Grube, E. Albertin, S. Schiebahn, M. Robinius, D. Stolten</i>	
SYNTHESIS OF CO TOLERANT TUNGSTEN ELECTROCATALYST FOR ELECTROCHEMICAL HYDROGEN PURIFICATION	992
<i>E. Andablo-Marquez, A. Chavez, S. Rivas</i>	
GREEN HYDROGEN SUPPLY FOR THE POWER AND MOBILITY SECTORS	994
<i>J. Michalski, U. Bunger</i>	
EXPERIMENTAL PROCESS FOR MATERIAL TESTING IN MOLTEN SALT ENVIRONMENTS FOR HYDROGEN PRODUCTION PROCESSES	996
<i>M. Nijhawan, O. Jianu, B. Ikeda</i>	
THE POTENTIAL FOR HYDROGEN AS A TRANSPORTATION FUEL IN NORWAY TOWARDS 2030	998
<i>M. Thomassen, S. Moller-Holst</i>	
STRATEGIC CHOICES FACING ESTABLISHED PRODUCERS AND CONSUMERS IN THE HYDROGEN ECONOMY	999
<i>A. Bakenne, W. Nuttall, B. Glowacki, N. Kazantzis, M. Timko</i>	
ELECTROLYZER SIZE TO MINIMIZE ANNUAL GRID ASSISTANCE FOR AN AUTONOMOUS WIND-HYDROGEN SYSTEM	1000
<i>J. Garcia-Clua, R. Mantz, H. Battista</i>	
COMPUTATIONAL INVESTIGATION OF PRESSURE AND TEMPERATURE EFFECTS ON THE STRUCTURAL STABILITY OF MG–H SYSTEM USING THE QUASI-HARMONIC MODEL CALCULATIONS	1002
<i>H. AlMatrouk, V. Chihai, V. Alexiev</i>	
DYNAMIC MODELING OF HYDROGEN DESORPTION USING THE ELECTRICAL FLUID ANALOGY	1004
<i>D. Chabane, F. Harel, A. Djerdir, D. Candusso, O. El-Kedim, N. Fenineche</i>	
FURTHER INSIGHTS ON THE ELECTROOXIDATION OF ETHANOL BY IN SITU IRRAS IN D₂O ELECTROLYTES	1006
<i>J. Torrero, F. Perez-Alonso, M. Pena, C. Dominguez, A. Al-Youbi, S. Al-Thabaiti, S. Basahel, A. Alshehri, S. Rojas</i>	
INCLUDING ARAGON, CATALONIA (SPAIN), ANDORRA AND MIDY PYRENÉES (FRANCE) REGIONS IN HYDROGEN MOBILITY INITIATIVES: A CROSS BORDER CORRIDOR THROUGH THE PYRENEES	1008
<i>J. Simon, D. Embid, G. Matute, F. Palacin</i>	
MASTER PLAN FOR HYDROGEN IN ARAGON 2011 – 2015: RESULTS OBTAINED DURING THE PERIOD	1011
<i>F. Palacin, J. Simon</i>	
SOLAR HYBRID WATER-SPLITTING CYCLE WITH THERMAL ENERGY STORAGE AS INTEGRAL PART OF THE CYCLE	1013
<i>N. Muradov, A. T-Raissi, K. Kakosimos, N. Qin, A. Srinivasa</i>	

MASTER PLAN FOR HYDROGEN IN ARAGON 2016 – 2020: NEW CHALLENGES IN HYDROGEN AND FUEL CELLS IN THE REGION OF ARAGON (SPAIN)	1016
<i>G. Palacin, E. Albertin, J. Arnedo, R. Canalejas, L. Castrillo, D. Embid, A. Ferriz, G. Matute, J. Simon</i>	
REDOX MATERIALS INVESTIGATION FOR H₂ PRODUCTION FROM SOLAR THERMOCHEMICAL SPLITTING OF WATER	1018
<i>S. Lorentzou, A. Zygogianni, C. Pagkoura, D. Dimitrakis, G. Karagiannakis, A. Konstandopoulos</i>	
CIRCUMSTANCES OF THE NATIONAL PLAN FOR HYDROGENIZATION OF ROAD TRANSPORT IN POLAND	1020
<i>G. Wojciech, M. Edward, W. Jerzy</i>	
CERTIFYH— DEVELOPING A EUROPEAN FRAMEWORK FOR THE GENERATION OF GUARANTEES OF ORIGIN FOR GREEN HYDROGEN	1022
<i>F. Barth, W. Vanhoudt, M. Londo, J. Jansen, K. Veum, J. Castro, K. Nurnberger, M. Altmann</i>	
POWER-TO-GAS IN GERMANY – IDEA, POTENTIAL AND PROJECTS	1024
<i>M. Weber, J. Semner, J. Schaffert, T. Kattenstein</i>	
THE NEW OPTIMIZATION CONCEPT OF THE STRESS DISTRIBUTION IN MULTILAYER HIGH PRESSURE COMPOSITE CYLINDERS FOR GASEOUS FUELS	1027
<i>J. Kaleta, P. Krysiak</i>	
A NEW APPROACH FOR THE ELECTROCHEMICAL REDUCTION OF CO₂ IN GAS PHASE	1029
<i>S. Perez-Rodriguez, F. Barreras, E. Pastor, M. Lazaro</i>	
NITROGEN DOPED CARBON MATERIALS AS ELECTROCATALYSTS FOR OXYGEN REDUCTION REACTION	1031
<i>G. Lemes, A. Borrero, M. Nieto-Monge, C. Alegre, R. Moliner, M. Lazaro, M. Martinez-Huerta, M. Goya, E. Pastor</i>	
ELECTROCHEMICAL STUDIES ON NOVEL LOW-Pt LOADING ELECTROCATALYSTS USING N-DOPED CARBON NANOTUBES AS SUPPORT	1033
<i>A. Valenzuela-Muniz, G. Rosado, M. Miki-Yoshida, Y. Verde-Gomez</i>	
INVESTMENT DECISIONS IN IMPERFECT POWER MARKETS WITH HYDROGEN STORAGE AND LARGE SHARE OF INTERMITTENT ELECTRICITY	1034
<i>J. Michalski</i>	
BRAZILIAN HYBRID ELECTRIC-HYDROGEN FUEL CELL BUS: IMPROVED ON-BOARD ENERGY MANAGEMENT SYSTEM	1037
<i>E. Carreira, U. Icardi, G. Nunes, P. Miranda</i>	
JOINT RUSSIA-TAIWAN PROJECT ON BIOHYDROGEN PURIFICATION USING METAL HYDRIDE TECHNOLOGIES	1039
<i>V. Borzenko, D. Dunikov, A. Kazakov, D. Blinov, C.-Y. Lin, S.-Y. Wu, C.-Y. Chu</i>	
TECHNO-ECONOMIC ASSESSMENT OF HYDROGEN INFRASTRUCTURE DESIGN OPTIONS	1041
<i>V. Tietze, S. Schiebahn, D. Stolten</i>	
HYACINTH: HYDROGEN ACCEPTANCE IN THE TRANSITION PHASE	1043
<i>D. Esteban, G. Alcalde, G. Rodado, J. Martin</i>	
RUSSIAN R&D IN HYDROGEN ENERGY	1045
<i>V. Borzenko, D. Dunikov, A. Antropov, A. Shashkin</i>	
DEGRADATION HETEROGENEITIES IN PEMFC STACKS: LOCAL ANALYSES OF PERFORMANCE AND COMPONENTS DURING AND AFTER AGEING TESTS	1046
<i>S. Escribano, L. Guetaz</i>	
SOLAR THERMOCHEMICAL HYDROGEN PRODUCTION AT PLATAFORMA SOLAR DE ALMERÍA	1048
<i>T. Denk, A. Gonzalez, A. Vidal</i>	
HYDROGEN INFRASTRUCTURE METRICS FOR INITIAL S-CURVE UNCERTAINTY	1050
<i>E. Amorim, R. Bento</i>	
TOWARDS LOW-COST AND EFFICIENT HYDROGEN PRODUCTION BY PEM WATER ELECTROLYSIS – DESIGN AND PERFORMANCE OPTIMIZATION FOR A HIGH-PRESSURE STACK	1052
<i>T. Smolinka, T. Lickert, P. Gese, A. Georg</i>	
USE OF ELECTROCHEMISTRY FOR CATALYST ACTIVATION AND REGENERATION IN H₂ PRODUCTION REACTIONS	1055
<i>J. Gonzalez-Cobos, E. Ruiz-Lopez, J. Valverde, A. Lucas-Consuegra</i>	
TRANSITION TO HYDROGEN FUEL CELL AND BATTERY ELECTRIC VEHICLE FLEETS IN JAPAN AND NEW ZEALAND	1057
<i>J. Leaver, A. Watabe</i>	
NATIONAL HYDROGEN SCENARIOS FOR THE UNITED STATES: HOW MANY STATIONS, WHERE AND WHEN?	1060
<i>M. Melaina, B. Bush, M. Penev, D. Stright, J. Zuboy</i>	
IMPACT AND ORIGIN OF FUEL-CELL CATALYST-LAYER RESISTANCE	1062
<i>T. Schuler, A. Freiberg, F. Spingler, M. Tucker, A. Weber</i>	
INVESTIGATION OF AUTOTHERMAL REFORMING CATALYSTS FOR PORTABLE AUXILIARY LOW-POWER UNITS	1063
<i>A. Zygogianni, S. Lorentzou, D. Zarvalis, G. Karagiannakis, A. Konstandopoulos</i>	
NUMERICAL STUDY ON CURRENT DENSITY DISTRIBUTION IN A THIN YSZ ELECTROLYTE OF AN SOFC	1065
<i>H. Iwai, Y. Tanaka, M. Saito, M. Kishimoto, H. Yoshida</i>	
ANALYSIS OF HYDROGEN REFUELING STATION DEPLOYMENT AND SUPPLY CHAIN FOR FCEV IN JAPAN	1067
<i>K. Itaoka, S. Kimura, K. Hirose, K. Honda, M. Kanazawa, A. Arai</i>	

KINETIC STUDY OF CO SELECTIVE METHANATION ON NICKEL-BASED CATALYSTS	1069
<i>W. Kim, K. Mohaideen, W. Yoon</i>	
RESEARCH INFRASTRUCTURES TO SUPPORT RESEARCH AND DEVELOPMENT ON HYDROGEN TECHNOLOGY	1071
<i>O. Jedicke</i>	
COMPLETE LCA EVALUATION FOR THE HYDROGEN PRODUCTION THROUGH THE INNOVATIVE BIOROBUR PROJECT CONCEPT	1074
<i>F. Battista, S. Bensaid, B. Ruggeri, D. Fino</i>	
CATALYSTS BASED ON REDUCED GRAPHENE OXIDE FOR THE ELECTROCHEMICAL HYDROGEN EVOLUTION REACTION	1077
<i>J. Florez-Montano, J. Grafe, L. Rivera, C. Montero, G. Lemes, C. Lazaro, E. Pastor</i>	
STRUCTURED CATALYTIC REACTOR FOR SOOT ABATEMENT IN A REDUCING ATMOSPHERE	1078
<i>Y. Camacho, S. Bensaid, N. Russo, D. Fino</i>	
BIOGAS ROBUST PROCESSING WITH COMBINED CATALYTIC REFORMER AND TRAP: BIOROBUR PROJECT	1080
<i>Y. Camacho, S. Bensaid, D. Fino, T. Trimis, A. Herrmann, N. Guilhaume, Y. Schuurman, A. Konsatndopoulos, S. Lorentzou, S. Gianella, M. Antonini, L. Marchisio, A. Ortona, A. Khinsky</i>	
EFFECTS OF NOBLE METALS ON NIAL MIXED OXIDES DERIVED FROM HYDROTALCITE FOR SELECTIVE CO METHANATION	1083
<i>K. Mohaideen, W. Kim, W. Yoon</i>	
SCALING PEM ELECTROLYSIS TO MEGAWATT SIZE	1085
<i>E. Anderson, M. Spaner, K. Ayers</i>	
SMALL-SCALE, HIGH PRESSURE PEM ELECTROLYSIS FOR HYDROGEN ENERGY APPLICATIONS	1087
<i>E. Anderson, L. Dalton, K. Ayers</i>	
TOLUENE STEAM REFORMING OVER NICKEL BASED CATALYSTS	1089
<i>S. Sayas, N. Vivo, A. Chica</i>	
SUSTAINABLE PRODUCTION OF HYDROGEN BY STEAM REFORMING OF BIOETHANOL USING RECYCLED ZNO PROMOTED WITH CO. GREENZO PROJECT	1092
<i>A. Costa-Serra, J. Carratala, L. Rey, R. Beneito, A. Chica</i>	
IEA HIA R,D&D: CULTIVATING SUSTAINABILITY IN THE CLIMATE CHANGE ERA	1093
<i>S. Oberholzer, M. Valladares</i>	
A BIGGER RENEWABLE ENERGY MARKET THAN ELECTRICITY GRID: HYDROGEN TRANSPORTATION FUEL FROM DIVERSE RENEWABLES	1095
<i>W. Leighty</i>	
TECHNICAL AND ECONOMIC ASSESSMENTS OF KEY TECHNOLOGIES FOR LOCAL HYDROGEN PRODUCTION AND SUPPLY SYSTEMS	1097
<i>C. Hulteberg, O. Ulleberg</i>	
LOCAL HYDROGEN SUPPLY FOR ENERGY APPLICATIONS (IEA HIA TASK 33)	1100
<i>O. Ulleberg</i>	
A COST BENEFIT ANALYSIS OF HYDROGEN FOR MOBILITY - THE NORMANDY PROJECT AND THE FRENCH ROADMAP	1101
<i>J. Brunet, J.-P. Ponsard</i>	
APERAM PEMFC : STAINLESS SOLUTION FOR FUTURE CARS	1103
<i>P. Girardon, A. Pimard, J. Damasse</i>	
HIGH TEMPERATURE PEMFCS RUNNING WITH SIC BASED ELECTRODES	1105
<i>J. Lobato, H. Zamora, J. Plaza, P. Canizares, M. Rodrigo</i>	
ACTIVITY OF TASK 29 IN IEA/HIA - DISTRIBUTED COMMUNITY HYDROGEN (DISCO-H2)	1108
<i>H. Ito, A. Gardiner</i>	
HYDROGEN FUELING STATION AND FCEV FUELING SAFETY SPECIFICATION: TS ISO 19880-1	1110
<i>J. Schneider, G. Dang-Nhu, N. Hart</i>	
ENERGY MANAGEMENT STRATEGY FOR PHOTOVOLTAIC/FUEL CELL/ ENERGY STORAGE HYBRID GENERATION SYSTEM	1112
<i>Y. Han, Z. Hong, Q. Li, W. Chen, Z. Liu</i>	
RULED-BASED CONTROL OF OFF-GRID ELECTROLYSIS	1114
<i>A. Serma, F. Tadeo, J. Normey-Rico, K. Agersted</i>	
POSSIBILITIES OF HYDROGEN ENERGY UTILIZATION IN KAZAKHSTAN: PREPARATION OF TICRMN HYDROGEN STORAGE ALLOYS AND INVESTIGATION OF THEIR ABSORPTION PROPERTIES	1116
<i>S. Zholdayakova, H. Uchida</i>	
SUPERCRITICAL WATER GASIFICATION OF BIOMASS AND IDENTIFICATION OF THE PRODUCTS	1118
<i>E. Demirel, N. Ayas</i>	
FUEL CELL BASED HYBRID POWER SYSTEM DESIGN FOR A PASSENGER TRAM	1119
<i>Z. Liu, Q. Bu, W. Chen, Q. Li, M. Li, B. Sun</i>	
CONSIDERATIONS FOR A MULTI LAYER SUPPORT DESIGN FOR PD BASED MEMBRANES	1122
<i>B. Bladergroen, N. Alhassan, G. Andrews, O. Barron, C. Sita</i>	
SIGNIFICANCE OF THE THERMAL CONDUCTIVITY OF THE CATALYST LAYER FOR HEAT DISSIPATION IN POLYMER ELECTROLYTE FUEL CELL	1124
<i>J. Motay, B. Peppley</i>	
POTENTIAL OF PALM OIL MILL EFFLUENT (POME) AS SOURCE OF BIOHYDROGEN PRODUCTION	1125
<i>E. Dewi, U. Priyanto, Z. Hastuti, S. Primeia, C. Chu, M. Rahman</i>	

LIFE CYCLE ASSESSMENT OF ON-BOARD HYDROGEN PRODUCTION FROM AMMONIA FOR VEHICLES	1127
<i>Y. Bicer, I. Dincer</i>	
INTEGRATION OF HYDROGEN METHANATION UNIT TO A RENEWABLE ENERGY STORAGE SYSTEM	1128
<i>L. Polak, A. Doucek, J. Polakova, K. Stehlik, V. Snajdrova, K. Ciahomy</i>	
AAH ARGENTINIAN HYDROGEN ASSOCIATION: CLEAN ENERGY IN MOTION	1131
<i>J. Bolcich, J. Podesta, J. Aprea, H. Canestro, C. Ares, A. Savini</i>	
SYNTHESIS AND OPTIMIZATION OF OXYGEN REDUCTION REACTION (ORR) AT CATHODE SIDE OF DIRECT METHANOL FUEL CELL	1133
<i>N. Karim, S. Kamarudin, L. Shyuan, W. Daud, A. Khadum</i>	
POLYBENZIMIDAZOLE MEMBRANES FOR ZERO GAP ALKALINE ELECTROLYSIS CELLS	1134
<i>M. Kraglund, D. Aili, E. Christensen, J. Jensen</i>	
Author Index	