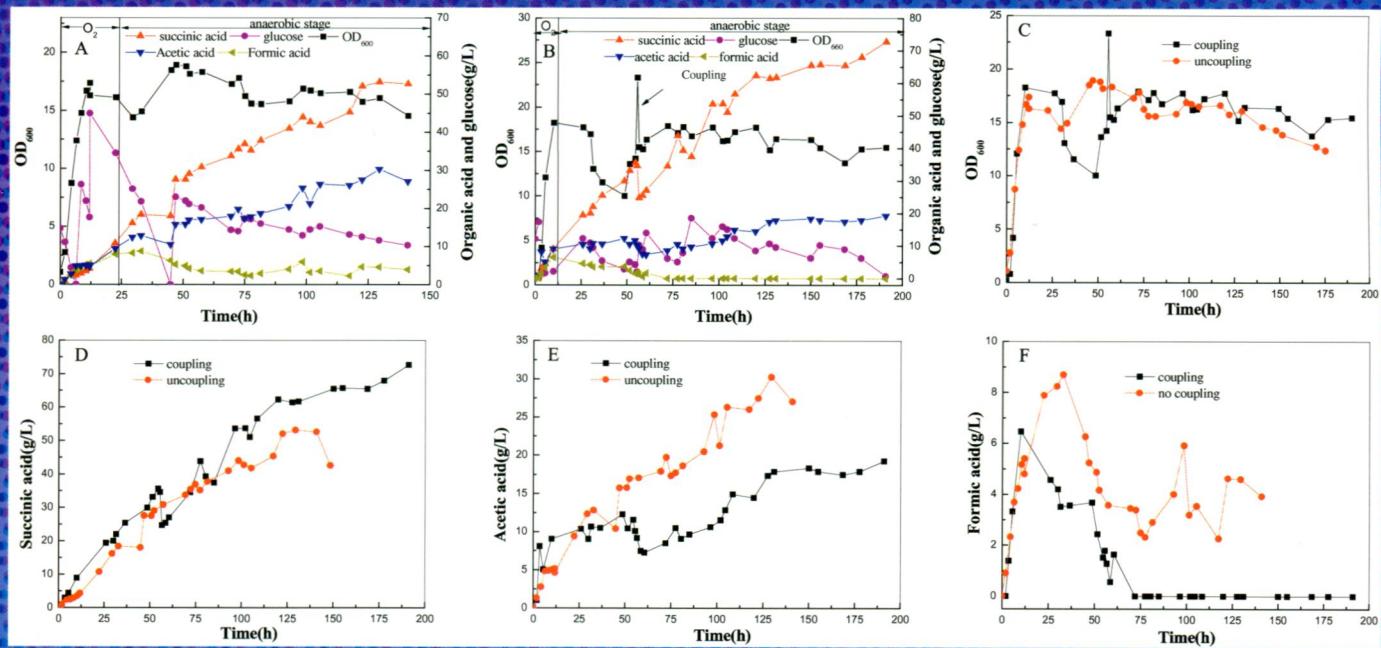


# BIORESOURCE TECHNOLOGY

applied microbiology ■ bioconversion/biocatalysis ■ biofuels ■  
biological engineering ■ biological waste treatment ■ biomass ■  
bioprocesses ■ thermo-chemical treatment



Available online at [www.sciencedirect.com](http://www.sciencedirect.com)

**ScienceDirect**



0960-8524(201403)156:C;1-C

(Abstracted/Indexed in: AGRICOLA database; Agricultural Engineering Abstracts; Analytical Abstracts (Royal Society of Chemistry Information Services); BIOSIS (Biological Abstracts); CAB Abstracts database; Elsevier BIOBASE/Current Awareness in Biological Sciences; Cambridge Scientific Abstracts; Chemical Abstracts; Current Contents/Agriculture, Biology and Environmental Sciences; Ecological Abstracts; Energy from Biomass and Municipal Wastes; Energy Information Abstracts; Engineering Index; Environmental Periodicals Bibliography; EMBASE/Excerpta Medica; Forestry Abstracts; Fuel and Energy Abstracts; Gas Abstracts; GEOBASE; Science Citation Index; SciSearch; Selected Water Resources Abstracts). Also covered in the abstract and citation database Scopus®. Full text available on ScienceDirect®.

For a full and complete Guide for Authors, please go to: <http://www.elsevier.com/locate/biotech>

## CONTENTS

### Volume 156, March 2014

#### Review

- 357 Fermentative hydrogen production in anaerobic membrane bioreactors: A review  
P. BAKONYI, N. NEMESTÓTHY, V. SIMON & K. BÉLAFI-BAKÓ (Hungary)

#### Full Length Articles

##### *Biological Waste Treatment*

- 29 Simultaneous removal of di-(2-ethylhexyl) phthalate and nitrogen in a laboratory-scale pre-denitrification biofilter system  
X. CAO, N. AI & X. MENG (China)
- 35 Effects of ionic strength on membrane fouling in a membrane bioreactor  
F. WANG, M. ZHANG, W. PENG, Y. HE, H. LIN, J. CHEN, H. HONG, A. WANG & H. YU (PR China)
- 63 Anaerobic digestion characteristics of pig manures depending on various growth stages and initial substrate concentrations in a scaled pig farm in Southern China  
W. ZHANG, Q. LANG, S. WU, W. LI (People's Republic of China), H. BAH (People's Republic of China, Guinea) & R. DONG (People's Republic of China)
- 132 A horizontal plug flow and stackable pilot microbial fuel cell for municipal wastewater treatment  
Y. FENG, W. HE, J. LIU, X. WANG, Y. QU & N. REN (China)
- 139 Stabilization of sewage sludge by different biochars towards reducing freely dissolved polycyclic aromatic hydrocarbons (PAHs) content  
P. OLESZCZUK, A. ZIELIŃSKA (Poland) & G. CORNELISSEN (Norway, Sweden)
- 155 Complete degradation of the azo dye Acid Orange-7 and bioelectricity generation in an integrated microbial fuel cell, aerobic two-stage bioreactor system in continuous flow mode at ambient temperature  
E. FERNANDO, T. KESHAVARZ & G. KYAZZE (UK)
- 176 Fungal pretreatment of yard trimmings for enhancement of methane yield from solid-state anaerobic digestion  
J. ZHAO, Y. ZHENG & Y. LI (USA)

(Continued on inside back cover)

For further information about *Bioresource Technology* or other Elsevier products, why not access the COMPLETE ELSEVIER CATALOGUE via the INTERNET?

WWW: <http://www.elsevier.com>



**CONTENTS** (*continued from outside back cover*)

- 195 Effect of intermittent aeration cycle on nutrient removal and microbial community in a fluidized bed reactor-membrane bioreactor combo system  
A. GUADIE, S. XIA, Z. ZHANG, J. ZELEKE (China), W. GUO, H. H. NGO (Australia) & S. W. HERMANOWICZ (United States)
- 307 Semi-continuous anaerobic co-digestion of dairy manure with three crop residues for biogas production  
J. LI, L. WEI, Q. DUAN, G. HU & G. ZHANG (China)
- 314 Performance of the biosorptive activated sludge (BAS) as pre-treatment to UF for decentralized wastewater reuse  
V. DIAMANTIS, A. EFTAXIAS (Greece), B. BUNDERVOET & W. VERSTRAETE (Belgium)
- 342 Anaerobic co-digestion of chicken manure and corn stover in batch and continuously stirred tank reactor (CSTR)  
Y. LI (China), R. ZHANG (China, United States), Y. HE, C. ZHANG, X. LIU, C. CHEN & G. LIU (China)

**Biofuels and Biorefineries**

- 14 Sulfate and organic carbon removal by microbial fuel cell with sulfate-reducing bacteria and sulfide-oxidising bacteria anodic biofilm  
D.-J. LEE (Taiwan), X. LIU (Taiwan, China) & H.-L. WENG (Taiwan)
- 42 Fresh water green microalga *Scenedesmus abundans*: A potential feedstock for high quality biodiesel production  
S. K. MANDOTRA, P. KUMAR, M. R. SUSEELA & P. W. RAMTEKE (India)
- 84 Anodic microbial community diversity as a predictor of the power output of microbial fuel cells  
J. P. STRATFORD, N. J. BEECROFT, R. C. T. SLADE, A. GRÜNING & C. AVIGNONE-ROSSA (UK)
- 123 Sequential acid and enzymatic hydrolysis *in situ* and bioethanol production from *Gracilaria* biomass  
F.-C. WU, J.-Y. WU, Y.-J. LIAO, M.-Y. WANG & I.-L. SHIH (Taiwan)
- 222 A more robust model of the biodiesel reaction, allowing identification of process conditions for significantly enhanced rate and water tolerance  
V. C. EZE, A. N. PHAN & A. P. HARVEY (UK)
- 240 Extractive-transesterification of algal lipids under microwave irradiation with hexane as solvent  
E. MARTINEZ-GUERRA, V. G. GUDE, A. MONDALA, W. HOLMES & R. HERNANDEZ (United States)
- 256 Integrated strategic and tactical biomass–biofuel supply chain optimization  
T. LIN, L. F. RODRÍGUEZ (United States), Y. N. SHASTRI (India), A. C. HANSEN & K. C. TING (United States)
- 283 Ultrasound-enhanced rapid *in situ* transesterification of marine macroalgae *Enteromorpha compressa* for biodiesel production  
T. SUGANYA, R. KASIRAJAN & S. RENGANATHAN (India)
- 303 Comparison of biogas production from wild and cultivated varieties of reed canary grass  
M. OLESZEK, A. KRÓL, J. TYS, M. MATYKA & M. KULIK (Poland)
- 329 Biodiesel production from transesterification of palm oil with methanol over CaO supported on bimodal meso-macroporous silica catalyst  
T. WITOON, S. BUMRUNGSALLEE, P. VATHAVANICHKUL, S. PALITSAKUN, M. SAISRIYOOT & K. FAUNGNAWAKIJ (Thailand)
- 348 High bioethanol titre from *Manihot glaziovii* through fed-batch simultaneous saccharification and fermentation in Automatic Gas Potential Test System  
A. P. MOSHI (Sweden, Tanzania), C. F. CRESPO, M. BADSHAH (Sweden), K. M. M. HOSEA, A. M. MSHANDETE (Tanzania) & B. MATTIASSEN (Sweden)

**Biomass and Feedstock Utilization**

- 48 Inactivating effects of lignin-derived compounds released during lignocellulosic biomass pretreatment on the endo-glucanase catalyzed hydrolysis of carboxymethylcellulose: A study in continuous stirred ultrafiltration-membrane reactor  
M. CANTARELLA, C. MUCCIANTE & L. CANTARELLA (Italy)

(Continued on facing page)

## CONTENTS (continued from inside back cover)

**Bioprocesses**

- 20 Characterization of growth and lipid production by *Chlorella* sp. PCH90, a microalga native to Quebec  
A. E. M. ABDELAZIZ, D. GHOSH & P. C. HALLENBECK (Canada)
- 108 Achieving high lipid productivity of a thermotolerant microalga *Desmodesmus* sp. F2 by optimizing environmental factors and nutrient conditions  
S.-H. HO (Taiwan, Japan), J.-S. CHANG, Y.-Y. LAI & C. N. CHEN (Taiwan)
- 117 Scale-up cultivation of *Chlorella ellipsoidea* from indoor to outdoor in bubble column bioreactors  
S.-K. WANG, Y.-R. HU, F. WANG (PR China), A. R. STILES (USA) & C.-Z. LIU (PR China)
- 146 Nitrogen stress triggered biochemical and morphological changes in the microalgae *Scenedesmus* sp. CCNM 1077  
I. PANCHA, K. CHOKSHI, B. GEORGE, T. GHOSH, C. PALIWAL, R. MAURYA & S. MISHRA (India)
- 163 Cellulase stability, adsorption/desorption profiles and recycling during successive cycles of hydrolysis and fermentation of wheat straw  
A. C. RODRIGUES (Portugal), C. FELBY (Denmark) & M. GAMA (Portugal)
- 206 Direct measurement and characterization of active photosynthesis zones inside wastewater remediating and biofuel producing microalgal biofilms  
H. C. BERNSTEIN, M. KESAANO, K. MOLL, T. SMITH, R. GERLACH, R. P. CARLSON, C. D. MILLER, B. M. PEYTON, K. E. COOKSEY, R. D. GARDNER & R. C. SIMS (United States)
- 322 Characterization of microalgae-bacteria consortium cultured in landfill leachate for carbon fixation and lipid production  
X. ZHAO (China), Y. ZHOU (United States), S. HUANG, D. QIU (China), L. SCHIDEMAN (United States), X. CHAI & Y. ZHAO (China)
- 335 Divergent responses of functional gene expression to various nutrient conditions during microcystin-LR biodegradation by *Novosphingobium* sp. THN1 strain  
J. LI, L. PENG, J. LI & Y. QIAO (China)

**Microbial Products**

- 6 Novel membrane-based biotechnological alternative process for succinic acid production and chemical synthesis of bio-based poly (butylene succinate)  
C. WANG, W. MING, D. YAN, C. ZHANG, M. YANG, Y. LIU, Y. ZHANG, B. GUO, Y. WAN & J. XING (PR China)
- 100 Enhanced cellulase producing mutants developed from heterokaryotic *Aspergillus* strain  
B. KAUR, H. S. OBEROI & B. S. CHADHA (India)
- 170 Enhanced production of 3-hydroxypropionic acid from glycerol by modulation of glycerol metabolism in recombinant *Escherichia coli*  
K. KIM, S.-K. KIM, Y.-C. PARK & J.-H. SEO (South Korea)
- 216 Optimization of polyhydroxyalkanoates fermentations with on-line capacitance measurement  
L. LI, Z.-J. WANG, X.-J. CHEN, J. CHU, Y.-P. ZHUANG & S.-L. ZHANG (China)
- 232 Construction of reductive pathway in *Saccharomyces cerevisiae* for effective succinic acid fermentation at low pH value  
D. YAN, C. WANG, J. ZHOU, Y. LIU, M. YANG & J. XING (PR China)
- 248 Enhanced polyhydroxyalkanoate production from organic wastes via process control  
A. VARGAS, L. MONTAÑO & R. AMAYA (Mexico)

**Physico-Chemical and Thermo-Chemical Processes for Biomass**

- 1 Hydrothermal liquefaction of *Chlorella pyrenoidosa* for bio-oil production over Ce/HZSM-5  
Y. XU, X. ZHENG, H. YU & X. HU (China)

(continued on previous page)

**CONTENTS** (*continued from following page*)

- 57 Devolatilisation kinetics and pyrolytic analyses of *Tectona grandis* (teak)  
A. O. BALOGUN (USA), O. A. LASODE (Niger) & A. G. MCDONALD (USA)
- 70 Torrefaction of agriculture straws and its application on biomass pyrolysis poly-generation  
Y. CHEN, H. YANG, Q. YANG, H. HAO, B. ZHU & H. CHEN (PR China)
- 78 High quality fuel gas from biomass pyrolysis with calcium oxide  
B. ZHAO, X. ZHANG, L. CHEN, L. SUN, H. SI & G. CHEN (China)
- 92 Remarkable solvent and extractable lignin effects on enzymatic digestibility of organosolv pretreated hardwood  
C. LAI (China, United States), M. TU, M. LI (United States) & S. YU (China)
- 182 Pyrolysis kinetics of hazelnut husk using thermogravimetric analysis  
S. CEYLAN & Y. TOPÇU (Turkey)
- 189 Physicochemical pretreatments and hydrolysis of furfural residues via carbon-based sulfonated solid acid  
B. J. MA, Y. SUN, K. Y. LIN, B. LI & W. Y. LIU (China)
- 267 Fast microwave assisted pyrolysis of biomass using microwave absorbent  
F. C. BORGES (United States, Brazil), Z. DU, Q. XIE (United States), J. O. TRIERWEILER (Brazil), Y. CHENG (United States), Y. WAN, Y. LIU, R. ZHU, X. LIN (PR China), P. CHEN (United States) & R. RUAN (United States, PR China)
- 275 Biorefining of wheat straw using an acetic and formic acid based organosolv fractionation process  
J. SNELDERS, E. DORNEZ (Belgium), B. BENJELLOUN-MLAYAH (France), W. J. J. HUIJGEN, P. J. DE WILD, R. J. A. GOSSELINK, J. GERRITSMA (The Netherlands) & C. M. COURTIN (Belgium)
- 291 Fast microwave-assisted catalytic gasification of biomass for syngas production and tar removal  
Q. XIE (United States), F. C. BORGES (United States, Brazil), Y. CHENG, Y. WAN, Y. LI, X. LIN, Y. LIU, F. HUSSAIN, P. CHEN & R. RUAN (United States)
- 297 Thermogravimetric and kinetic study of Pinyon pine in the various gases  
S.-S. KIM (Republic of Korea), A. SHENOY & F. A. AGBLEVOR (USA)

**Short Communications**

- 364 Effects of wastewater microalgae harvesting methods on polyhydroxybutyrate production  
A. RAHMAN, R. J. ANTHONY, A. SATHISH, R. C. SIMS & C. D. MILLER (United States)
- 368 Natural laccase mediators separated from water-washed solution of steam exploded corn straw by nanofiltration and organic solvent fractionation  
W. QIU, W. ZHANG & H. CHEN (PR China)
- 372 Understanding the stability of pyrolysis tars from biomass in a view point of free radicals  
W. HE, Q. LIU, L. SHI, Z. LIU, D. CI, C. LIEVENS, X. GUO & M. LIU (China)
- 376 Additives initiate selective production of chemicals from biomass pyrolysis  
S. LENG, X. WANG, L. WANG, H. QIU, G. ZHUANG, X. ZHONG, J. WANG, F. MA, J. LIU & Q. WANG (PR China)
- 380 Cellular surface characteristics of *Saccharomyces cerevisiae* before and after Ag(I) biosorption  
C. CHEN, D. WEN & J. WANG (PR China)
- 384 Distribution and genetic diversity of the microorganisms in the biofilter for the simultaneous removal of arsenic, iron and manganese from simulated groundwater  
L. YANG, X. LI, Z. CHU, Y. REN & J. ZHANG (China)
- 389 Bio oil synthesis by coupling biological biomass pretreatment and catalytic hydroliquefaction process  
S. HAMIEH (France, Lebanon), R. BEAUCHET, L. LEMEE (France), J. TOUFAILY, B. KOUBAISSY, T. HAMIEH (Lebanon), Y. POUILLOUX & L. PINARD (France)

*(continued on previous page)*

**CONTENTS** (*continued from following page*)

- 395 Evaluation of a thermo-tolerant acidophilic alga, *Galdieria sulphuraria*, for nutrient removal from urban wastewaters  
T. SELVARATNAM, A. K. PEGALLAPATI, F. MONTELYA, G. RODRIGUEZ, N. NIRMALAKHANDAN, W. VAN VOORHIES & P. J. LAMMERS (USA)
- 400 Efficient secretion of (*R*)-3-hydroxybutyric acid from *Halomonas* sp. KM-1 by nitrate fed-batch cultivation with glucose under microaerobic conditions  
Y. KAWATA, H. ANDO, I. MATSUSHITA & J. TSUBOTA (Japan)
- 404 Influence of organic solvent on the separation of an ionic liquid from a lignin-ionic liquid mixture  
P. WEERACHANCHAI, K. H. LIM & J.-M. LEE (Singapore)
- 408 Phosphorus limitation and starvation effects on cell growth and lipid accumulation in *Isochrysis galbana* U4 for biodiesel production  
A. ROOPNARAIN, V. M. GRAY & S. D. SYM (South Africa)

Cover figure: Time profile of cell growth, metabolite production and the glucose consumption during fermentation of engineered *E. coli*. (A) Fermentation process without ultrafiltration; (B) fermentation process with ultrafiltration. (C) Comparison of bacterial growth between fermentation integrated with and without ultrafiltration; (D) comparison of produced succinic acid between fermentation integrated with and without ultrafiltration; (E) comparison of produced acetic acid between fermentation integrated with and without ultrafiltration; (F) comparison of produced formic acid between fermentation integrated with and without ultrafiltration. See the article "Novel membrane-based biotechnological alternative process for succinic acid production and chemical synthesis of bio-based poly (butylene succinate)" by C. Wang et al.