

Program

Water Treatment and Reuse II

February 11-16, 2007

Tomar, Portugal

Chairs

Prof. D. Bhattacharyya
Department of Chemical and Materials Engineering
University of Kentucky, USA

Prof. K.K. Sirkar
Otto H. York Dept. of Chemical Engineering
New Jersey Institute of Technology, USA

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Cargill Inc., Minnesota, USA

**Kentucky Water Resources Research Institute (KWRRRI),
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Sunday, February 11, 2007

17:30 – 19:30	Registration
19:30 - 21:00	Opening Dinner
21:00 – 22:00	Opening Reception

Monday, February 12, 2007

- 08:30 – 09:00 **Welcome and Opening Remarks**
 Dibakar Bhattacharyya (DB) and Kamalesh Sirkar, Conference
 Chairs
 Herman Bieber, ECI Conferences Committee
- 09:00 – 13:00 **Session I: Membrane Processes**
 Chairs: Jack Gilron, Ben Gurion University, Israel;
 Yoram Cohen, University of California, Los Angeles, USA
- 09:00 – 09:40 ADVANCED MEMBRANE TECHNOLOGY FOR WATER
 TREATMENT -- A GLOBAL PERSPECTIVE
 Norman N. Li (*Invited Keynote Speaker*)
 NL Chemical Technology, Inc., USA
- 09:40 – 10:20 AN OVERVIEW OF MEMBRANE ADVANCEMENT (RO, MF, UF
 & MBR) IN JAPAN
 Masaru Kurihara (*Invited Speaker*)
 Toray Industries, Inc., Japan
- 10:20 – 10:50 Coffee Break
- 10:50 – 11:20 NOVEL CONCEPT FOR THE OPERATION OF MEMBRANE-
 BASED FILTRATION SYSTEM FOR REVERSE OSMOSIS
 PRETREATMENT
David Nordham, Naval Surface Warfare Center, Carderock
 Division, USA.
 Joseph Pizzino, Naval Surface Warfare Center, Carderock
 Division
 William Varnava, Naval Facilities Engineering Service Center
- 11:20 – 11:50 EFFECTS OF SURFACE MODIFICATIONS ON MEMBRANE
 FOULING RESISTANCE
 Isabel C. Escobar, The University of Toledo, USA
- 11:50 – 12:20 SUSTAINABLE FLUX IN DEAD-END ULTRAFILTRATION
W.J.C. van de Ven, University of Twente, The Netherlands;
 K. van 't Sant, University of Twente;
 I.G.M. Punt, University of Twente;
 A. Zwijnenburg, Wetsus, Centre for Sustainable Water
 Technology, The Netherlands;
 M. Wessling, University of Twente
- 12:20 – 13:00 ENVIRONMENTAL VALIDATION TESTING OF UF/RO FOR
 PRODUCTION OF POTABLE WATER FROM MUNICIPAL
 WASTEWATER
Michelle Chapman (*Invited Keynote Speaker*)
 U.S. Bureau of Reclamation, USA
 Steve Dundorf, U.S. Bureau of Reclamation

Monday, February 12, 2007 (continued)

- 13:00 – 14:00 Lunch
- 14:00 – 16:30 Free time/*ad hoc* sessions
- 16:30 – 19:00 **Session II: Toxic Inorganics Removal**
 Chairs: J.G. Crespo, REQUIMTE/CQFB, UNL, Portugal;
 Ranil Wickramasinghe, Colorado State University, USA
- 16:30 – 17:10 ARSENIC CRISIS IN INDIAN SUBCONTINENT: A
 SUSTAINABLE ENGINEERING SOLUTION
Arup K. SenGupta (*Invited Keynote Speaker*),
 Lehigh University, USA;
 Sudipta Sarkar, Bengal Engineering and Science University;
 Lee Blaney, Lehigh University;
 John Greenleaf, Lehigh University;
 Anirban Gupta, Bengal Engineering and Science University
- 17:10 – 17:40 ARSENIC REMOVAL FROM AQUEOUS SOLUTIONS USING
 SORGHUM BIOMASS AND IRON-COATED SORGHUM
 BIOMASS
Irene Cano-Aguilera, Alberto Aguilera-Alvarado, Guadalupe de la
 Rosa and Moisés Gutiérrez-Valtierra, Universidad de Guanajuato,
 Mexico
- 17:40 – 18:10 CYANIDE REMOVAL FROM WASTEWATER USING GAS
 MEMBRANES
Ranil Wickramasinghe, Colorado State University, USA
 Zhisong Shen, Jiangsu Institute of Microbiology
- 18:10 – 18:40 MERCURY BIOREMEDIATION FROM WATER SYSTEMS
 THROUGH PURE AND MIXED MICROBIAL CULTURES
A. Oehmen, Universidade Nova de Lisboa, Portugal;
 S. Serra, G. Carvalho, J.L. Capelo, S. Velizarov,
 REQUIMTE/CQFB, Chemistry Dept., FCT, UNL ;
 M.T.B. Crespo, IBET/ITQB, UNL, 2870-156 Oeiras, Portugal;
 J.G. Crespo, REQUIMTE/CQFB, UNL;
 M.A.M. Reis, REQUIMTE/CQFB, UNL
- 18:40 – 19:00 Discussion
- 19:00 – 20:30 Dinner
- 20:30 – 21:30 Social Hour

Tuesday, February 13, 2007

- 07:30 – 08:30 Breakfast
- 08:30 – 13:00 **Session III: Industrial and Municipal Water Reuse**
Chairs: John Pellegrino, University of Colorado, Boulder, USA;
Benito Serrano Rosales, Universidad Autonoma de Zacatecas,
Mexico
- 08:30 – 09:10 REUSE/RECYCLE WATER OPPORTUNITIES AND
CHALLENGES IN FOOD/BIO PROCESSING INDUSTRY
H. S. Muralidhara (*Invited Keynote Speaker*), Cargill Inc., USA
- 09:10 – 09:40 NEWATER: SINGAPORE'S EXPERIENCE IN WATER
RECLAMATION
Aik Num Puah (*Invited Speaker*), Public Utilities Board, Singapore;
Key Wee ONG, Public Utilities Board, Singapore
- 09:40 – 10:10 HIGH EFFICIENCY REVERSE OSMOSIS DESALINATION –
PROCESS INTEGRATION AND CONTROL
Yoram Cohen (*Invited Speaker*), University of California, Los
Angeles, USA;
Panagiotis Christofides, University of California, Los Angeles;
Francesc Giralt, Jaume Giralt, Dan Libotean, Universitat Rovira i
Virgili;
Charles McFall, Michal Uchymiak, Anditya Rahardianto, Eric
Lyster, University of California, Los Angeles
- 10:10 – 10:40 Coffee Break
- 10:40 – 11:10 NEW TECHNOLOGIES TO TREAT AND RECYCLE MUNICIPAL
EFFLUENTS ON THE LOWER MONDEGO BASIN
José Cardoso Duarte, INETI, Portugal ;
Belina Ribeiro, Cristina Moreira, Rute Teixeira, INETI;
Alain Grasmick, Univ. Montpellier II;
António Ferreira, TECNIA;
Diogo Pontes, PERTA
- 11:10 – 11:40 ELECTROLYTIC PROCESSING OF WATER FOR USE AND
REUSE
Alan George Langdon, University of Waikato, New Zealand;
Grant Alexander Mathieson, University of Waikato;
Graham Jamieson, Works Filter Systems
- 11:40 – 12:10 MINIMIZATION OF RAW-WATER DEMAND AND
WASTEWATER GENERATION IN A PETROCHEMICAL PLANT
Rita Maria de Brito Alves,
University of São Paulo – Polytechnic School, Brazil;
Antonio Esio Bresciani, University of São Paulo;
Claudio Augusto Oller do Nascimento, University of São Paulo

Tuesday, February 13, 2007 (continued)

- 12:10 – 12:40 CHALLENGES OF WATER REUSE IN A CORRUGATED BOARD INDUSTRY
Elizabeth C.N.F d'Almeida Duarte, Instituto Superior de Agronomia, DQAA, Portugal;
Miguel Bruno de Oliveira Martins, Instituto Superior de Agronomia, DQAA
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- 12:40 – 13:10 HEAT TREATMENT OF GRANULAR ACTIVATED CARBON APPLIED TO ADSORPTION OF DISINFECTON BY-PRODUCTS PRECURSORS N
Chimeno-Alanís, B. Pereda-Ayo, U. Iriarte-Velasco, J. I. Álvarez-Uriarte, J. R. González-Velasco, Department of Chemical Engineering. Faculty of Science and Technology. Universidad del País Vasco/ EHU, Spain
- 13:10 – 14:00 Lunch
- 14:00 – 17:00 Free time; Optional guided excursion to Convento de Cristo (walking distance)
- 17:00 – 19:30 **Poster Session (with wine)***
- 19:30 – 21:00 Dinner
- 21:00 – 22:00 **Poster Session and Social Hour**

* This is the main poster session.

Wednesday, February 14, 2007

07:30 – 08:30	Breakfast
08:30 – 13:00	Session IV: Catalytic and Advanced Oxidation/Reduction Processes Chairs: Luis M. Madeira, Universidade do Porto, Portugal; Timothy J. Strathmann, University of Illinois at Urbana-Champaign, USA
08:30 – 09:00	DEVELOPMENT OF CATALYTIC TECHNOLOGIES FOR SELECTIVE REDUCTION OF DRINKING WATER CONTAMINANTS <u>Timothy J. Strathmann</u> (<i>Invited Speaker</i>) University of Illinois at Urbana-Champaign, USA; Charles J. Werth, University of Illinois at Urbana-Champaign; John R. Shapley, University of Illinois at Urbana-Champaign
09:00 – 09:30	ENHANCED DECHLORINATION OF TCE BY MEMBRANE-SUPPORTED IRON AND BIMETALLIC NANOPARTICLES Stephen M.C. Ritchie University of Alabama, USA
09:30 – 10:00	CHLORO-ORGANIC DEGRADATION FROM WATER BY NANOSIZED METALLIC SYSTEMS AND BY HYDROXYL RADICAL REACTION <u>D. Bhattacharyya</u> University of Kentucky, USA; D.Ahuja, Y.C. Li, Y. Tee, S. Lewis, L. Bachas, J. Xu University of Kentucky
10:00 – 10:30	Coffee Break
10:30 – 11:00	AZO-DYE ORANGE II DEGRADATION BY HETEROGENEOUS FENTON-LIKE REACTION USING SUPPORTED-Fe CATALYSTS <u>Luis M. Madeira</u> Universidade do Porto, Portugal; J. Herney Ramirez, Universidade do Porto; F. J. Maldonado-Hódar, Universidad de Granada; Carlos A. Costa, Universidade do Porto

Wednesday, February 14, 2007 (continued)

- 11:00 – 11:30 A PROPOSAL OF A REACTION MECHANISM FOR THE HETEROGENEOUS PHOTOCATALYTIC DEGRADATION OF PHENOL
Benito Serrano Rosales
 Universidad Autonoma de Zacatecas, Mexico;
 Sayra Orozco Cerros, Virginia Flores Morales
 Universidad Autonoma de Zacatecas, Mexico;
 Miguel Salaices Arredondo
 Instituto de Investigaciones Electricas, Mexico;
 Hugo de Lasa, Aaron Ortiz Gomez, The University of Western Ontario, Canada
- 11:30 – 12:10 SONOCHEMICAL REACTION ENGINEERING FOR WATER TREATMENT
Michael R. Hoffmann (*Invited Keynote Speaker*),
 California Institute of Technology
 W. M. Keck Engineering Laboratories 138-78, Pasadena, CA, 91125, USA
 Chad Vecitis, Hyunwoong Park, Caltech, and Brian Mader, 3M Corporation
- 12:10 – 12:30 Discussion
- 12:30 – 13:30 Lunch
- 12:30 – 16:00 Free Time/*ad hoc* discussions
- 16:00 – 19:00 **Session V: Bioreactors**
 Chairs: Birgir Norddahl, University of Southern Denmark;
 David Nordham, NAVSEA, USA
- 16:00 – 16:40 HYBRID MEMBRANE SYSTEMS USING ORGANIC WASTE AS RAW MATERIAL FOR BIO FUEL AND FERTILISER PRODUCTION.
 Birgir Norddahl, University of Southern Denmark, Denmark
- 16:40 – 17:10 MBR+RO INTEGRATED MEMBRANE SYSTEM FOR MUNICIPAL WASTEWATER RECLAMATION
Kitanaka Atsushi
 Toray Industries, Inc., Japan;
 Uemura Tadahiro, Toray Industries, Inc., Japan;
 Cao Bin, Tsinghua University, China;
 Huang Xia, Tsinghua University, China;
 Yang Yufang, Toray Fibers and Textile Research Lab Co.Ltd., China

Wednesday, February 14, 2007 (continued)

- 17:10 – 17:40 AEROBIC TREATMENT OF WINERY WASTEWATER USING AN
AIR MICRO-BUBBLE BIOREACTOR
Margarida Oliveira
Technical University of Lisbon, Portugal;
Ana Neves, Polytechnic Institute of Santarém;
Elizabeth Duarte, Technical University of Lisbon
- 17:40 – 18:10 SUBMERGED MEMBRANE FUNGI REACTOR FOR
RECALCITRANT TEXTILE WASTEWATER TREATMENT:
EFFLUENT QUALITY AND MEMBRANE FOULING
Faisal Ibney Hai
University of Tokyo, Japan;
Kazuo Yamamoto, University of Tokyo;
Fumiyuki Nakajima, University of Tokyo;
Kensuke Fukushi, University of Tokyo
- 18:10 – 18:40 PERACETIC ACID TREATMENT FOR BIOFILM CONTROL
Adele Dell'Erba
Technical University of Bari, Italy;
Pierangela Cristiani, CESIRICERCA S.p.A, Italy;
Dario Falsanisi, Technical University of Bari, Italy;
Michele Notarnicola, Technical University of Bari, Italy;
Lorenzo Liberti, Technical University of Bari, Italy
- 18:40 – 19:00 Discussion
- 19:00 – 20:30 Dinner
- 21:00 – 22:00 Poster Session and Social Hour

Thursday, February 15, 2007

- 07:30 – 08:30 Breakfast
- 08:30 – 10:30 **Session VI: Micropollutant, Health, Regulatory, and Reuse Aspects: I**
 Chairs: Daniel J. Murray, Jr., U.S. Environmental Protection Agency, USA;
 Maria Norberta de Pinho, Instituto Superior Técnico Av. Rovisco, Portugal
- 08:30 – 09:10 MEETING TODAY'S EMERGING CONTAMINANTS WITH TOMORROW'S RESEARCH TOOLS
 TL Jones-Lepp (*Invited Keynote Speaker*)
 U.S. Environmental Protection Agency, USA
- 09:10 – 09:50 AN INTERDISCIPLINARY APPROACH TO IMPROVING PUBLIC HEALTH THROUGH THE REMEDIATION OF CONTAMINATED GROUNDWATER
 Claudia Thompson (*Invited Keynote Speaker*)
 National Institute of Environmental Health Sciences, USA
- 09:50 – 10:20 MEMBRANE TECHNOLOGY FOR CONTROLLING CYANOBACTERIAL TOXINS
Margarida Ribau Teixeira
 University of Algarve, Portugal;
 Margarida Campinas, University of Algarve, Portugal;
 Maria João Rosa, National Laboratory of Civil Engineering
- 10:20 – 10:50 Coffee break
- 10:50 – 13:00 **Session VII: Micropollutant, Health, Regulatory, and Reuse Aspects: II**
 Chairs: Claudia Thompson, NIEHS, USA;
 TL Jones-Lepp, U.S. Environmental Protection Agency, USA
- 10:50 – 11:30 U.S. EPA'S GUIDELINES FOR WATER REUSE
 Daniel J. Murray, Jr. (*Invited Keynote Speaker*)
 U.S. Environmental Protection Agency, USA
- 11:30 – 12:00 ION EXCHANGE MEMBRANE BIOREACTOR OPTIMIZATION FOR ANIONIC MICROPOLLUTANTS REMOVAL FROM DRINKING WATER SUPPLIES
Ana R. Ricardo
 Universidade Nova de Lisboa, Portugal
 Cristina T. Matos, Universidade Nova de Lisboa, Portugal;
 Svetlozar Velizarov, Universidade Nova de Lisboa, Portugal;
 Maria A. M. Reis, Universidade Nova de Lisboa, Portugal;
 João G. Crespo, Universidade Nova de Lisboa, Portugal

Thursday, February 15, 2007

- 12:00 – 12:30 **ASSESSMENT OF ULTRAFILTRATION AND NANOFILTRATION IN THE ORGANIC MATTER REMOVAL FROM SURFACE WATER AND IMPACT IN THE PREVENTION OF DISINFECTION BY-PRODUCTS FORMATION**
Maria Norberta de Pinho
 Instituto Superior Técnico, Portugal;
 Ana Rita Costa, Instituto Superior Técnico, Portugal
- 12:30 – 13:00 **INFLUENCE OF HUMIC- AND FULVIC-LIKE SUBSTANCES ON PROTEIN DETECTION WITH 2D-FLUORESCENCE SPECTROSCOPY FOR MONITORING THE BEHAVIOUR OF WASTEWATER TREATMENT SYSTEMS**
Cláudia F. Galinha
 Universidade Nova de Lisboa, Portugal ;
 Carla Portugal, REQUIMTE/CQFB and IBET/ITQB, UNL
 Gilda Carvalho, REQUIMTE/CQFB and IBET/ITQB, UNL
 Maria A. M. Reis, REQUIMTE/CQFB
 João G. Crespo, REQUIMTE/CQFB
- 13:00 – 14:00 Lunch
- 14:00 – 15:30 Free time/*ad hoc* sessions
- 15:30 – 18:30 **Session VIII: Emerging Membrane Technologies**
 Chairs: Isabel C. Escobar, The University of Toledo, USA;
 Ane Urtiaga, University of Cantabria, Spain
- 15:30 – 16:00 **EVALUATING THE SCALING POTENTIAL IN CROSS-FLOW MEMBRANE DISTILLATION MODULES**
Jack Gilron
 Ben Gurion University, Israel;
 Fei He, Hanyong Lee, Kamallesh Sirkar, New Jersey Institute of Technology, USA
- 16:00 – 16:30 **MODELING OF MEMBRANE PERFORMANCE IN FORWARD OSMOSIS DESALINATION: IMPLICATIONS FOR IMPROVED MEMBRANE DESIGN**
Jeffrey McCutcheon
 Yale University, USA
 Menachem Elimelech, Yale University, USA

Thursday, February 15, 2007 (continued)

- 16:30 – 17:00 ARSENATE REMOVAL FROM DRINKING WATER SUPPLIES THROUGH A NOVEL HYBRID ION EXCHANGE MEMBRANE PROCESS
S. Velizarov
Universidade Nova de Lisboa, Portugal;
A. Oehmen, Universidade Nova de Lisboa, Portugal;
S. Serra, Universidade Nova de Lisboa, Portugal
M.A.M. Reis, Universidade Nova de Lisboa, Portugal
J.G. Crespo, Universidade Nova de Lisboa, Portugal
- 17:00 – 17:30 A NOVEL FORWARD OSMOSIS PROCESS FOR WATER RECOVERY FROM ANY SOURCE
Peter McCormick
University of Colorado Boulder, USA;
Filippo Mantovani, Università degli Studi di Bologna, Italy;
John Pellegrino, University of Colorado Boulder, USA;
Giulio C. Sarti, Università degli Studi di Bologna, Italy
- 17:30 – 18:00 MEMBRANE DISTILLATION OF SALINE WATER IN CROSS FLOW HOLLOW FIBER DEVICES: MULTISCALE AND PILOT PLANT STUDIES AND MODELING
Kamalesh K. Sirkar, New Jersey Institute of Technology;
Liming Song, Baoan Li, Praveen B. Kosaraju, Jack Gilron, New Jersey Institute of Technology, USA;
Zidu Ma, Xiaohong Liao, United Technologies Research Center, USA
- 18:00 – 18:30 MEMBRANE CONTACTORS FOR BORON REMOVAL: THE WATER THAT PURIFIES WATER
Alessandra Criscuoli
Institute on Membrane Technology, ITM-CNR, Italy;
Enrica Rossi, Institute on Membrane Technology, ITM-CNR, Italy
Enrico Drioli, Institute on Membrane Technology, ITM-CNR, Italy and University of Calabria, Italy
- 18:30 – 19:00 Discussion
- 19:30 Conference Banquet

Friday, February 16, 2007

- 07:30 – 08:30 Breakfast
- 08:30 – 12:00 **Session IX: Integrated and Other Processes**
Chair: Michelle Chapman, Bureau of Reclamation, USA;
Francesc Giralt, Universitat Rovira i Virgili, Tarragona, Spain
- 08:30 – 09:00 ADVANCED TREATMENT OF LANDFILL LEACHATES FOR WATER RE-USE. INTEGRATION OF ELECTROOXIDATION AND WATER PURIFICATION TECHNOLOGIES (IX/NF/RO)
Ane Urtiaga
University of Cantabria, Spain;
Adelaida Cabeza, University of Cantabria, Spain;
Inmaculada Ortiz, University of Cantabria, Spain
- 09:00 – 09:30 PURIFICATION OF A OLIVE VEGETATION WASTE WATER STREAM BY COAGULATION AND MEMBRANE SEPARATION
Marco Stoller
University of Rome “La Sapienza”, Italy
- 09:30 – 10:00 REGENERATION OF WASTEWATER IN THE CARWASH INDUSTRY: AN INTEGRATED APPROACH USING MEMBRANE PROCESSES
Bart Van der Bruggen, Katleen Boussu , K.U.Leuven, Belgium
Ward Colen, Guy Van Baelen, K.H.Kempen, Belgium
- 10:00 – 10:30 APPLICATION OF THE SEQUENCE ULTRA/NANOFILTRATION FOR VALORISATION AND REDUCTION OF THE ENVIRONMENTAL IMPACT OF SERPA CHEESE WHEY
Maria Norberta Neves Correia de Pinho
Instituto Superior Técnico, Portugal;
Antónia Teresa Zorro Nobre Macedo
Escola Superior Agrária - Instituto Politécnico de Beja, Portugal;
António José Lourenço Martins
Escola Superior Agrária - Instituto Politécnico de Beja, Portugal;
Miguel Martins
Instituto Superior de Agronomia, Portugal;
Elizabeth da Costa Neves Fernandes d` Almeida Duarte
Instituto Superior de Agronomia, Portugal
- 10:30 – 11:00 Coffee Break
- 11:00 – 11:30 INTEGRATING PHYSICO-CHEMICAL AND MEMBRANE PROCESSES FOR THE TREATMENT OF LANDFILL LEACHATE ON PILOT PLANT
Maria J. Rivero
University of Cantabria, Spain
Ana Rueda, Oscar Primo, Inmaculada Ortiz
University of Cantabria, Spain

Friday, February 16, 2007 (continued)

- 11:30 – 12:00 MAGNETIC CLASSIFICATION IN FILTRATION AND
SEPARATION PROCESSES FOR WATER TREATMENT AND
PURIFICATION
Paulo A. Augusto
Universidade do Porto, Portugal
Teresa Castelo-Grande,
Universidade do Porto, Portugal
Domingos Barbosa
Universidade do Porto, Portugal
- 12:00 – 12:30 Discussion and Conference Wrap-up
- 12:30 – 14:00 Lunch and Departure

Poster Presentations

Tuesday and Wednesday PM: Poster Session

Chair: Prof. Stephen M.C. Ritchie, University of Alabama, USA;

Co-Chairs: Prof. S. Velizarov, Universidade Nova de Lisboa, Portugal, Prof. Bart VanderBruggen, Belgium

1. AN ESTIMATION OF THE EFFICIENCY IN A PHOTOCATALYTIC REACTOR.
Benito Serrano Rosales., Universidad Autonoma de Zacatecas, Mexico
 Jesus Moreira - del Rio, Universidad Autonoma de Zacatecas, Mexico.
 Miguel Salaires - Arredondo, Instituto de Investigaciones Eléctricas, Mexico.
 Aaron Ortiz - Gomez, Hugo de Lasa, The University of Western Ontario, Canada.
2. WETTING PHENOMENON AND INTERNAL CONCENTRATION
 POLARIZATION IN FORWARD OSMOSIS AND PRESSURE RETARDED
 OSMOSIS
Jeffrey McCutcheon, Yale University, USA;
 Menachem Elimelech, Yale University, USA
3. SELECTIVE OXIDATION OF FLUOROQUINOLONE ANTIBACTERIAL AGENTS
 BY VISIBLE LIGHT PHOTOCATALYSIS
Tias Paul, University of Illinois, USA;
 Penney L. Miller, Rose-Hulman Institute of Technology, USA;
 Timothy J. Strathmann, University of Illinois, USA
4. DESTRUCTION OF CHLORINATED ORGANICS FROM CONTAMINATED
 WATER BY CHELATE-MODIFIED FENTON REACTION
Scott Lewis, University of Kentucky, USA
 Y. Li, D. Ahuja, D. Bhattacharyya, and L. Bachas, University of Kentucky, USA
5. REMOVAL OF CADMIUM AND CHROMIUM FROM WATER USING CHICKEN
 FEATHERS
Elizabeth Reynel-Avila, Instituto Tecnológico de Aguascalientes, Mexico;
 Adrian Bonilla-Petriciolet, Instituto Tecnológico de Aguascalientes, Mexico;
 Ana Laura Martinez-Hernandez, Centro de Fisica Aplicada y Tecnologia
 Avanzada UNAM, Mexico;
 Carlos Velasco-Santos, Centro de Fisica Aplicada y Tecnologia Avanzada
 UNAM, Mexico;
 Juan Jose Soto-Bernal, Centro de Investigaciones en Optica, Mexico
6. ARSENIC REMOVAL BY COAGULATION AND FILTRATION FROM
 GROUNDWATERS IN THE UNITED STATES AND BANGLADESH
 Ranil Wickramasinghe, Colorado State University, USA
7. METHOD VALIDATION FOR THE DETECTION OF FUNGI IN DIFFERENT
 DRINKING WATER SOURCES
L. Silva, Instituto de Biologia Experimental e Tecnológica, Portugal;
 V.J. Pereira, M.T. Crespo, Instituto de Biologia Experimental e Tecnológica
 San Romão, M. V., Instituto de Biologia Experimental e Tecnológica and Estação
 Vitivinícola Nacional, Portugal

8. REDUCTION OF SOLIDS IN LEACHATE STREAMS BY A MEMBRANE BIOREACTOR
Paulo A. Augusto, Universidade do Porto, Portugal;
Teresa Castelo-Grande, Universidade do Porto, Portugal;
Domingos Barbosa, Universidade do Porto, Portugal;
Paulo Monteiro, Universidade do Porto, Portugal
9. CHROMIUM (VI) REMOVAL FROM WASTE WATER ELECTROPLATING PROCESS THROUGH ADSORPTION ON ALUMINA: MATHEMATICAL MODELING FOR A PACKED-BED COLUMN OPERATION
Alberto F. Aguilera-Alvarado, University of Guanajuato, Mexico
Irene Cano-Aguilera, The University of Guanajuato, Mexico
J. Merced Martínez-Rosales, The University of Guanajuato, Mexico
Beatriz E. Rubio Campos, The University of Guanajuato, Mexico
Fracisco J. Luna- García, The University of Guanajuato, Mexico
10. AEROBIC BIOREACTOR FOR BIO-TREATMENT OF AGRO-INDUSTRIAL EFFLUENTS
José Cardoso Duarte, INETI, Portugal;
António Ferreira, TECNIA Lda., Portugal;
Manuela Mateus, INETI, Portugal;
Ana Eusébio, INETI, Portugal;
Elsa Almeida-Vara, INETI, Portugal
11. REMOVAL OF BORON BY CATIONIC SURFACTANT MODIFIED POWDERED ACTIVATED CARBON (PAC)
Young-Chul Lee, Korea Advanced Institute Science and Technology, Korea;
Hojeong Kim, Korea Advanced Institute Science and Technology, Korea;
Hye-jin Hong, Korea Advanced Institute Science and Technology, Korea;
Ji-Won Yang, Korea Advanced Institute Science and Technology, Korea
12. REMOVAL OF TRICHLOROETHYLENE BY ZERO-VALENT IRON IMMOBILIZED IN ALGINATE BEAD AND CATIONIC EXCHANGE MEMBRANE
Hojeong Kim, Korea Advanced Institute of Science and Technology, Korea;
Hye-Jin Hong, Korea Advanced Institute of Science and Technology, Korea;
Young-Chul Lee, Korea Advanced Institute of Science and Technology, Korea;
Seong-Hye Kim, Korea Advanced Institute of Science and Technology, Korea;
Ji-Won Yang, Korea Advanced Institute of Science and Technology
13. TREATMENT OF CORK PROCESSING WASTEWATERS BY ULTRAFILTRATION AND ULTRAFILTRATION INTEGRATED PROCESSES
Maria Norberta de Pinho, Instituto Superior Técnico, Portugal;
Miguel Minhalma, Instituto Superior de Engenharia de Lisboa, Portugal
14. EMPIRICAL DETERMINATION OF FLUX-DECLINE KINETICS BASED ON WATER AND MEMBRANE CHARACTERISTICS
John Pellegrino, University of Colorado, USA;
NoHwa Lee, University of Colorado-Boulder, USA;
Gary Amy, UNESCO-IHE Institute for Water Education

15. WATER QUALITY TRADING IN NEW JERSEY: A WATERSHED-SCALE APPROACH TO REDUCING AGGREGATE DISCHARGE OF TOTAL PHOSPHORUS FROM WASTEWATER TREATMENT PLANTS
Josef Kardos, Rutgers University, USA
Christopher Obropta, Rutgers University, USA