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***Recent Advances in
Environmental Science and Biomedicine***

***Proceedings of the 8th International Conference on
Energy and Development, Environment and Biomedicine (EDEB '14)***

Lisbon, Portugal, October 30 - November 1, 2014

Recent Advances in Environmental Science and Biomedicine



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Table of Contents

Plenary Lecture 1: Design of Contingency Plan to Combat an Oil Spill Approaching the Seashore	9
<i>Fragiskos Batzias</i>	
Land Recovery as a Tradeoff Variable in Lake Redesign for Environmental Protection	11
<i>Fragiskos A. Batzias</i>	
Energy Renovation of a School Building, a Legacy of the Cultural Heritage of the City of Tournai: Ecole du Vieux Chemind'Ere	21
<i>Amaryllis Audenaert, Manuela Scalembra, Fabien Van De Meulebroecke</i>	
LCA Applied to Nano Scale Zero Valent Iron Green Synthesis	33
<i>Florinda Martins, Susana Machado, Tomás Albergaria, Cristina Delerue Matos</i>	
Investigation of the Removal Efficiency of an ESP in a Residential Biomass Boiler	39
<i>Robertas Poskas, Arunas Sirvydas, Jurgis Jankauskas</i>	
Swirling Flows with Heat Transfer in a Cylindrical under Axial Magnetic Field	45
<i>Mahfoud Brahim</i>	
Potential of Energy Savings in Portuguese Meat Industry	51
<i>J. Nunes, P. D. Silva, L. P. Andrade, P. D. Gaspar</i>	
The Influence of Indoor Climate on Students' Learning Performance	61
<i>Teet-Andrus Koiv, Alo Mikola, Aider Saar</i>	
Water-Energy Nexus. The Outcome of the Implementation of Water Efficiency Measures in Buildings	69
<i>A. Silva-Afonso, C. Pimentel-Rodrigues</i>	
Parameter Estimation in Chemical Processes	75
<i>Abdelhani Boukrouche</i>	
Content of Hazardous Substances in Recycled Aggregates	81
<i>Vladimira Vytlačilova</i>	
Environmental Evaluation of Valorization Options for Used Cooking Oil	87
<i>Ana Cláudia Dias, Maria Isabel Nunes, Telma Ferreira, Luis Arroja</i>	
Experimental Researches in the Black Sea Basin	92
<i>Panaitescu Fanel-Viorel</i>	
Synthesis of Appropriate Oleaginous Biomass for Biodiesel Production	96
<i>A. C. Ahmia, F. Danane, R. Bessah, I. Boumesbah, R. Alloune</i>	

Environmental Impact and Comparative Economic Analysis among Different Building Constructive Systems Used in Portugal	101
<i>Francisco Oliveira, Paulo Mendonça, João Pedro Couto, Aires Camões</i>	
A Perturb and Observe Method Using Dual Fuzzy Logic Control for Resistive Load	107
<i>Sarah Abdourraziq, Rachid El Bachtiri</i>	
Road Gradient for Cycling Infrastructures: Standard and Low-Cost Measurement	113
<i>Paulo Ribeiro, Daniel S. Rodrigues, Elton Taniguchi</i>	
Modeling of a Photovoltaic System on a Secluded Site	121
<i>Salah Eddine Mankour, Ahmed Wahid Belarbi, Mohamed Tarik Benmessaoud, Mohamed El Amine Kefif</i>	
Sequential Robustness Analysis for Increasing Sustainability of Chemical Processes	127
<i>Florinda Martins, Carlos A. V. Costa</i>	
A New Pt/Graphene/Polyaniline Composite Processable at Ambient Temperature as Efficient Low Cost Counter Electrode for Dye Sensitized Solar Cells	135
<i>Samaneh Mozaffari, Mohammad Reza Nateghi, Mahmoud Borhanizarandi</i>	
New System for Early Breast Cancer Detection by Electrical Impedance Spectroscopy	142
<i>Ensaf Alzurq, Alya Almaktari, Buthina Shuja'a Aldin, Maha Hamoud, Sabreen Othman, Seham Nasr</i>	
Optimal Sizing and Placement of Renewable Energy Source in Large Scale Power System Using ABC Technique in Presence of UPFC	151
<i>Sebaa Haddi, Bouktir Tarek</i>	
Medical Knowledge Management since the Integration Heterogeneous Data until the Knowledge Exploitation in a Decision-Making System	157
<i>Nadjat Zerf Boudjettou, Fahima Nader, Rachid Chalal</i>	
Physico Chemical Parameters And economic Evaluation of Bio ethanol Produced from Waste of Starting Dates in South Algeria	164
<i>Insaf Mehani, Bachir Bouchekima</i>	
Planning Process of a Cycling Network: Case Study of Ponte de Lima, Portugal	168
<i>Paulo Ribeiro, Carolina L. Neiva, Pedro Lemos</i>	
Modeling and Simulation of a Photovoltaic Cell Considering Single-Diode Model	175
<i>M. Azzouzi</i>	
Optimal Sizing and Placement of Renewable Energy Source in Large Scale Power System Using ABC	183
<i>Haddi Sebaa, Mohammed Ammroune, Tarek Bouktir</i>	
Authors Index	188

Plenary Lecture 1

Design of Contingency Plan to Combat an Oil Spill Approaching the Seashore



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Abstract: Several accidents in oil transport by tankers have provided effective object lessons on the futility of oil spill contingency plans that are based on inadequate response action, contain imprecise environmental risk assessment, or fail to address the basic issues of cleanup technology, worker safety, and final disposal. Nowadays, a major effort has been directed towards improving such planning for large areas in open sea but also along the coast. This last issue is of main importance for closed seas like the Mediterranean, where, in parallel with the usual oil transportation, offshore drilling for hydrocarbon fields exportation is expected to increase risk due to accidental or/and systematic pollution of seawater.

The present work deals with the design of a contingency plan for immediate response to oil spill approaching a coast of important characteristics due to either sensitive ecosystems or/and special installations (e.g., for desalination or aquaculture) or/and touristic/recreational activities. We have achieved this task by (i) developing an interactive algorithmic procedure through logical/dynamic programming and (ii) incorporating this procedure into the empty shell of an expert system, where the Knowledge Base is continually enriched through case based reasoning (CBR) while the corresponding Inference Engine is a multicriteria tool operating in a fuzzy version to count for uncertainty. An implementation of this methodology, concerning scenario of probable pollution of an island of the East Aegean Sea sited near the corridor of tankers coming from Black Sea, is presented and the results are discussed.

Brief Biography of the Speaker: Prof. Fragiskos Batzias holds a 5years Diploma and a PhD degree in Chemical Engineering, and a BSc in Economics. He has also studied Mathematics and Philosophy. He is Director of the Laboratory of Simulation of Industrial Processes and Head of the Research Group on Systems Analysis at the Department of Industrial Management and Technology of the University of Piraeus, Greece. He is teaching at the interdepartmental postgraduate courses (i) Systems of Energy Management and Protection of the Environment, running by the University of Piraeus in cooperation with the Chem. Eng. Dept. of the Nat. Tech. Univ. of Athens, and (ii) Techno-Economic Systems, running by the Electr. & Comp. Eng. Dept. of the Nat. Tech. Univ. of Athens in cooperation with the University of Athens and the University of Piraeus. His research interests are in chemical engineering systems analysis and knowledge based decision making. He has >100 publications in highly ranked journals and conference proceedings, including 29 research monographs in collective volumes, with 171 citations and an h-index of 8 (for the period 2004-2012, source: ISI Web of Science, Thompson Scientific; self-citations have been excluded).

He has participated (and chaired after invitation from the organizers) in prestigious international conferences, such as those organized periodically by the IEEE, the European Federation of Chemical Engineering (EFCE), the DECHEMA, CHISA, WSEAS Organizations. He organizes the annual Symposium on Industrial and Environmental Case Studies running successfully since 2004 within the International Conference of Computational Methods in Sciences and Engineering (ICCMSE).

Authors Index

Abdourraziq, S.	107	Jankauskas, J.	39
Ahmia, A. C.	96	Koiv, T.-A.	61
Albergaria, T.	33	Lemos, P.	168
Aldin, B. S.	142	Machado, S.	33
Alloune, R.	96	Mankour, S. E.	121
Almaktari, A.	142	Martins, F.	33, 127
Alzurq, E.	142	Matos, C. D.	33
Ammroune, M.	183	Mehani, I.	164
Andrade, L. P.	51	Mendonça, P.	101
Arroja, L.	87	Mikola, A.	61
Audenaert, A.	21	Mozaffari, S.	135
Azzouzi, M.	175	Nader, F.	157
Batzias, F. A.	11	Nasr, S.	142
Belarbi, A. W.	121	Nateghi, M. R.	135
Benmessaoud, M. T.	121	Neiva, C. L.	168
Bessah, R.	96	Nunes, J.	51
Borhanizarandi, M.	135	Nunes, M. I.	87
Boucekima, B.	164	Oliveira, F.	101
Boudjettou, N. Z.	157	Othman, S.	142
Boukrouche, A.	75	Panaitescu, F.-V.	92
Bouktir, T.	183	Pimentel-Rodrigues, C.	69
Boumesbah, I.	96	Poskas, R.	39
Brahim, M.	45	Ribeiro, P.	113, 168
Camões, A.	101	Rodrigues, D. S.	113
Chalal, R.	157	Saar, A.	61
Couto, J. P.	101	Scalembra, M.	21
Danane, F.	96	Sebaa, H.	183
Dias, A. C.	87	Silva, P. D.	51
El Amine Kefif, M.	121	Silva-Afonso, A.	69
El Bachtiri, R.	107	Sirvydas, A.	39
Ferreira, T.	87	Taniguchi, E.	113
Gaspar, P. D.	51	Tarek, B.	151
Haddi, S.	151	Van De Meulebroecke, F.	21
Hamoud, M.	142	Vytlačilova, V.	81