

# **1st Mini Conference on Emerging Engineering Applications (MCEEA'15)**

MATEC Web of Conferences Volume 41 (2016)

Chalkida, Greece  
26 - 27 November 2015

**Editor:**

**Michael G. Skarpetis**

ISBN: 978-1-5108-1941-2

**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.**

This work is licensed under a Creative Commons Attribution license:  
<http://creativecommons.org/licenses/by/2.0/>

**You are free to:**

**Share** – copy and redistribute the material in any medium or format.

**Adapt** – remix, transform, and build upon the material for any purpose, even commercial.

The licensor cannot revoke these freedoms as long as you follow the license terms.

**Under the following terms:**

You must give appropriate credit, provide a link to the license, and indicate if changes were made.

You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use. The copyright is retained by the corresponding authors.

Printed by Curran Associates, Inc. (2016)

For additional information, please contact EDP Sciences – Web of Conferences  
at the address below.

EDP Sciences – Web of Conferences  
17, Avenue du Hoggar  
Parc d'Activité de Courtabœuf  
BP 112  
F-91944 Les Ulis Cedex A  
France

Phone: +33 (0) 1 69 18 75 75

Fax: +33 (0) 1 69 28 84 91

[contact-edps@webofconferences.org](mailto:contact-edps@webofconferences.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: 845-758-2634  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# TABLE OF CONTENTS

<b>EXPLOITING SHARED-ACCESS PASSIVE OPTICAL NETWORKS FOR BUILDING DISTRIBUTED DATACENTERS</b> .....	1
<i>Leligou H.-C., Orphanoudakis T., Stavdas A., Matrakidis C.</i>	
<b>A LOW COST - HIGH EFFICIENCY ELECTRODEPOSITION DEVICE FOR THE LABORATORY</b> .....	5
<i>Karagiannis Vasilios, Ktena Aphrodite, Manasis Christos, Ladoukakis Onoufrios, Hristoforou Evangelos, Vourna Polyxeni, Tsiantos Vasilios</i>	
<b>MODELLING OF A MAGNETOSTRICTIVE TORQUE SENSOR</b> .....	9
<i>Tsiantos Vasilios, Karagiannis Vasilios, Ktena Aphrodite, Manasis Christos, Ladoukakis Onoufrios, Elias Charalambos, Hristoforou Evangelos, Vourna Polyxeni</i>	
<b>COMMUNICATION CHALLENGES IN SMART GRID</b> .....	13
<i>Tsampanis Eleftherios, Bargiotas Dimitrios, Elias Charalambos, Sarakis Lambros</i>	
<b>PERFORMANCE EVALUATION OF OPTICAL CHANNEL TRANSMISSION BETWEEN UAVS AND GROUND STATIONS</b> .....	17
<i>Hatziefremidis Antonis, Zarganis Konstantinos E., Leligou Helen C., Pleros Nikos, Zoiros Kyriakos E.</i>	
<b>EVALUATION OF RPL-COMPLIANT ROUTING SOLUTIONS IN REAL-LIFE WSNS</b> .....	21
<i>Zahariadis Theodore, Sarakis Lambros, Voliotis Stamatis, Bargiotas Dimitrios, Karkazis Panagiotis</i>	
<b>ENERGY MONITORING AND MANAGEMENT MECHANISM FOR WIRELESS SENSOR NETWORKS</b> .....	25
<i>Papadakis Andreas, Zahariadis Theodore</i>	
<b>ROBUST PID CONTROLLER FOR A PNEUMATIC ACTUATOR</b> .....	29
<i>Skarpetis Michael G., Koumboulis Fotis N., Panagiotakis George, Kouvakas Nikolaos D.</i>	
<b>DYNAMIC OPTIMIZATION FOR VORTEX SHEDDING SUPPRESSION</b> .....	33
<i>Bonis Ioannis, Sarimveis Haralambos, Koubogiannis Dimitrios</i>	
<b>CONTROLLER DESIGN FOR ROBOTIC HAND THROUGH ELECTROENCEPHALOGRAM</b> .....	37
<i>Pandelidis P., Kiriazis N., Orgianelis K., Koulios N.</i>	
<b>AUTOMATED SYNTHESIS OF AN FPGA-BASED CONTROLLER FOR VEHICLE LATERAL CONTROL</b> .....	41
<i>Economakos Christoforos, Economakos George, Skarpetis Michael, Tzamtzi Maria</i>	
<b>A SYSTEM OF GAMMA RAY IMAGING DEVICES WITH CODED APERTURES</b> .....	45
<i>Papadimitropoulos Christos, Kaissas Ioannis, Karafasoulis Konstantinos, Potiriadis Constantinos, Lambropoulos Charalambos P.</i>	
<b>CMOS PIXEL SPECTROSCOPIC CIRCUITS FOR CD\(\text{ZN}\)TE GAMMA RAY IMAGERS</b> .....	49
<i>Hatzistratis D., Theodoratos G., Zervakis E., Loukas D., Lambropoulos C.P.</i>	
<b>DESIGN AND DEVELOPMENT OF A HYBRID PRECLINICAL PET/SPECT/X-RAY SYSTEM</b> .....	53
<i>Georgiou Maria, Fysikopoulos Eleftherios, Mikropoulos Kostas, Palamaris Lazaros, Fragogeorgi Eirini, Loudos George</i>	
<b>A THERANOSTIC IMAGING PROTOTYPE BASED ON SIPM DETECTORS FOR NANOPARTICLES IMAGING DURING HYPERTHERMIA</b> .....	56
<i>Loudos George, Georgiou Maria, Fysikopoulos Eleftherios, Fragogeorgi Eirini</i>	
<b>DEVELOPMENT OF LAYERED ANODE STRUCTURES SUPPORTED OVER APATITE-TYPE SOLID ELECTROLYTES</b> .....	60
<i>Pandis P., Kharlamova T., Sadykov V., Stathopoulos V.N.</i>	
<b>H<sub>2</sub>S IN BLACK SEA: TURNING AN ENVIRONMENTAL THREAT TO AN OPPORTUNITY FOR CLEAN H<sub>2</sub> PRODUCTION VIA AN ELECTROCHEMICAL MEMBRANE REACTOR. RESEARCH PROGRESS IN H<sub>2</sub>S-PROTON PROJECT</b> .....	64
<i>Kraia Tzoulia, Konsolakis Michalis, Marnellos George E.</i>	
<b>UVALVIT: A TOOL FOR DROPLET MOBILITY CONTROL AND VALVING</b> .....	67
<i>Vourdas Nikolaos, Dalamagkidis Konstantinos, Stathopoulos Vassilis N.</i>	
<b>ON THE MODIFICATION OF DIFFERENTIAL EVOLUTION STRATEGY FOR THE CONSTRUCTION OF RUNGE KUTTA PAIRS</b> .....	71
<i>Famelis Ioannis Th., Tsitouras Ch.</i>	

<b>EVOLUTIONARY CONSTRUCTION OF RUNGE–KUTTA–NYSTRÖM PAIRS OF ORDERS 5(4)</b> .....	75
<i>Famelis I. Th., Tsitmidelis S., Tsitouras Ch.</i>	
<b>ON PATH HYPERCOMPOSITIONS IN GRAPHS AND AUTOMATA</b> .....	78
<i>Massouros Christos G.</i>	
<b>IMPLEMENTING SECURITY IN A UNIVERSITY NETWORK</b> .....	82
<i>Diakakis Ioannis, Almaliotis Ioannis, Mitakos Theodoros</i>	
<b>Author Index</b>	