

2018 International Conference on Photovoltaic Science and Technologies (PVCon 2018)

**Ankara, Turkey
4-6 July 2018**



**IEEE Catalog Number: CFP18Q93-POD
ISBN: 978-1-5386-7539-7**

**Copyright © 2018 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP18Q93-POD
ISBN (Print-On-Demand):	978-1-5386-7539-7
ISBN (Online):	978-1-5386-7538-0

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
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

TABLE OF CONTENTS

APPROACHING NET-ZERO ENERGY BUILDING THROUGH UTILIZATION OF BUILDING-INTEGRATED PHOTOVOLTAICS FOR THREE CITIES IN TURKEY-PRELIMINARY CALCULATIONS	1
<i>Umut Uygun ; Çagla Meral Akgül ; Ipek Gürsel Dino ; Bülent G. Akinoglu</i>	
BIPV APPROACH IN MODELING AND RE-DESIGNING OF TABRIZ INTERNATIONAL AIRPORT, IRAN	6
<i>Ahadollah Azami ; Harun Sevinc ; Nasrin Akbarzadeh</i>	
COMPARISON OF DIFFERENT COOLING OPTIONS FOR PHOTOVOLTAIC APPLICATIONS	15
<i>Feyzullah Behlül Özkul ; Erhan Kayabasi ; Erdal Çelik ; Huseyin Kurt ; Erol Arcaklioglu</i>	
DAILY AND MONTHLY MODULE TEMPERATURE VARIATION FOR 9 DIFFERENT MODULES	24
<i>Talat Özden ; Doga Tolgay ; Bulent G. Akinoglu</i>	
DETERMINING PHOTOVOLTAIC MODULE PERFORMANCE AND COMPARISONS	30
<i>Abdullah Bugrahan Karaveli ; Talat Ozden ; Bulent G. Akinoglu</i>	
D-STATCOM FOR A DISTRIBUTION NETWORK WITH DISTRIBUTED PV GENERATION	35
<i>Wesam Rohouma ; Robert S. Balog ; Aaqib Ahmad Peerzada ; Miroslav M. Begovic</i>	
ELECTRO-OPTICAL ANALYSIS AND NUMERICAL MODELING OF Cu_2O AS THE ABSORBER LAYER IN ADVANCED SOLAR CELLS	40
<i>Constantin Dumitru ; Laurentiu Fara ; Ørnulf Nordseth ; Irinela Chilibon ; Raj Kumar ; Bengt Gunnar Svensson ; Florin Dragan ; Vlad Muscurel ; Dan Craciunescu ; Paul Sterian</i>	
EXPERIMENTAL EVALUATION OF PERFORMANCE DROP FOR CRYSTALLINE PHOTOVOLTAIC MODULES AFFECTED BY SNAIL TRAILS DEFECT	47
<i>Bouaichi Abdellatif ; Hajjaj Charaf ; Alami Merrouni Ahmed ; Ghenniou Abdellatif ; Choukri Messaoudi ; Zitouni Houssain ; Aumeur El Amrani ; Ikken Badr</i>	
AN EXPERIMENTAL STUDY ON THE MODELING OF THE PV OUTPUT	52
<i>Fatih Onur Hocaoglu ; Melih Kurekci ; Emre Akarslan ; Fatih Serttas</i>	
EXPERIMENTAL VALIDATION OF NON-LINEAR EMPIRICAL MODEL TO SIMULATE THE PHOTOVOLTAIC PRODUCTION UNDER SEMI-ARID CLIMATE. CASE STUDY OF BENGUERIR, MOROCCO	56
<i>Hajjaj Charaf ; Bouaichi Abdellatif ; Alami Merrouni Ahmed ; Benhmida Mohammadi ; Bennouna Amin ; Ghenniou Abdellatif ; Zitouni Houssain ; Ikken Badr</i>	
THE FEASIBILITY OF PHOTOVOLTAIC AND GRID-HYBRID POWER PLANT FOR WATER PUMPING STATION IN TABRIZ-IRAN	61
<i>Mohamadreza Shirinabadi ; Ahadollah Azami</i>	
FLEXIBLE AND SCALABLE PHOTOVOLTAIC CURVE TRACER	65
<i>Rawdha S. Ameen ; Robert S. Balog</i>	
IMPACTS OF A PHOTOVOLTAIC POWER PLANT FOR POSSIBLE HEAT ISLAND EFFECT	69
<i>Emre Demirezen ; Talat Ozden ; Bulent G. Akinoglu</i>	
INVESTIGATING THE EFFECTS OF COOLING OPTIONS ON PHOTOVOLTAIC PANEL EFFICIENCY: STATE OF THE ART AND FUTURE PLAN	76
<i>Feyzullah Behlül Özkul ; Erhan Kayabasi ; Erdal Çelik ; Huseyin Kurt ; Erol Arcaklioglu</i>	
MEASUREMENT OF ECONOMIC FEASIBILITY OF PHOTOVOLTAIC POWER PLANTS - APPLICATION TO TURKEY	82
<i>Abdullah Bugrahan Karaveli ; Bulent G. Akinoglu ; Ugur Soytas</i>	
OPTIMIZATION OF SILICON NITRIDE (SiNx) ANTI-REFLECTIVE COATING (ARC) AND PASSIVATION LAYERS USING INDUSTRIAL PLASMA ENHANCED CHEMICAL VAPOR DEPOSITION (PECVD) FOR PERC TYPE SOLAR CELLS	86
<i>Gamze Kökbudak ; Efe Orhan ; Firat Es ; Emel Semiz ; Rasit Turan</i>	
PARAMETERS EXTRACTION OF SINGLE AND DOUBLE DIODE MODEL USING THE FLOWER ALGORITHM	91
<i>Rabah Benkercha ; Samir Moulahoum ; Bilal Taghezouit</i>	
PBSE NANORODS FOR HYBRID SOLAR CELLS: OPTIMIZATION OF SYNTHESIS PROTOCOLS AND INVESTIGATION OF SURFACE STABILITY	97
<i>Tugba Hacıfendioglu ; Demet Asil Alptekin</i>	
PERFORMANCE AND DEGRADATION ANALYSES OF TWO DIFFERENT PV MODULES IN CENTRAL ANATOLIA	102
<i>Talat Ozden ; Bulent G. Akinoglu ; Sarah Kurtz</i>	

PRODUCTION AND CHARACTERIZATION OF $\text{Cu}_2\text{S}/\text{SnS}_3$ ABSORBER LAYERS FOR PHOTOVOLTAIC SOLAR CELL APPLICATIONS	106
<i>Elif Ketenci ; Ferhunde Atay ; Orhan Büyükgüngör</i>	
SHORT TERM SOLAR POWER GENERATION FORECASTING: A NOVEL APPROACH	110
<i>Fatih Serttas ; Fatih Onur Hocaoglu ; Emre Akarslan</i>	
SILICON CARBIDE PURIFICATION BY FORMATION OF THIN POROUS LAYER FOLLOWED BY THERMAL ANNEALING FOR SILICON PASSIVATION.....	114
<i>Barbouche Mohamed ; Benammar Nour Elhouda ; Zaghoulani Benabderrahmane Rabia ; Ezzaouia Hatem</i>	
SIZE DEPENDENT INTERMEDIATE BAND ENERGY LEVELS AND ABSORPTION OF BOUND STATES IN BOX SHAPED QUANTUM DOTS	117
<i>Volkan Kiziloglu ; Tugba Selcen Navruz ; Muzeyyen Saritas</i>	
TECHNO-ECONOMIC ANALYSIS OF PHOTOVOLTAIC-HYDROGEN FUEL CELL/PUMPED HYDRO STORAGE SYSTEM FOR MICRO GRID APPLICATIONS: CASE STUDY IN CYPRUS.....	121
<i>Loiy Al-Ghussain ; Onur Taylan ; Remember Samu ; Murat Fahrioglu</i>	
THERMAL MODELING AND VERIFICATION OF PV MODULE TEMPERATURE AND ENERGY YIELD USING OUTDOOR MEASUREMENTS FOR ANKARA, TURKEY	127
<i>Bilge Tuncel ; Bulent G. Akinoglu ; Talat Ozden ; Robert S. Balog</i>	
TWO-DIMENSIONAL NUMERICAL ANALYSIS OF PHOSPHORUS DIFFUSED EMITTERS ON BLACK SILICON SURFACES	134
<i>Deniz Turkay ; Selcuk Yerci</i>	
Author Index	