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September 7-8, 2019**

# CONFERENCE PROCEEDINGS

## BOOK OF ABSTRACTS ECBA-2019

**International Conference on  
“Engineering & Technology, Computer, Basic and Applied  
Sciences”  
(ECBA-2019), Istanbul, Turkey**



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# **Book of Abstracts Proceeding**

**International Conference on  
“Engineering & Technology, Computer, Basic and Applied  
Sciences”  
(ECBA-2019)  
Istanbul, Turkey**

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**International Conference on  
“Engineering & Technology, Computer, Basic and  
Applied Sciences”  
Istanbul, Turkey  
Venue: Istanbul Gonen Hotel, Istanbul Turkey**

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## CONFERENCE CHAIR MESSAGE

**Dr. Malika Ait Nasser**

International Conference on “Engineering & Technology, Computer, Basic & Applied Sciences” serves as platform that aims to help the scholarly community across nations to explore the critical role of multidisciplinary innovations for sustainability and growth of human societies. This conference provides opportunity to the academicians, practitioners, scientists, and scholars from across various disciplines to discuss avenues for interdisciplinary innovations and identify effective ways to address the challenges faced by our societies globally. The research ideas and studies that we received for this conference are very promising, unique, and impactful. I believe these studies have the potential to address key challenges in various sub-domains of social sciences and applied sciences.

I am really thankful to our honorable scientific and review committee for spending much of their time in reviewing the papers for this event. I am also thankful to all the participants for being here with us to create an environment of knowledge sharing and learning. We the scholars of this world belong to the elite educated class of this society and we owe a lot to return back to this society. Let’s break all the discriminating barriers and get free from all minor affiliations. Let’s contribute even a little or single step for betterment of society and welfare of humanity to bring prosperity, peace and harmony in this world. Stay blessed.

Thank you.

**Dr. Malika Ait Nasser**

Conference Chair

Email: [chair@academicfora.com](mailto:chair@academicfora.com)

ECBA-2019

## Conference Program

**DAY 01 Saturday (September 7, 2019)**

**Venue: Istanbul Gonen Hotel, Istanbul Turkey**

09:00 am – 09:10 am	Welcome Reception & Registration
09:10 am – 09:20 am	Introduction of Participants
09:20 am – 09:30 am	Inauguration and Opening address
09:30 am – 09:40 am	Grand Networking Session
09:40 am– 10:00am	Tea Break

**DAY 01 Saturday (September 7, 2019)**  
**Session I (10:00 am – 11:30 am)**  
**Venue: Room 1**

**Track A: Engineering & Technology, Computer, Basic & Applied Sciences**

<b>IST-199-102E</b>	Robust control of the thermoelectric system	Toualbia Asma
<b>IST-199-103E</b>	Optimization of a Power Supply used for a Discharge Lamp-Electronic Ballast System for Sterilization using Conventional Converter and a Matrix Converter.	Aissa Bokhtache Aicha
<b>IST-199-104E</b>	The Influence of Water and Dee as Additives with Diesel Fuel in A Diesel Engine Generator – An Experimental Investigation	Montaha Ali Said Albalushi
<b>IST-199-101E</b>	Study the Third Harmonic Parameters for Different Liquid Laser Media	Mithaq M. Mehdy Al-Sultani
<b>REEIA-SEP19-116</b>	Smart Irrigation Application	Ahmad Alshemmari

**Lunch Break (11:30 am – 12:30 pm)**  
**Closing Ceremony**

**DAY 02 Sunday (September 8, 2019)**

## **City Tour and Shopping Day**

All respective guests are free to conduct their own sightseeing and tour. The second day of the event is reserved for this memorable purpose.

**TRACK A: ENGINEERING & TECHNOLOGY,  
COMPUTER, BASIC & APPLIED SCIENCES**

# Robust Control Of The Thermoelectric System

Toualbia Asma<sup>1</sup>, Aissa Bokhtache Aicha<sup>2\*</sup>, Kessaissia Fatma Zohra<sup>3</sup>

**Abstract** Thermoelectric module (TEM) is a solid-state energy conversion device, which converts thermal energy into electric energy. Thermoelectric generation (TEG) which consists of several TEMs has recently attracted increased attention as an independent, clean, and renewable energy source. An important characteristic of thermoelectric module is that the available maximum power is provided only in a single operating point given by a localized voltage and current known, called Maximum Power Point. However the thermoelectric power generation has some problems, such as the position of this point is not fixed but it moves according to the temperature and load. A power conditioning system for TEG based on interleaved Boost converter with maximum power point tracking (MPPT) control is investigated in this paper. Nowadays, more research works have been concentrating on how to extract more power effectively from the TEM. Among so many MPPT schemes been proposed in thermoelectric applications, the perturbation and observation (P&O) scheme is one of the most widely used schemes due to the low-cost and ease of implementation. The drawback of the P&O MPPT technique is that, the system in thermal equilibrium electrical operating point oscillates around the MPP. Various improvements to the P&O MPPT were proposed to reduce the number of oscillations around the MPP. In this paper, P&O based passivity algorithm is designed in order to overcome the disadvantage of the conventional P&O algorithm. For ensuring better stability at MPP operating point, the Euler Lagrange-passivity technique is used with the classical P&O MPPT in a new approach. Therefore, (P&O/EL-PBC) algorithm can facilitate the tracking of maximum power faster and minimize the voltage variation, it has achieved outstanding performance under load variations. Simulations of the algorithm P&O/EL-PCB had conclusive results and ensuring best global asymptotic stability. Robustness test approved the usefulness of this algorithm.

**Keywords:** Thermoelectric, MPPT, Euler Lagrange, Passivity Based Control

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# Optimization of a Power Supply used for a Discharge Lamp-Electronic Ballast System for Sterilization using Conventional Converter and a Matrix Converter

Aissa Bokhtache Aicha<sup>1\*</sup>, Toulbia Asma<sup>2</sup>, Zegaoui Abdalah<sup>3</sup>, Kessaissia Fatma Zohra<sup>4</sup>

**Abstract** The use of ultraviolet radiation sterilization system is recommended in sanitary services, hospitals, pharmacies, agriculture, aquariums, well water or rain water collection, etc. UV radiation acts quickly, efficiently and safely and is an economical and environmentally friendly process. In recent years, high frequency electronic ballasts for discharge lamps have been introduced as a replacement for magnetic ballast because of their superior qualities such as high system efficiency (power factor improvement, etc.). Electronic ballasts enable discharge lamps to improve the quality of radiation by operating at high frequencies. This work presents the design of a high-frequency current supply based on PWM inverter (use of a conventional PWM-based inverter as well as a matrix converter) dedicated to supply the UV-Argon low-pressure lamp - electronic ballast system for a germicidal effect (a maximum of UV radiation at 253.7 nm), for disinfection of finished products by a 0.65 A rms sinusoidal current at 50 KHz. The basic open loop system delivers voltage and current at a frequency of 50 KHz. The conditions to be realized are essentially the following ones: to ensure a zero average current operation, to ensure a fast switching time, to be able to impose on the discharge of the rapid re-boots with currents substantially constant, to be able to function as a source of current with cyclic ratio and variable frequency. Then compare the results of the two power supplies to choose the most optimal for feeding the system in the best conditions and to have the best germicidal effect.

**Keywords:** Low Pressure Mercury-Argon Discharge, Germicidal, UVC, Electronic Ballast, Conventional Converter, Matrix Converter

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# The Influence of Water and Dee as Additives with Diesel Fuel in A Diesel Engine Generator – An Experimental Investigation

Montaha Ali Said Albalushi<sup>1\*</sup>, J. Sadhik Basha<sup>2</sup>

**Abstract** Energy, Economy, and Environment are the three important E's which are considered for an urgent cause of global attention for the technical community. The technical community has focused to reduce the harmful emissions in order to safeguard the global environment from the diesel engine without reflecting any negative effect in terms of its performance attributes. In the present work, water and Di-Ethyl Ether (DEE) are incorporated with diesel fuel in specific proportions systematically. The purpose of adding water and DEE is to reduce the harmful emissions and to enhance the performance attributes of the diesel engine. In this research investigation, to attain the above objectives, 5 phases of investigation have been carried out. In the first phase, performance and emission readings of pure diesel fuel in a diesel engine generator was noted. In the second phase, water (2% by volume) was incorporated with the diesel fuel in the presence of surfactants (Span 80 & Tween 80) systematically with the aid of a digital overhead stirrer. In the third phase, DEE was incorporated with water emulsion fuel which was prepared in the second phase. In the third phase, stability and properties of fuel was determined. In the fifth phase, the stable water-diesel emulsion fuel and DEE blended water-diesel emulsion fuels were tested in a diesel engine generator and compared to those readings of pure diesel fuel. It was observed that on adding water and DEE to the water-diesel emulsion fuels, the performance attributes (such as brake thermal efficiency and brake specific fuel consumption) were improved, whilst the harmful emissions were reduced while compared to that of neat diesel. It was also noted that the NOx emissions was drastically reduced for the water-diesel emulsion fuels while compared to that of neat diesel. This was due to the combined mechanism of micro-explosion and secondary atomization effects of emulsion fuels during the combustion in the engine cylinder.

**Keywords:** Emulsion, DEE, Micro Explosion, Emissions, Diesel Engine

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# Study The Third Harmonic Parameters For Different Liquid Laser Media

Mithaq M. Mehdy Al- Sultani\*

**Abstract** Three different ethanol solutions of laser dyes as ( cryptocyanine ,Oxazine 4 as well as Cresyl violet ) had been prepared at ( $5 \times 10^{-4}$  M) , and study the linear optical parameters as (maximum absorption wavelength, absorbance  $A$ , transmittance  $T$ , absorption coefficient  $\alpha$  and refractive index  $n$  for three different solutions . Tm: YLF laser at 1907.8 nm , had been used to study the parameters of Third Harmonic generation in these solutions by using two cells from the same solution depending on the third harmonic power generated from them . Ordinary Refractive index  $n_1$  , 3<sup>rd</sup> harmonic refractive index  $n_3$  , the difference  $\Delta n$  between  $n_1$  and  $n_3$  , 3<sup>rd</sup> harmonic absorption coefficient  $\alpha_3$ , 3<sup>rd</sup> harmonic electrical conductivity  $\sigma_{elect(3)}$  , 3rd harmonic extinction coefficient  $exc_3$  and the phase shift  $\Delta\phi$ , gradient of 3<sup>rd</sup> harmonic electric field  $\frac{\partial E_3}{\partial Z}$  , and conversion efficiency  $\eta$  , 3<sup>rd</sup> optical conductivity  $\sigma_{opt(3)}$  , The coherence length  $l_c$  , The optical density  $d$  , had been studied for these solutions at different Tm: YLF laser power in one time and at different laser incident angle on the solution cell in another time. It can be concluded that the Oxazine 4 laser dye is the best studied laser dye in 3rd harmonic generation efficiency; while the Cresyl Violet laser dye gives highest 3rd harmonic properties than other studied laser dyes. The main conclusion is that the incident laser power on the liquid laser dyes has the strongest effects in all the 3<sup>rd</sup> harmonic properties.

**Keywords:** THG , Tm:YLF laser , Cryptocyanine ,Oxazine And Cresyl Violet Laser Dyes

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# Smart Irrigation Application

Ahmad Alshemmari\*

**Abstract** Solar power can be considered a solution for many problems concerning energy consumption if it is applied in a cost-effective way. The implementation of a smart irrigation system is a great way to save energy, time, and effort for public parks and for personal home gardens. The proposed system will save not only energy and power, but also water; where plants will only be watered when needed. The proposed system uses humidity sensors that are placed in the soil to know exactly when the plants need to be watered. This ensures that the plants never face problems such as dry soil or having too much water. The system will also use power provided from solar panels, where the excess power will be sent back to the grid. This way, the system produces power for its own functions, and when there is no need for any power consumptions such as when the soil is still wet from being watered; it will feedback into the grid. If this system is large scaled, then a good amount of load will be taken off the grid, and a small percentage of energy will also be added to it.

**Keywords:** Somatic Gene Therapy, Shari'ah Framework, Islamic Principles  
Maqasid Syariyyah Qawaid Fiqhiyyah

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