

# ETASE-2018



**International Symposium on Emerging Technologies &  
Advancements in Applied Sciences and Engineering**

**The Howard Plaza Hotel Taipei, Taiwan**

**July 09-10, 2018**



**ESRDB**

# ***CONFERENCE BOOK OF ABSTRACT PROCEEDINGS***

***ESRDB***

Engineering Science Research & Development Board



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# **Book of Abstracts Proceedings**

**International Symposium on Emerging Technologies and Advancements in Applied Sciences and Engineering (ETASE-2018)**

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***International Symposium on Emerging Technologies and  
Advancements in Applied Sciences and Engineering  
(ETASE-2018)***

**Venue: The Howard Plaza Hotel Taipei, Taiwan**

**Conference Theme:** Provide platform for researchers in a wide area of topics from all fields related to Engineering, Technology, Computer and Applied Sciences.



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## ORGANIZING COMMITTEE

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Conference Supervisor

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## CONFERENCE TRACKS

- Basic Science
- ICT
- Electrical Engineering
- Mechanical & Industrial Engineering
- Civil Engineering
- Business and Management Studies
- Electric Drives and Control
- Electrical Machines
- Instrumentation Engineering
- Power Generation, Transmission and Distribution
- Power System Engineering

## CONFERENCE CHAIR MESSAGE

**Ms. Mei Shu Lai**

“International Conference of Engineering Science Research and Development Board” is a platform that thrives to support the worldwide scholarly community to analyze the role played by the multidisciplinary innovations for the betterment of human societies. It also encourages academicians, practitioners, scientists, and scholars from various disciplines to come together and share their ideas about how they can make all the disciplines interact in an innovative way and to sort out the way to minimize the effect of challenges faced by the society. All the research work presented in this conference is truly exceptional, promising, and effective. These researches are designed to target the challenges that are faced by various sub-domains of the social sciences and applied sciences.

I would like to thank our honorable scientific and review committee for giving their precious time to the review process covering the papers presented in this conference. I am also highly obliged to the participants for being a part of our efforts to promote knowledge sharing and learning. We as scholars make an integral part of the leading educated class of the society that is responsible for benefitting the society with their knowledge. Let’s get over all sorts of discrimination and take a look at the wider picture. Let’s work together for the welfare of humanity for making the world a harmonious place to live and making it flourish in every aspect. Stay blessed.

Thank you.

Ms. Mei Shu Lai

Conference Chair

Email: [contact@esrdb.com](mailto:contact@esrdb.com)



## CONFERENCE SECHDULE

**ETASE-2018**

**Venue: The Howard Plaza Hotel Taipei, Taiwan**

**Time: Registration & Kit Distribution (09:00 - 09:30 am)**

**Day: Monday**

**Date: July 09, 2018**

**Venue: Room 1**

09:30 am - 09:40 am	Introduction of Participants
09:40 am - 09:50 am	Inauguration and Opening address
09:50 am - 10:00 am	Grand Networking Session

**DAY 01 Monday (July 09, 2018)**

**First Presentation Session (10:00 - 11:00 am)**

**Venue: Room 1**

<b>Presenter Name</b>	<b>Manuscript Title</b>	<b>Paper ID</b>
<b>Track A: Engineering, Technology, Computers and Applied Sciences</b>		
IL TAE KIM	SN-TE-Based Composite Anodes for High-Performance Lithium ION Storage	TKE-178-101
Ho-Joon Lee	LQ-PI Control for Three-level of Vienna Rectifier	TPE-178-102
Matthew J. Taylor	Functional Electrical Stimulation (FES): Historical and Beneficial Perspective	ETASE-JULY-TW102

**Lunch Break & Ending Note:(11:00 am - 12:00 pm)**

## **Conference Day 02 (July 10, 2018)**

Second day of conference will be specified for touristy. Relevant expenses are borne by Individual him/herself.

***TRACK A***  
***ENGINEERING, TECHNOLOGY AND APPLIED SCIENCES***





## Sn-Te-Based Composite Anodes for High-Performance Lithium Ion Storage

<sup>1</sup>Il Tae Kim, <sup>2</sup>Seung Yeon Son, <sup>3</sup>Doo Soo Kim

<sup>1,2,3</sup>Gachon University, South Korea

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**Keywords:** Tin-Telluride, Titanium Carbide, Lithium Ion Batteries

Rechargeable lithium-ion batteries (LIBs) have attracted much attention as one of effective energy storage systems due to high energy density. Graphitic carbon, known as commercial anode materials, cannot meet the demand of current industry for longer-lasting electrical device and hybrid/full electric vehicles, leading to the development of advanced anode materials. Sn has been evaluated as an alternative of graphitic carbon owing to their high theoretical capacity (993 mAh/g); however, it undergoes a huge volume change during the charge-discharge process, resulting in severe capacity fades. To overcome these problems, we attempt the synthesis of Sn-Te-based nanocomposites including conductive TiC and amorphous carbon matrices, which are prepared by applying the pre-heating step before the high-energy ball milling (HEBM) process. The different morphological characteristics and electrochemical performances are discussed depending on the TiC contents in composites, where TiC/C hybrid matrix acts as a buffering matrix and accommodates the volume change during cycling, resulting in the improvement of electrochemical performances.

## LQ-PI Control for Three-level of Vienna Rectifier

<sup>1\*</sup>Chang-Hyun Kim, <sup>2</sup>Sung-Keun Oh, <sup>3</sup>Ho-Joon Lee

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**Keywords:** Linear-Quadratic Optimal Control, PI Control, Voltage-Current Control, Three-level Vienna Rectifier

In this paper, we propose linear-quadratic proportional integral (LQ-PI) controller for voltage-current control of three-level Vienna rectifier. The Vienna rectifier approach with 3-phase power factor has been being applied widely in industry for their high efficiency and unity power factor operation. Recently, Vienna rectifier is imbedded to fast EV chargers and electric power converter. The control of Vienna rectifier is more important than conventional AC to DC converters because there exist many components and switching states in power converter. The optimal controller with linear-quadratic performance index is applied to Vienna rectifier such that the general PI controller is improved in order to consider time domain specifications.

## Functional Electrical Stimulation (Fes): Historical And Beneficial Perspective

<sup>1\*</sup>Matthew J. Taylor, <sup>2</sup>Ch Fornusek, <sup>3</sup>Andrew J. Ruys

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**Keywords:** Rehabilitation Engineering, Electrical Stimulation, General Review.

Within the sphere of rehabilitation engineering there are several technologies being developed for persons with paralysis, such as environmental sensors [1], interactive games and robotic exoskeletons. Despite these new upcoming technologies, also available but sometimes unknown are Functional Electrical Stimulation (FES) technologies. FES is the activation of nerves or muscles of paralyzed individuals using electrical stimulation. Individuals may perform exercise assisted by FES, which involves application of high voltage electrical pulses by either surface or implantable electrodes. Over the past 50 years FES technology has developed but these developments have not been translated to the community use. Thus, FES is not being used to its full potential. While investigations surrounding such issues are under way by our group [2], insights into various issues may be taken from the current literature. A general search of the literature was performed, then divided into relevant sub-themes, discussed in this work. Firstly, we put forward a historical overview of FES technology. We draw from the literature some early examples of FES technology. Then we illustrate different types of FES-cycling systems grouped into various categories derived from literature. Finally, we conclude by discussing some of the benefits and drawbacks of FES as suggested by the literature. It is envisaged that this work will stimulate discussion in the wider engineering community of some possible areas for research, paving way for future innovation in FES rehabilitation technologies.

## *UP COMING EVENTS*

You can find the details regarding our upcoming events by following below:

<http://esrdb.com/irestm/>

<http://http://esrdb.com/citas/>

<http://http://esrdb.com/aecit/>

<http://http://esrdb.com/icta/>

<http://http://esrdb.com/iaets-2018/>

<http://http://esrdb.com/ctsest-2018/>

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<http://anissh.com/conferences/turkey-conferences/>

<http://http://esrdb.com/conferences/csndm-2018/>

<http://http://esrdb.com/conferences/etase-2018/>

<http://http://esrdb.com/conferences/cetas-2018/>

## Vision

Invests in creation of 21st century engineers and discovery of technologies through transformational center-based research, research in education and inclusion, and research opportunities for students and teachers.

## Mission

To increase the diversity of the scientific and engineering workforce by including all members of society, regardless of race, ethnicity, or gender, in all aspects of the centers' activities. Because ESRDBs play critical roles in academe by integrating research, education, diversity, outreach, and industrial collaboration.



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