



International Research  
Network for Engineering  
Science and Technology

# **ICESAT-JULY-2019**

**2nd IRNEST International Conference on  
Engineering and Technology, Smart Materials,  
Applied Sciences & Telecommunications**

**Shanghai, China**

**Date: July 27-28, 2019**

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

## ***IRNEST-2019***

International Research Network for Engineering Science and Technology



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# **Book of Abstracts Proceedings**

**2nd IRNEST International Conference on Engineering and Technology, Smart  
Materials, Applied Sciences & Telecommunications (ICESAT-JULY-2019)**

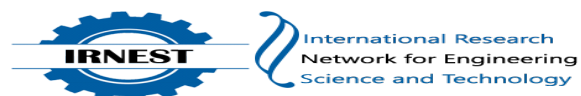
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Proceedings of the 2nd IRNEST International Conference on Engineering and Technology, Smart Materials, Applied Sciences & Telecommunications (ICESAT)

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***2nd IRNEST International Conference on Engineering  
and Technology, Smart Materials, Applied Sciences &  
Telecommunications (ICESAT-JULY-2019)***

**Venue: VESH COFFEE No. 1100 Ding Xi Road (Near Zhao Hua Road)  
Changning District 1100101**

**Conference Theme:** Providing Platform for enhancement of research  
and developmental activities through networking.



## SCIENTIFIC COMMITTEE

**Qihu QIAN**

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Senior Engineer, China Railway Major Bridge Reconnaissance and Design Institute Co. Ltd./Member of Chinese Academy of Engineering

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**Prof. Amnart Suksri**

Khonkaen University, Thailand



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## CONFERENCE TRACKS

- Computer and Software Engineering
- Mechanical & Metallurgical Engineering
- Electrical & Electronics Engineering
- Civil Engineering
- Bio-Technology & Food Technology
- Chemistry & Chemical Engineering
- Physical, Applied and Life Sciences
- Interdisciplinary

## CONFERENCE CHAIR MESSAGE

### **Prof. Lin GAO**

“International Conference of International Research Network for Engineering Science and Technology (IRNEST)” 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.

Prof. Lin GAO

Conference Chair

Email: [lin\\_gao@irnest.org](mailto:lin_gao@irnest.org)



# CONFERENCE AGENDA

DATE: July 27-28, 2019

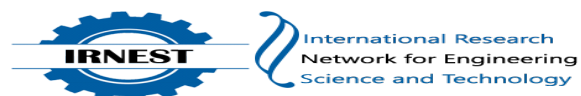
LOCATION: VESH COFFEE No. 1100 Ding Xi Road (Near Zhao Hua Road)hangning District  
1100101

EVENT TITLE: 2nd IRNEST International Conference on Engineering and Technology, Smart  
Materials, Applied Sciences & Telecommunications (ICESAT-JULY-2019)

## Start Time

09:00 am - 09:10 am: Registration & Kit Distribution  
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

**Tea/Coffee Break (09:40 am -10:00 am)**



# CONFERENCE AGENDA

DATE: July 27-28, 2019

LOCATION: VESH COFFEE No. 1100 Ding Xi Road (Near Zhao Hua Road)hangning District  
1100101

EVENT TITLE: 2nd IRNEST International Conference on Engineering and Technology, Smart  
Materials, Applied Sciences & Telecommunications (ICESAT-JULY-2019)

Session: 01  
10:00 am - 11:00 am: Presentation Session  
Track A: Engineering, Technology & Applied Sciences

Presenter Name	Manuscript Title	Paper ID
Mohamed Sayed Selim	Facile-synthesis of $\gamma$ -MnO <sub>2</sub> nanorods through a $\gamma$ -Manganite Precursor Route	ICESAT-JULY19-101
Junichi IDA	Effect Of TiO <sub>2</sub> Coating And UV Irradiation On Oil Decomposition/Removal On The Surface Of The Optical Fiber Sensor	ICPPAI-FEB19-102
Miyuki KADOKURA	Vibration Pattern Measurement Using A Hetero-Core Optical Fiber Sensor For Defect Diagnosis	ICPPAI-FEB19-103
Masahiro Mikami	Aging Effect Of Pd Based Hetero-Core Optical Hydrogen Sensor By The Storage In Different Gases Atmosphere	ICPPAI-FEB19-105

### Track B: Medical, Medicines & Health Sciences

Zakiah Samori	Establishment of the Shariah Framework for the Application of Somatic Gene Therapy in Human	SHA-479-110
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**Lunch Break & Closing Ceremony (11:00 am - 12:00 pm)**

## CONFERENCE AGENDA

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Materials, Applied Sciences & Telecommunications (ICESAT-JULY-2019)

### Participants Registered As Listener/ Observer

The following Scholars/ practitioners who don't have any paper presentation, however they will attending the conference as delegates & observers.

**Official ID:** ICESAT-JULY19-103A

Mr. Horacio Licon

Vice President, International Investment and Trade-Greater Houston Partnership  
Houston, Texas, USA

**Official ID:** SHA-479-102A

Ella Pearson

University of Queensland, Australia

**Official ID:** SHA-479-103A

Sharon J. Herring, MD, MPH

Associate Professor of Medicine Temple University, USA

## CONFERENCE AGENDA

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### Conference Day 02 (July 28, 2019)

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



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***TRACK A***

***ENGINEERING, TECHNOLOGY & APPLIED SCIENCES***



## Facile-synthesis of -MnO<sub>2</sub> nanorods through a -Manganite Precursor Route

<sup>1\*</sup>Mohamed Sayed Selim, <sup>2</sup>Zhifeng Hao, <sup>3</sup>Yi Jiang, Mingming Yi, <sup>4</sup>Yingming Zhang  
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**Keywords:** One-Dimensional Nanomaterials, -MnOOH Nanorods, Hydrothermal Process, Wurtzite Structure, Thermal Decomposition.

A global interest was awarded to the one-dimensional nanomaterials for a great variety of industrial applications. -MnOOH nanorods with a single crystal structure were synthesis via a hydrothermal technique through a direct reaction between potassium permanganate and ethylene glycol. It was found that the reaction time and temperature play important roles in the structural and morphological modifications. The results show that the -MnOOH nanorods are formed through a lamellar growth, assembly and ripening process. -MnO<sub>2</sub> nanorods with a single crystal structure, a mean diameter of 20-30 nm and a length of 0.51 μm, and a wurtzite structure that preferentially grew in the [110] direction have been prepared by thermal decomposition of -MnOOH precursors under controlled temperature and time. It was found that the MnO<sub>2</sub> products were both single crystalline and retained the similar morphologies of MnOOH nanorods. Characterization is carried out based on scanning electron microscope, X-ray diffraction and transmission electron microscope and X-ray photoelectron spectroscopy analyses. Novel properties and applications are expected from the prepared oxyhydroxide and manganese oxide nanorods.

## Effect Of TioCoating And UV Irradiation On Oil Decomposition/Removal On The Surface Of The Optical Fiber Sensor

<sup>1\*</sup>Kumi KOGUCHI, <sup>2</sup>Michiko NISHIYAMA, <sup>3</sup>Hiroshi YAMAZAKI, <sup>4</sup>Kazuhiro  
WATANABE, <sup>5</sup>Junichi IDA

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**Keywords:** Hetero-core optical fiber, Oil decomposition, Photocatalyst, TiO

A problem in our previous hetero-core optical fiber sensor for oil detection is that after oil sensing, it is very difficult to remove oil from the sensor surface by washing with water. Therefore, in this study, we developed an optical fiber oil detection sensor based on a hetero-core fiber structure coated with TiO<sub>2</sub> nanoparticle layer on the surface, and tried to improve its oil removal performance using its photocatalytic activity. In the experiment, three coating methods of TiO<sub>2</sub> layer formation such as the sol-gel, the dip-coating and the sputtering method were tried, and their oil decomposition/removal performance was examined under UV irradiation. In the case of the sol-gel method, calcination process is needed after TiO<sub>2</sub> coating to transform amorphous phase to crystalline, and this resulted in the decrease of mechanical strength of the optical fiber. The TiO<sub>2</sub> coated optical fiber sensor prepared by the sputtering method showed very weak photocatalytic activity for oil decomposition/removal. On the other hand, the TiO<sub>2</sub> coated optical fiber sensor prepared by the dip-coating method exhibited improved oil removal performance under UV irradiation with maintaining its mechanical strength. These results indicated that the dip-coating method was suitable to prepare oil detection optical fiber sensor with TiO<sub>2</sub> coating.

## Vibration Pattern Measurement Using A Hetero-Core Optical Fiber Sensor For Defect Diagnosis

<sup>1\*</sup>Miyuki KADOKURA, <sup>2</sup>Hiroshi YAMAZAKI, <sup>3</sup>Michiko NISHIYAMA, <sup>4</sup>Taketoshi  
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**Keywords:** Optical Fiber Sensor, Hetero-Core Fiber, Vibration Monitoring

Defect diagnosis techniques based on vibration patterns on machines have been developed so far for structural health monitoring. The performances of defect diagnosis greatly depend on the precision of sensors utilized to measure vibration so that, especially in practical usages, it is indispensable for the sensors not only to be accurate but also robust to such environmental changes as temperature, humidity, electromagnetic interferences, and so on. In this study, a novel vibration sensor has been proposed based on hetero-core fiber optics for overcoming such environmental conditions. The hetero-core fiber optic sensor picks up the change of bending curvature at a sensor portion which consists of two single-mode(SM) optical fibers with different core diameters. The vibration sensor is fabricated by mounting a hetero-core optical fiber segment in an arch shape, which produces vibration to the curvature of the sensor portion by given input acceleration. A series of experiments was conducted in order to confirm responses of the sensor when several patterns of vibration was given with assuming the knocking of ratchet on a gear as follows: a part of the tooth was worn out fully or to some extent and the rotation speed of the gear was changed higher and lower. Through the experiments it was successfully demonstrated that the differences between a normal knocking pattern and other abnormal patterns apparently appeared in the response of the proposed sensor, and the abnormal conditions could be identified by the temporal changes in RMS values of measured data.

## **Aging Effect Of Pd Based Hetero-Core Optical Hydrogen Sensor By The Storage In Different Gases Atmosphere**

<sup>1\*</sup>Masahiro Mikami, <sup>2</sup>Michiko Nishiyama, <sup>3</sup>Shoichi Kubodera, <sup>4</sup>Kazuhiro Watanabe

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**Keywords:** Optical Fiber, Palladium Nanoparticles, Hydrogen, Durability

In recent years, hydrogen has attracted much attention as a clean renewable and abundant energy source. However, it has an explosion risk when the concentration in air exceeds more than the explosion limit of 4%. Therefore, reliable hydrogen sensors are needed for rapid and accurate hydrogen leakage detection. In potentially explosive environments, optical fiber sensors are preferable to be used since they have no electrical contact in the sensor portion and transmission line. Most hydrogen sensors based on the optical fiber have employed palladium (Pd) thin film because of the selective absorption of hydrogen. We have proposed hetero-core structured optical fibers, which consisted of a single mode fiber inserted into a multimode transmission ber, as a hydrogen sensor with Pd materials. The hetero-core optical hydrogen sensor could detect the change in dielectric function of Pd based on the optical loss change in the near-infrared region. Our previous works attempted to use Pd nano-particles (PdNP) because the PdNP could be a useful candidate to achieve a trade-off between the response time and sensitivity, with the life time of operation to be more improved for practical application level. This study has shown the storage effect of PdNP sensors on the life time by means of evaluating the response time and sensitivity of the PdNP sensors for 4 % hydrogen gas every two weeks. The sensors were stored in moist or dry and room-temperature or low-temperature air with resulting in an aging effect of the proposed Pd based hydrogen hetero-core optical fiber sensor. It has been found that dry and low-temperature air environments less than 20 % and 0 deg. shows to suppress the deterioration of PdNP.



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***TRACK B***

***MEDICAL, MEDICINE & HEALTH SCIENCES***

## **Establishment of the Shariah Framework for the Application of Somatic Gene Therapy in Human**

<sup>1\*</sup>Zakiah Samori, <sup>2</sup>Fadilah Abd Rahman

<sup>1,2</sup>Universiti Teknologi MARA, Shah Alam, Selangor Malaysia

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**Keywords:** Somatic Gene Therapy, Shariah Framework, Islamic Principles.

Human gene therapy is best known as a transfer of nucleic acids to either the somatic cells or germ cells of an individual. It introduces genetic materials which have therapeutic purpose ranging from inherited genetic disorders to certain malignancies and infectious diseases. This medical scientific breakthrough has received lucrative demand worldwide as it offers potential treatment to cure genetic diseases in human at the molecular level. Since then, thousands of people have already participated in the trials thus it is likely to be part of medical practice in the future. This model of Shariah Framework would serve as the ethical basis for the application of somatic gene therapy in Malaysia and beyond (particularly Muslim countries) especially for Muslim doctors, scientists and Muslims at large. Consideration of the position of Somatic Gene Therapy from the Shariah perspective is undeniably crucial in any attempt to regulate Somatic Gene Therapy in any Muslim countries in the future.

## ***UP COMING EVENTS***

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

<http://irnest.org/upcoming-conferences/>



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# VISION

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