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2nd International Conference on Sustainable Engineering Techniques (ICSET 2019)

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The 2nd International Conference on Sustainable Engineering Techniques (ICSET2019)



Baghdad, Iraq, March 6-7th, 2019

Organizers:



Middle Technical University



and Insitutie of Technology

Supported by

Ministry of Higher Education & Scientific Research, Iraq





Professor Majid Hameed Majeed
The Middle Technical University Chancellor

Preface

The **ICSET2019** is the 2nd International Conference on Sustainable Engineering Techniques took place in Baghdad, on March 6-7th, 2019 at the Middle Technical University, Institute of Technology- Baghdad (Iraq Republic). **ICSET** present a platform to support the futurity research and deliver a forum for a discussion of the latest findings, innovation of new Techniques and their implementations into different fields of Mechanical and materials, Civil, Architectural, environmental; Chemical and Petroleum; Electrical; Electronic, and Information Technologies engineering techniques.

ICSET 2019 fulfilled its primary objective to provide an international platform for academics, researchers, engineers, and industrial pioneers share their findings with experts, gather the scientific research efforts and the sustainability techniques to conserve the natural resources for future generations to enhance life and stimulate new ideas in the research area of sustainability. The conference program covered presentations, oral, and video conference presentations with more than 383 active contributors.

Finally, a sincere thanks to the **Ministry of Higher Education & Scientific Research (Iraq)**, which provide extraordinary support represented by the rich social program started with an outstanding set up an opening ceremony of the conference. We would also like to extend our thanks to all authors for their precious research papers and presentations. All reviewers are also thanked for their professional assistance in reviewing. Thanks are finally given to IOP Publication as well for producing this volume.



Professor Kareem Hassan Alwan
Organizing Committee Chairman, March 8, 2019

Editorial Preface

This proceeding contains rare scientific selected manuscripts submitted to the conference from students and researchers who are interested in sustainability, academic society's researchers, training institutes, enterprises and companies, and academia from numerous universities and research institutions, as well as professional associations and other related organization in the field of sustainable engineering area. We received over 508 abstract submissions from both local, regional and international universities.

The Scientific Committee worked hard to ensure that all submissions were checked and reviewed before the deadline. A strict peer review by two to three referees, chosen according to their scientific specialization. The participant accepted papers of two hundred and twenty-four selected according to the paper quality and the rapport to the conference topic. All accepted papers published in this edition of **ICSET** revised and approved by the scientific committee.

ICSET 2019 features unique mixed topics of Sustainable Engineering; we expect that our conference does not only demonstrate the contributors an overview of the modern research results on related fields but promote a significant platform for academic exchange. The keynote speakers were **Prof. Dr. Abdul Hadi N. Kalifa** from Engineering Technical College (presently "The prospects of using solar energy in Middle Technical University") and **Dr. Ali Yasir Jaber**. In total there are 72 invited sessions. The invited session chairmen are an expert in their research fields.

Our deepest gratitude to all the members of the Scientific Committee and organizers for their efforts, and proficiency. Sincere thanks to reviewers, authors, participants and supporting staff for the effort and diligent pursuit work they have generously given to ICSET2019.

*Asst. Prof. Mohamed Aboud Kadim, Asst.Prof. Baydaa Maula, Dr. Musaab Kadem Rashed
Institute of Technology – Middle Technical University
On behalf of ICSET 2019 Organizing & Scientific Committee*

Conference Photograph



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Scientific, Organizing, and Coordination

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Invited speakers

Dr. Wadhah Amer Hatem (Asst. Prof. Civil Engineering)

Prof. Dr. Abdul Hadi N. Kalifa

Dr. Ali Yasir Jaber

Middle Technical University