

Preface

The 3rd International Conference on Advanced Engineering and Technology (ICAET 2016) was held in Incheon, South Korea, December 16-18, 2016. This conference was sponsored by Incheon Disaster Prevention Research Center (IDPRC) in INU. The ICAET 2016 is an annual international conference aimed at presenting current research being carried out in the fields of materials, structures and mechanical engineering. The idea of the conference was for the scientists, scholars, engineers and students from universities, research institutes and industries all around the world to present on-going research activities. This allows for the free exchange of ideas and challenges among the conference participants and encourages future collaboration between members of these groups. The goal of the conference was also foster cooperation among organizations and researchers involved in the merging fields and will provide in-depth technical presentations with abundant opportunities for individual discussions with the presenters.

The book is a collection of accepted papers. All these accepted papers were subjected to strict peer-reviewing by 2-3 experts referees including preliminary review process conducted by conference editors and committee members before there publication by Trans Tech Publication. The committee of ICAET 2016 should show our sincere thanks to all authors for their high-quality research papers and careful presentations. All reviewers should be also thanked for their careful comments and advices.

Thanks are all finally given to Trans Tech Publication as well for producing this volume.

The Organizing Committee of ICAET 2016

Committee Chair Prof. J.W. Hu, Incheon National University, South Korea

Committee

Organizer

Prof. Jong Wan Hu	Head of Incheon Disaster Prevention Research Center Department of Civil and Environmental Engineering Incheon National University
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Sponsors

Incheon Disaster Prevention Research Center
(IDPRC)



Recently, various efforts to prevent and prepare are vitally needed for prevention of Disasters and calamities. So we understand the necessity for technology of disaster and we built up the Incheon Disaster Prevention Research Center (IDPRC) in Incheon National University (INU) in 1997.

Accordingly Incheon Disaster Prevention Research Center (IDPRC) in Incheon National University has progressed of research on the prevention of disasters and calamities through the various seminars, conference and lectures. These research could be conducted cooperation with Incheon National University (INU) in various fields structure, soil, hydraulic and environment.

Incheon Disaster Prevention Research Center (IDPRC) will try to be a leader in the disaster of industry through the various research activities and global conference.

Incheon National University



Incheon National University established a global campus by integrating two city council funded colleges into one in March 2010 and became a national university operated by the legal entity. With the start of attracting the branch of Lawrence Berkeley Research Center that is a world famous US national policy research center for education and research, Incheon National University will attract St. Petersburg University in Russia, Polymers University in Britain, and Kent University in Belgium and other foreign universities and research centers. These efforts will make INU spring to a world-wide competitive university.

As a local development leading university, Incheon National University established INU VISON 2020 and improved its competition actively through investment in selection and concentration. In compliance with the geographic feature and areal specialty, it will concentrate on the international trade, goods distribution, applied technology convergence, BNT-based life science, urban science and the sinology- based local humanity fields.