## **Preface**

The 2021 5th International Symposium on Advanced Material Research (5th ISAMR 2021) was taken place in Jeju Island, South Korea, during June 19-21, 2021.

The objective of ISAMR 2021 was to bring together scientists, engineers, postgraduates, and other professionals in the area of material science and engineering technology from all over the world. Symposium provided a high-standard international forum the presentation, and discussions recent advances in materials engineering, novel and practical research techniques of materials properties.

We want to thank the program chairs, organization staff, and the program committee members for their work. Thanks also go to all those who have contributed to the success of ISAMR 2021. We hope that all participants and other interested readers benefit scientifically from these proceedings and find them stimulating.

The Organizing Committee of ISAMR 2021

Prof. Dongkeon Kim

Committee Chair

Dong-A University

National Research Center for Disaster-free and Safe Ocean City Construction

## **Committee**

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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. This 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.