



Abstract #1730

English

ISERI ISRU Construction Technology

Planetary construction requires additive construction technologies which are a game changer for the manned exploration of the Moon and Mars. The technology to build a 3D printed habitat on the Moon or Mars is very challenging as it varies differently from terrestrial construction technologies which have been developed with thousands of years of experience. The challenges include 1) using indigenous/recyclable materials and no water, 2) creating an informal structural design, 3) engineering materials/structures to protect humans from the harsh environment, 4) operating a construction system in a space environment, and 5) automating the entire process. Additive construction technologies require civil engineers and architects who can think in new ways, facilitate a convergence between multiple disciplinary fields, and bring an understanding of not only human exploration but also In-situ Resource Utilization (ISRU). International Space Exploration Research Institute (ISERI) has been working on ISRU construction technologies for the Moon & Mars, and 3D Printing technologies for construction for more than several years. This presentation will introduce our recent achievements on extruding polymer concrete which is a mixture of our Lunar regolith simulant KOHLS-1 and polymer binder. And also other ISRU construction technologies that are under development.

French

No abstract title in French

No French resume

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Biography submitted with the abstract

Tai Sik Lee currently serves as the President of the Korea Institute of Civil Engineering and Building Technology (KICT), a government-sponsored research institute responsible for establishing government policies and performing R&D for construction industry. He has also served as professor of the Civil and Environmental Engineering Department at Hanyang University since 1994. As a researcher, he was one of the pioneers who majored in construction management and introduced this new field to Korea's engineering society and construction industry. He has served for the president of numerous organizations such as the Korean Society of Civil Engineers (KSCE), as well as serving as a member of the National Academy of Engineering of Korea (NAEK). He received his B.S. degree in Civil Engineering from Seoul National University in Korea and continued on to receive both his M.S. and Ph.D. in Construction Management at the University of Wisconsin-Madison in the U.S.A.

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