



SIERA Group 2020 Seminar Series – Seminar No. 23

Wednesday, September 23, 2020 @ 5:30pm PST

IC-IMPACTS Invited Speaker

Additive Manufacturing of Sustainable Cement Based Composite Materials



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Dr. Biranchi Panda is an Assistant Professor at Indian Institute of Technology (IIT) Guwahati, India. Before joining IIT, Dr. Panda was a Research Associate in Singapore centre for 3D printing (SC3DP) and obtained his Ph.D. in “3D concrete printing” from Nanyang Technological University (NTU), Singapore. Dr. Panda’s research focuses on sustainable multifunctional composites and lies at the intersection of advanced manufacturing, materials science, and multi-scale, multi physics modelling. Examples of his current projects include additively manufactured smart composites, digital construction and ceramic additive manufacturing.

Abstract: Concrete is worldwide used as one of the major construction materials, both in situ and prefabricated. It is cheap, fire resistant and durable. However, the costs of a typical concrete structures consist for about 50% on the formwork needed. Besides, the cement production is responsible for a serious part of the exhaust of greenhouse gasses worldwide. Printing of concrete structures potentially could save on the costs, improves productivity and could above all seriously limit the environmental impact by using less material. This talk will discuss about material design of sustainable cementitious composites amenable for 3D printing application. The design of these materials is accompanied by material characterization of cementitious binders which include rheology and early age green strength development. Finally, the talk will touch on the future outlook and the current trends of this new and the exciting field.

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