

Titles of Symposium Lectures

## **CLIMATE RELATED PERFORMANCE OF CONCRETE IN TROPICAL CONDITIONS**

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*Abstract*

Concrete the most versatile construction material exhibiting mould-ability in the range of zero slump concrete to self-compacting concrete, strength ranging from 5 MPa for mass concrete to 200MPa grade reactive powder concrete and maintenance service life for reasonably long period. Concrete construction technology for building construction has exhibited remarkable progress both in Off Site Manufacturing (OSM) and On Site Construction (OSC). 3-D modular Construction and 3-D printed concrete exemplify such advancement. Besides, tunnel form, MIVAN form and precast 2-D planner elements have gained significant popularity for faster mass construction of building. One common aspect for all these construction is use of concrete in internal walls and envelope as well. Hence these elements are multi-functional demanding need for integrating structural performance together with functional performance such as thermal and noise insulation, fire resistance requirements, etc. Thus while additional insulating material cladding may find its use, knowledge of thermal properties of structural concrete becomes a necessity. In this article first method for estimation of thermal properties concrete from the information of ingredients characteristics and mix proportion, based on a previously proposed model is discussed in the context of thermal performance of envelope in tropical climate.

The precipitation pattern and wetting and drying of exposed concrete in tropical climate dictates the maintenance free service life of such exposed envelope. Thus the second part of this article relates to wetting and drying of exposed concrete and its role on service life. Relevance of microstructure of concrete with reference to ingredients and mix proportions is thus high lighted.