ZERO-MAINTENANCE, SELF-HEALING AND HIGH SUSTAINABLE CONCRETE AND ITS APPLICATION IN INFRASTRUCTURE PROJECTS

SYNOPSIS

Engineered Cementitious Composites (ECC) is also well-known as bendable concrete, ductile concrete, high performance fibre-reinforced cementitious composites (HPFRCC) and strain-hardening cementitious composites (SHCC).

It is characterized by the ability to sustain higher level of loading after first cracking while undergoing large deformation which is known as strain-hardening behavior.

Generally, ECC exhibits tensile strain-hardening behavior with strain capacities between 3% and 10%, which is hundred times stronger than concrete while maintaining the same compressive strength. However, the fiber content of ECC is typically 2% by volume or less.

ECC is designed using a well-defined toolbox of micromechanical models to achieve tensile ductility. As ECCs become more advanced, their benefits are being discovered continuously including zero-maintenance, self-healing and self-damage sensing.

The properties of the structure are therefore designed to meet target structural performance levels, to fulfil requirements beyond structural capacity, and to be sustainable in their social, economic, and environmental dimensions.

As the material continues to evolve, more practice is expected to lead to improved durability and sustainability.

Organised by: C&S TC, Transportation Division

ABOUT THE SPEAEKER

Dr. Li Junxia is a Scientist in Institute of Materials Research and Engineering, A*STAR, Singapore. Prior to joining A*STAR, she was a Postdoctoral Research Fellow in Nanyang Technological University (NTU), Singapore.

She graduated from Doctor of Philosophy from Interdisciplinary Graduate School (IGS) of NTU and Bachelor of Master's degrees in Structural Engineering from Chongqing University, China.

Dr. Li's principal research area involves reinforced concrete, strain hardening cementitious composites (SHCCs), geopolymers, recyclable and green materials, multifunctional materials, and modelling of construction materials.

Date: 9 Oct 2021, Saturday

Time: 10am to 12pm

Fees: $20 (IES Members) / $40 (Non Members)
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