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Concrete curing process monitoring using intensity-based plastic optical fiber sensor

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Plastic Optical Fiber (POF) sensor has emerged as a potential sensing tool for structural health monitoring. The POF sensor provides a new alternative for monitoring the concrete curing processing since the conventional monitoring techniques have many limitations. This paper briefly presents a sensor fabricating process using a carving machine in order to produce grooves in the POF as sensing elements and also presents a new monitoring technique of concrete curing process based on intensity-based POF sensor. The aim of this technique is to monitor the water presence through the scattering of the propagated signal because the concrete curing is accompanied by water evaporation. In this technique, the POF with grooves was embedded in the concrete. By monitoring the intensity of the transmitted light signal, the cement setting rate along all the curing period can be determined. The experimental results verify the practicality of the POF sensing technique for monitoring the concrete curing process. The proposed POF sensor-based monitoring method has the potential to be applied in curing monitoring of concrete structures at early ages.

Biography

Dong Yang has completed his PhD at the age of 30 years from Central South University and postdoctoral studies from National University of Singapore School of Engineering. He is Associate Professor in the Hefei University of Technology now. He has published more than 10 papers in reputed journals. Technology. She has published more than 8 papers in reputed journals and has been serving as the reviewer of several journals.

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