HETERO CORE FIBER SENSOR

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ABSTRACT

Hetero core fiber sensor is the sensor characterized by a short-length, different core-size fiber insertion in a fiber as a transmission network line. The fiber that we used in this research is single mode fiber which is 9-5-9 type. The 9-5-9 type utilizes a single mode fiber whose core diameter is 9μm as the transmission line in which the hetero-core portion of 5μm core diameter is inserted. Since the core diameter of 5μm at the hetero-core portion could be large enough to support single mode propagation, most of power can pass through this hetero-core region with a relatively small loss. Single mode beam in the transmission fiber will partially leaks into a cladding at an interface boundary between the transmission fiber and the hetero-core part. In this research we designed and simulate the hetero-core sensor by using computer software. We use CAMFR, MathCad and BEAMPROP software. Simulation of hetero core fiber is to investigate the value of reflection and transmission coefficient in straight and bend of hetero core fiber sensor. Then based on the transmission and reflection coefficient value, we can determine the characteristic of the hetero core fiber sensor. We can apply hetero core fiber sensor for door sensor and detect the landslide.