

ABSTRAK

Nama : Desnia Lestari
Program Studi : Fisika
Judul : “Studi Penggunaan *Fiber Bragg Grating* Sebagai Sensor
Tsunami”

Telah dilakukan penelitian mengenai sistem sensor deteksi *tsunami* dengan pengujian pengaruh tekanan terhadap panjang gelombang pada sensor serat optik berbasis *Fiber Bragg Grating*. Penelitian ini menggunakan serat optik jenis *single mode* dan *Optical Spectrum Analyzer* YOKOGAWA tipe AQ 6370. Pengujian dilakukan menggunakan 2 sensor dengan bahan PVC dan variasi ukuran ketebalan dinding sensor A sebesar 1 cm dan ketebalan dinding sensor B sebesar 1,5 cm. Dari hasil pengujian diperoleh perubahan panjang gelombang yang linear. Sensor A dengan gradien perubahan panjang gelombang $y = 0,0009$ menunjukkan tingkat sensitivitas pada sensor A lebih besar dibanding sensor B dengan gradien $y = 0,0006$. Ketinggian air yang dapat diukur oleh sensor FBG pada pengujian ini yaitu 119,69 – 122,96 meter.

Kata kunci: Sensor *tsunami*, sensor tekanan serat optik, *Fiber Bragg Grating*, *Optical Spectrum Analyzer*.

ABSTRACT

Name : Desnia Lestari
Study Program : Physics
Title : “*Study of the Use of Fiber Bragg Grating as a Tsunami Sensor*”

Research has been conducted on the tsunami detection sensor system by testing the effect of pressure on wavelengths on Fiber Bragg Grating based optical fiber sensors. This study uses a single mode optical fiber and Optical Spectrum Analyzer YOKOGAWA type AQ 6370. The test was carried out using 2 sensors with PVC material and variations in the size of the wall thickness of sensor A was 1 cm and the thickness of the sensor wall B was 1.5 cm. From the results of the test it is obtained that changes in the wavelength are linear. Sensor A with a gradient of change in wavelength $y = 0,0009$ indicates that the sensitivity level of sensor A is greater than sensor B with a gradient of $y = 0,0006$. The water level that can be measured by the FBG sensor in this test is 119.69 - 122.96 meters.

Keywords: *Tsunami sensor, optical fiber pressure sensor, Fiber Bragg Grating, Optical Spectrum Analyzer.*