Ayu Candra Binarti 2011, **Application of Multimode Fiber Coupler as a Temperature Sensor System Using Steel Probe**. This Thesis under the guidance of Samian, S.Si., M. Si and Supadi, S.Si., Department of Physics FSAINTEK Airlangga University Surabaya.

ABSTRACT

The research with title multimode fiber coupler as a temperature sensor system using steel as a probe has conducted. The purpose of this research is to know the characteristics of these sensors. The principle of temperature sensor according to metal expansion and displacement sensor. Metals with a diameter of 3mm, 4mm and 5 mm, whose tip was given the mirror will expand when heated. The change intensity of laser light is transmitted by the sensing port and will be reflected by a mirror. It will be detected by the sensing port of the optical detector output voltage changes. The results show that the characteristics of temperature sensors for metals with a diameter of 3mm, 4mm, 5mm is a resolution of 2 ° C, respectively outreach 20-224 ° C, 20 ° C - 210 ° C, 18 ° C - 202 ° C, the linear each 52 ° C - 212 ° C, 60 ° C - 210 ° C, 80 ° C - 180 ° C, the sensitivity of each sensor is 0.005 V /, 0.004 V /, 0.005 V / ° C, and response time respectively 2,5 S/° C, 3,9 S/° C, 6,7S/° C. The results of this research indicate multimode fiber coupler with a steel probe can be used as a temperature sensor system with sensors outreach value large enough and has a value sensirivitas yamg stable for different diameters, a simple working principle, and tuneable

Key word: fiber optic, multimode fiber coupler, characteristic censor, steel.