

UNIVERSITI TEKNOLOGI MARA

**AN INVESTIGATION OF ELECTRON MOBILITY IN
LEUCAENA LEUCOCEPHALA WOOD PLASTIC
COMPOSITE FOR THZ PHOTOCONDUCTIVE
ANTENNA RADIATION ENHANCEMENT**

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MSc

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ABSTRACT

Photoconductive antenna (PCA) is promising devices that are most frequently used in Terahertz (THz) generation and detection system. However, THz PCA has limitation due to low output power (μW) and inefficient sources. Substrate material is one of parameters considered to enhance the THz output power radiation of PCA. This paper is aimed to investigate the electron mobility in *Leucaena Leucocephala* (Local Malaysian name *Petai Belalang*) Wood Plastic Composite for THz PCA radiation enhancement using Hall-effect measurement system (ECOPIA HMS-3000) equipment by 300 Kelvin room temperature with variance input currents. Data gathered by this material is compared with material made of 100% polypropylene polymer relatively with the same data input and supported by the literature research results. Simulation graph is used to analyze suitability material sample for THz frequency range while ANOVA hypothesis is used to determine consistency amongst the samples.

Keywords: Terahertz (THz), photoconductive antenna (PCA), *Leucaena Leucocephala* Wood Plastic Composite (WPC), Hall-effect measurement, ANOVA hypothesis.

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