Jakgrit Nuchyoo 2012: Analysis Wood Type using Fluorescence Spectra. Master of Science (Physics), Major Field: Physics, Department of Physics. Thesis Advisor: Mr. Apichart Pattanaporkratana, Ph.D. 58 pages.

Nowadays, wood is very important in furniture industries. Different wood types are used for different purposes based on their hardness and natural durability. The hardness of woods is identified by a static bending, and their natural durability depends on wood types and life time of the woods. Identification of wood types is usually done by experienced personnel. This research aims to study fluorescence spectra of woods for their identification. We use a 532-nm green laser and a 395-nm light emitting diode (LED) to test our wood samples. The scattered fluorescence is collected to a spectrometer. The resulting fluorescent spectra show characteristics which depend on wood type and the exciting light. The spectra of the same wood type are varied in intensity but the peak wavelengths are the same. Principle Component Analysis (PCA) shows that 15-year-old and 30-year-old teaks with brown color can be separated from other soft woods such as durian wood or Persia wood. However, young teak samples with white color, collected from live teak trees at Kasetsart University, cannot be differentiated from the soft woods.

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