

DESIGN AND CONSTRUCTION OF A LOW-COST RAMAN MICROSCOPE FOR IDENTIFICATION OF CHEMICAL COMPOUNDS

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The design, construction and operation of a low-cost Raman microscope is presented. The apparatus can be configured to function in both backscattering and transmission modes with minimal effort. A laser excitation source with a 35 mW power output and 633 nm wavelength was used while an Ocean Optics QE65Pro spectrometer was used as the detector. The functionality of the instrument is illustrated using solid samples of paracetamol and naphthalene and liquid samples of toluene and acetone.

Four different brands of commercially available paracetamol were compared using their Raman spectral fingerprint. Results were compared with reference values and found to be in good agreement with accepted spectra. The modular system provides an affordable approach for the identification of a range of unknown compounds.

Keywords: Microscope, Low-cost, Chemical compounds