

Phofluorescence lifetime measurement by single photon counting.

Aweda, Moses Adebayo

M.Sc. Physics

Department of Physics

Obafemi Awolowo University, Ile Ife, Nigeria

1985.

Abstract:

A fluorescence lifetime measuring instrument in the nanosecond time range has been assembled using components from the ORTEC, EMI, TEKTRONIX, BRANDENBURG AND CAMBERRA. The fluorescence emission spectra of two aromatic hydro-carbons (naphthalene and pyrene) were measured for identification and proper classification.

The lifetime measuring instrument was calibrated and tested with 1µg/ml solution of quinine sulphate in 0.05M sulphuric acid. A value of 21.50 ns was obtained for the fluorescence lifetime of quinine sulphate. The fluorescence lifetimes of naphthalene and pyrene were then determined with this system using four different concentration of each sample. A vacuum system was also constructed for removing the dissolved oxygen in these aromatic hydrocarbons. After degassing the measurement was repeated for each sample. The monomer fluorescence lifetime of 437.50 ns was obtained for naphthalene while 577.02 ns was obtained for pyrene.

Keywords: Hydrocarbon/ naphthalene/ oxygen/ monomer fluorescence/ nanosecond/ calibration/ pyrene

Supervisor: J.B. Aladekomo

For more information, please contact **ir-help@oauife.edu.ng**