Inherent Photoluminescence Properties of Poly(Propyl Ether Imine) Dendrimers

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Supplementary Information

Methods: Absorption and fluorescence spectra were recorded using quartz cell with a path length of 1 cm. Absorption spectra were recorded on a Perkin-Elmer lambda 35 spectrophotometer at a scan rate of 120 nm/ min and a width of 2 nm. The absorption data were blank corrected with absorption of the solvent. Fluorescence spectra were recorded on a Shimadzu RF-540 spectrofluorophotometer. Distilled deionized water (Millipore filtration system) was used for the experiments. Fluorescence lifetime spectrophotometer (Model 5000 U, IBH, UK) with a Time Correlated Single Photon Counting technique (TCSPC) and microchannel plate photomultiplier tube (MCP-PMT) as detector was used to conduct the lifetime measurements. A picosecond laser was used as the excitation source. The excitation wavelength is 267 nm, which was produced by using third harmonic laser and the emission decay was monitored at the wavelength of 390 nm. Fluorescence quenching studies were performed using aqueous **G5** (0.1 mM) solution, titrated with a sample of the quenchers in water.

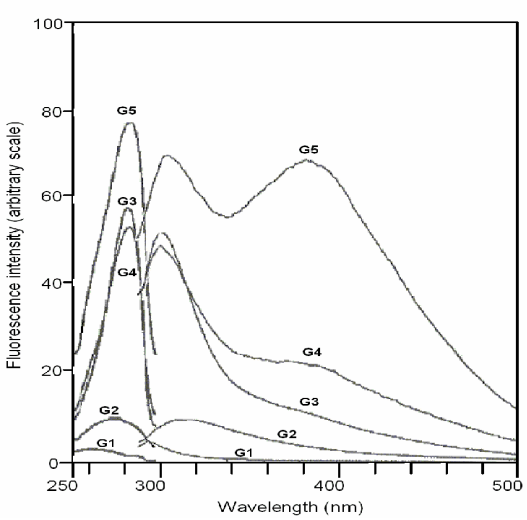

Figure 1. Emission and excitation spectra of methanolic solutions of PETIM dendrimer generations at λ_{ex} = 273 nm. [**G1**]-[**G3**] = 0.5 mM; [**G4**] = 0.25 mM; [**G5**] = 0.125 mM.

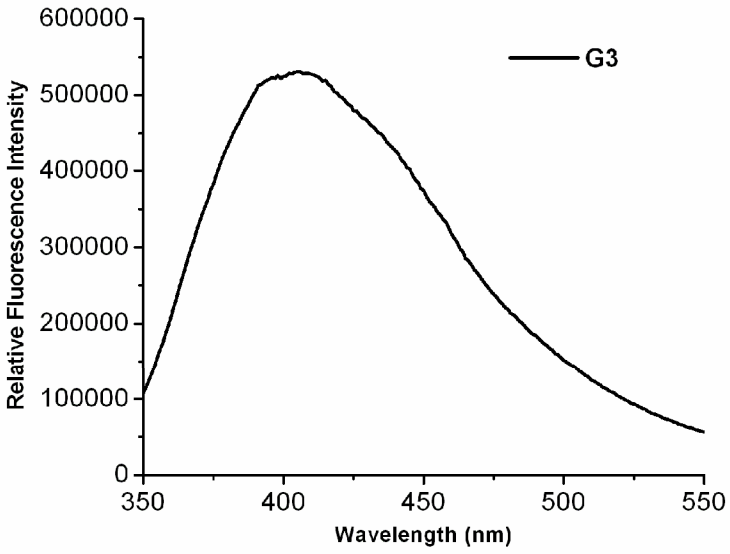

Figure 2. Thin film emission spectrum of **G3** (λ_{ex} = 330 nm).

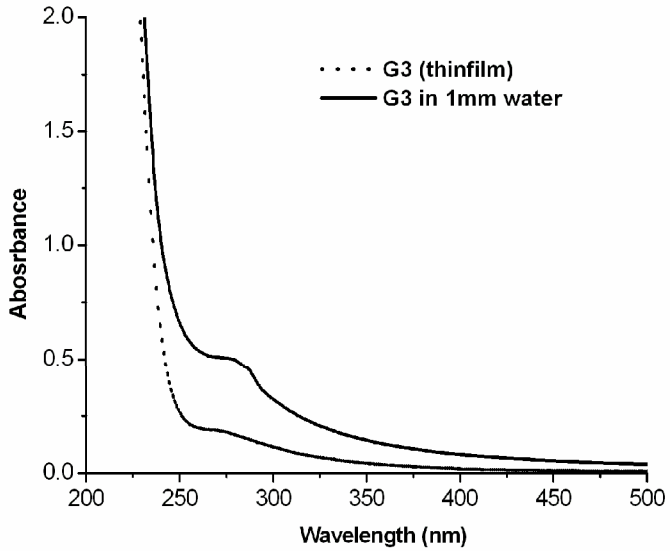

Figure 3. Thin film and solution absorption spectrum.

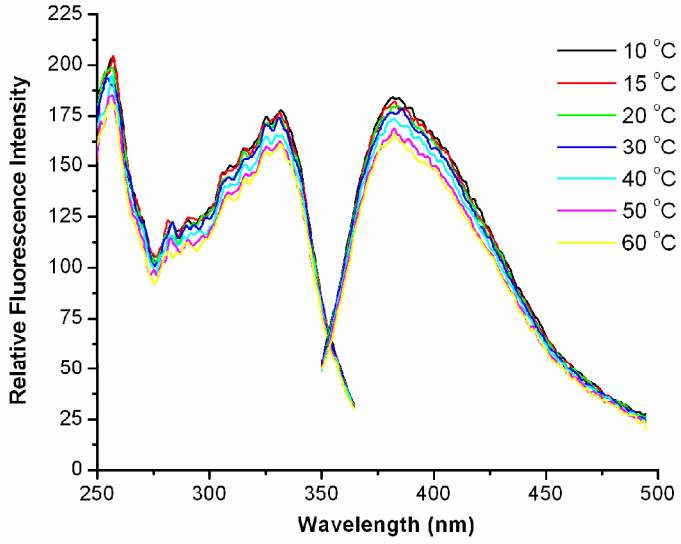

Figure 4. Variable temperature excitation and emission spectra of an aqueous solution of the **G4** dendrimer (0.5 mM).

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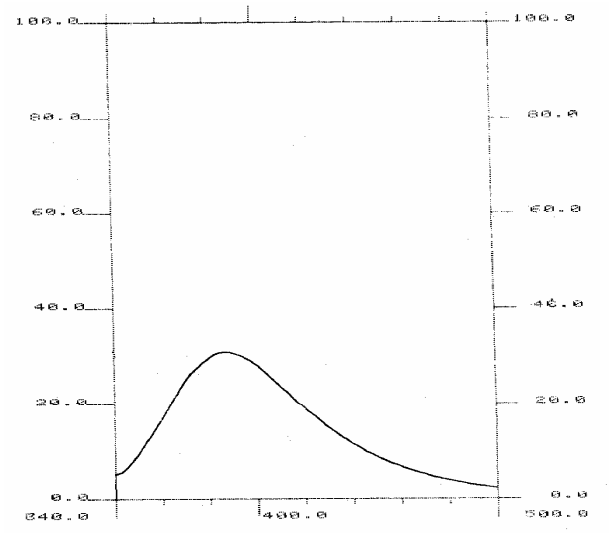

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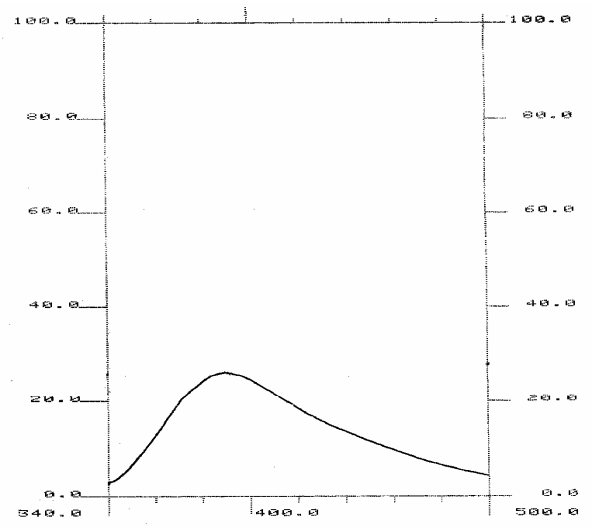

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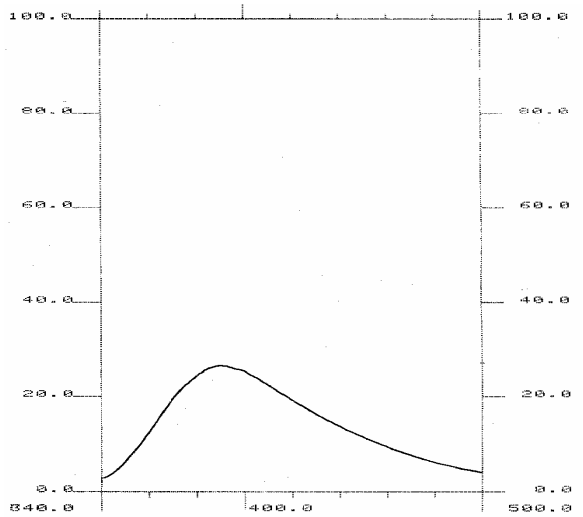

Relative fluorescence intensity *vs* number of days

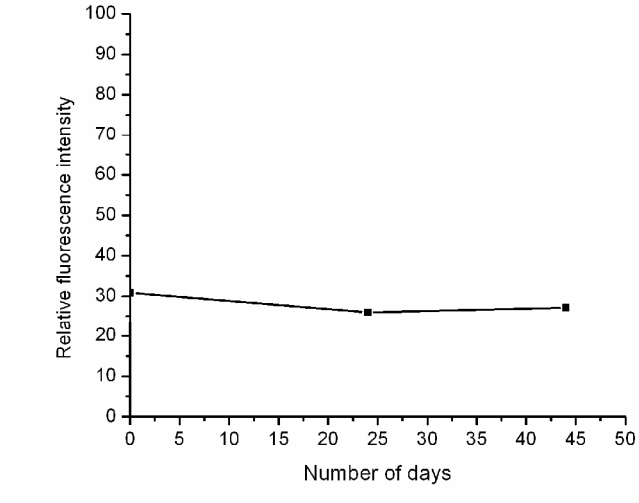

Figure 5. Emission spectra of an aqueous solution of **G4** dendrimer (0.7 mM), purged with nitrogen and kept at 50 ^{o}C, measured at different intervals.

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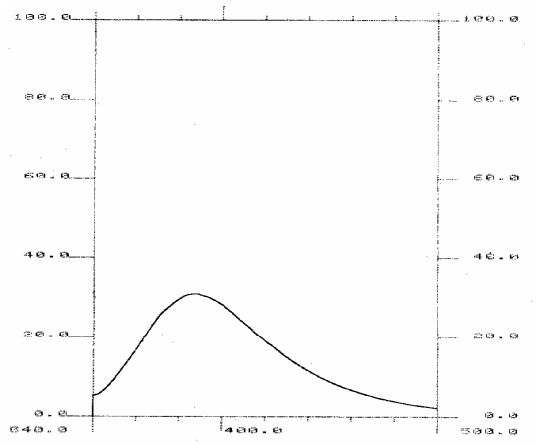

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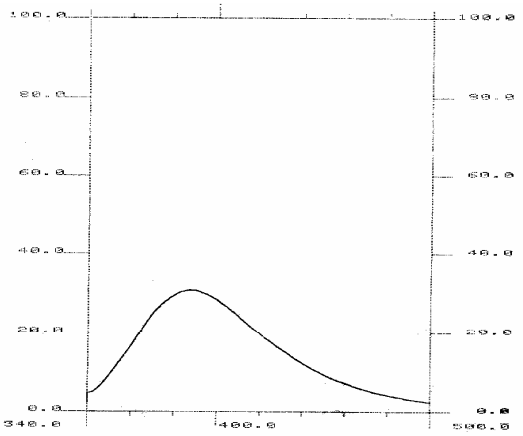

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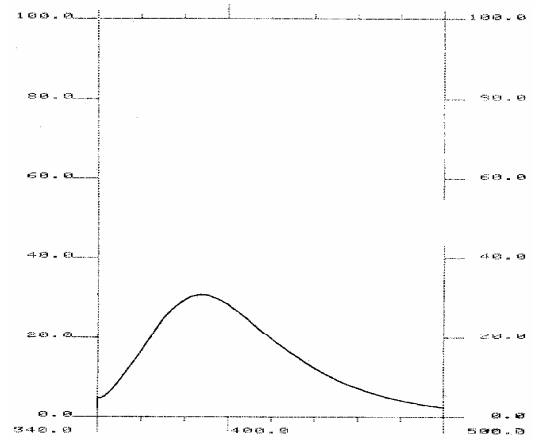

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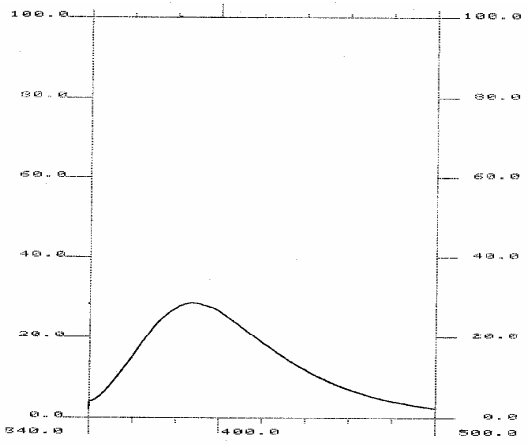

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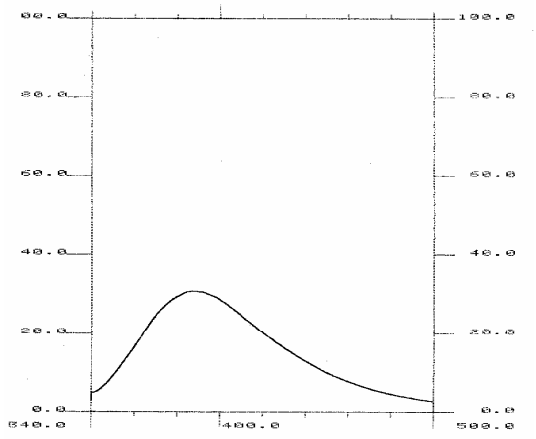

Relative fluorescence intensity *vs* number of days

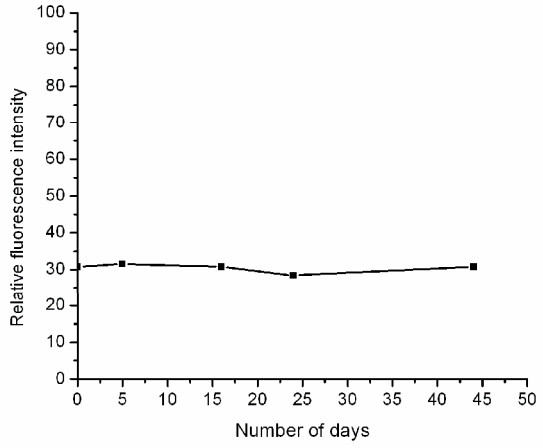

Figure 6. Emission spectra of an aqueous solution of **G4** dendrimer (0.7 mM), purged with air and kept at 0 ^{o}C, measured at different intervals.

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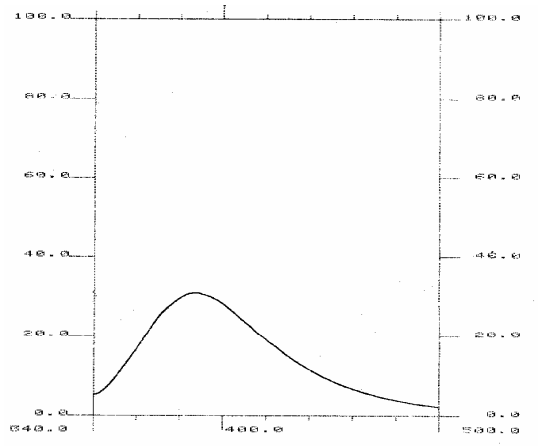

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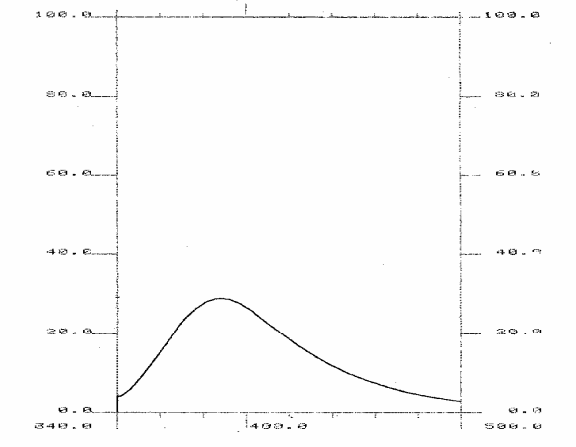

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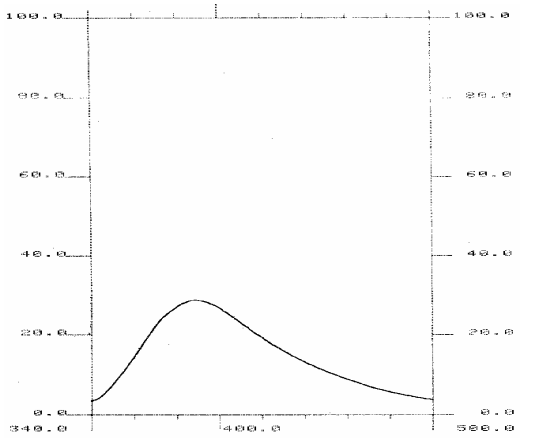

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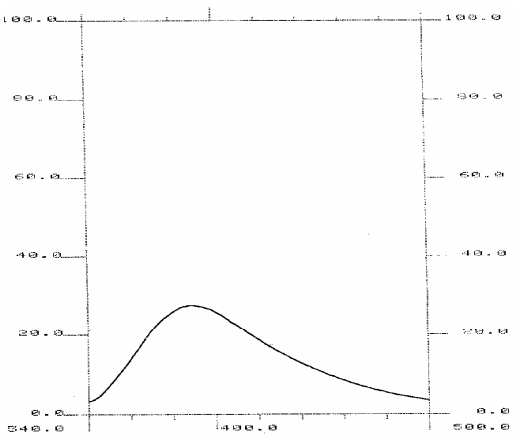

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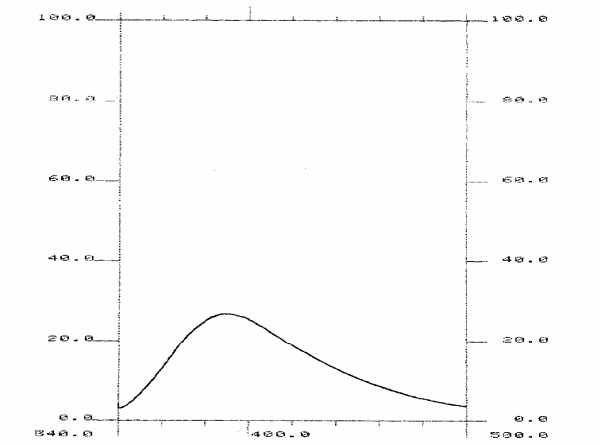

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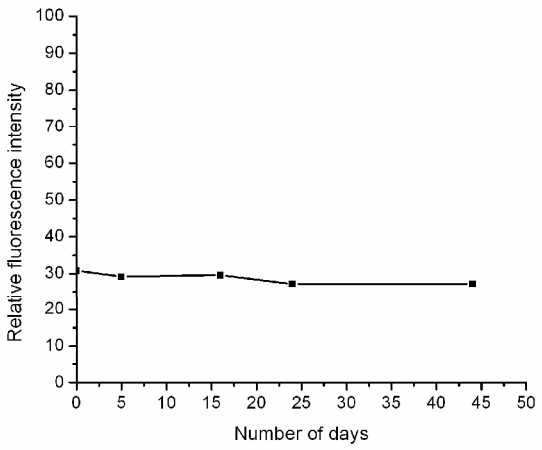

Figure 7. Emission spectra of an aqueous solution of **G4** dendrimer (0.7 mM), purged with air and kept at 50 ^{o}C, measured at different intervals.

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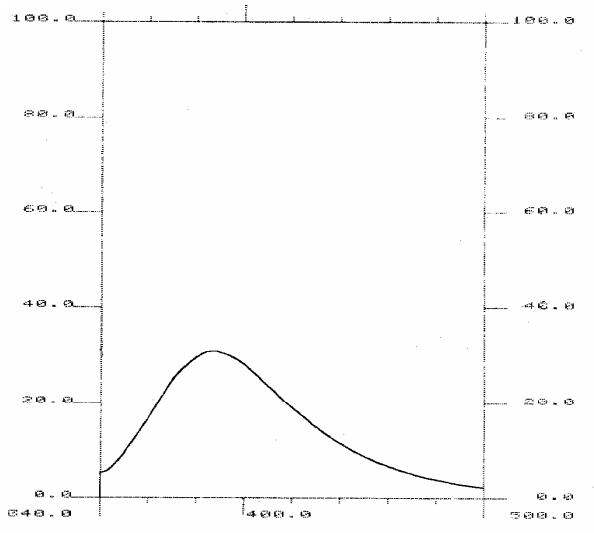

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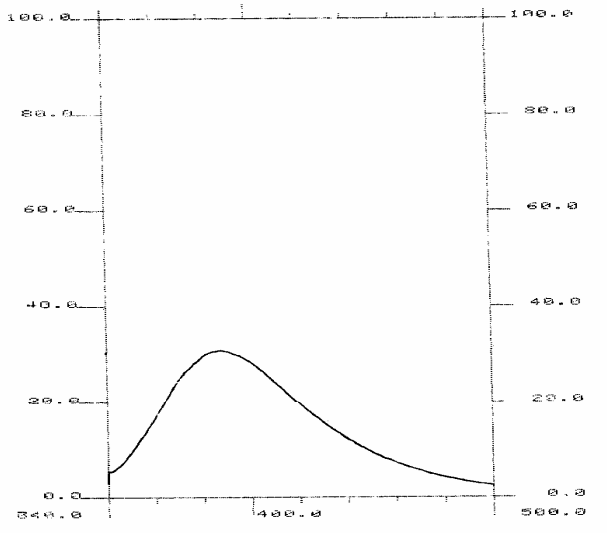

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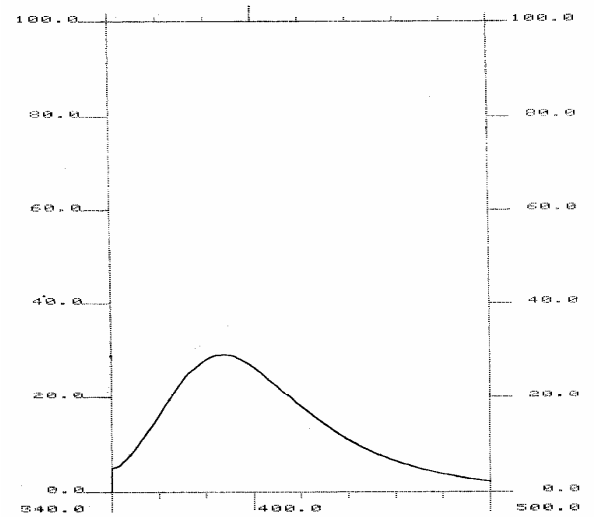

Relative fluorescence intensity *vs* number of days

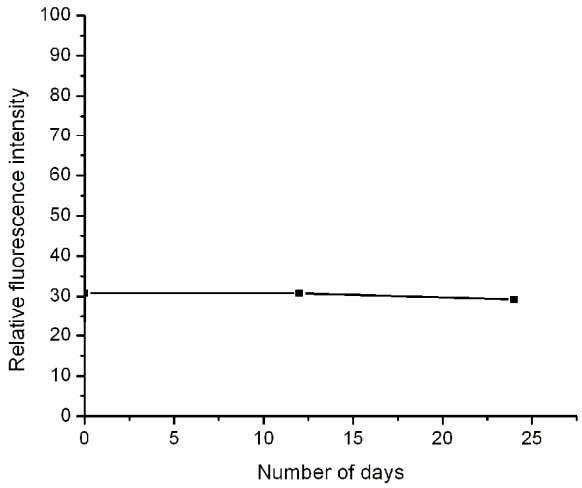

Figure 8. Emission spectra of an aqueous solution of **G4** dendrimer (0.7 mM), purged with air and kept at room temperature, measured at different intervals.

Lifetime Measurements

Fluorescence lifetime distributions for PETIM dendrimers excited at 330 nm, using a nanosecond flash lamp.

Sample	λ_{ex}	λ_{em}	T1(α1)	T2(α2)	T3(α3)
G4 H_2O	330 nm	390 nm	1.90 ns (0.37)	0.25 ns (0.17)	6.98 ns (0.45)

Fluorescence lifetime spectrophotometer (model 5000 F) with a Time Correlated Single Photon Counting technique (TCSPC) was used to conduct the life time measurements.