

Laser-induced fluorescence detection of a α -hydronaphthyl radical
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The atmospherically relevant radical has been the subject of numerous theoretical and experimental spectroscopic studies. This interest arises, in part, because of its importance in the chemistry of the upper atmosphere. In this view, α -hydronaphthyl radical was studied using laser-induced fluorescence (LIF) spectroscopy. The gas mixture of 1,4-dihydronaphthalene (or 1,2-dihydronaphthalene) and oxalyl chloride in helium was photolysed using 248 nm or 308 nm excimer laser. LIF signals were measured in the region of 490-550 nm. A broad band was observed near at 18950 cm^{-1} (18926 , 18940 , 18953 and 18966 cm^{-1}) (Figure 1). Further, Figure 1a and 1b, are essentially identical, which clearly indicates that the produced emitting species from 1,4-dihydronaphthalene and 1,2-dihydronaphthalene are same. We also studied the time profiles of the radical concentration. The experimental observations will be presented and discussed.

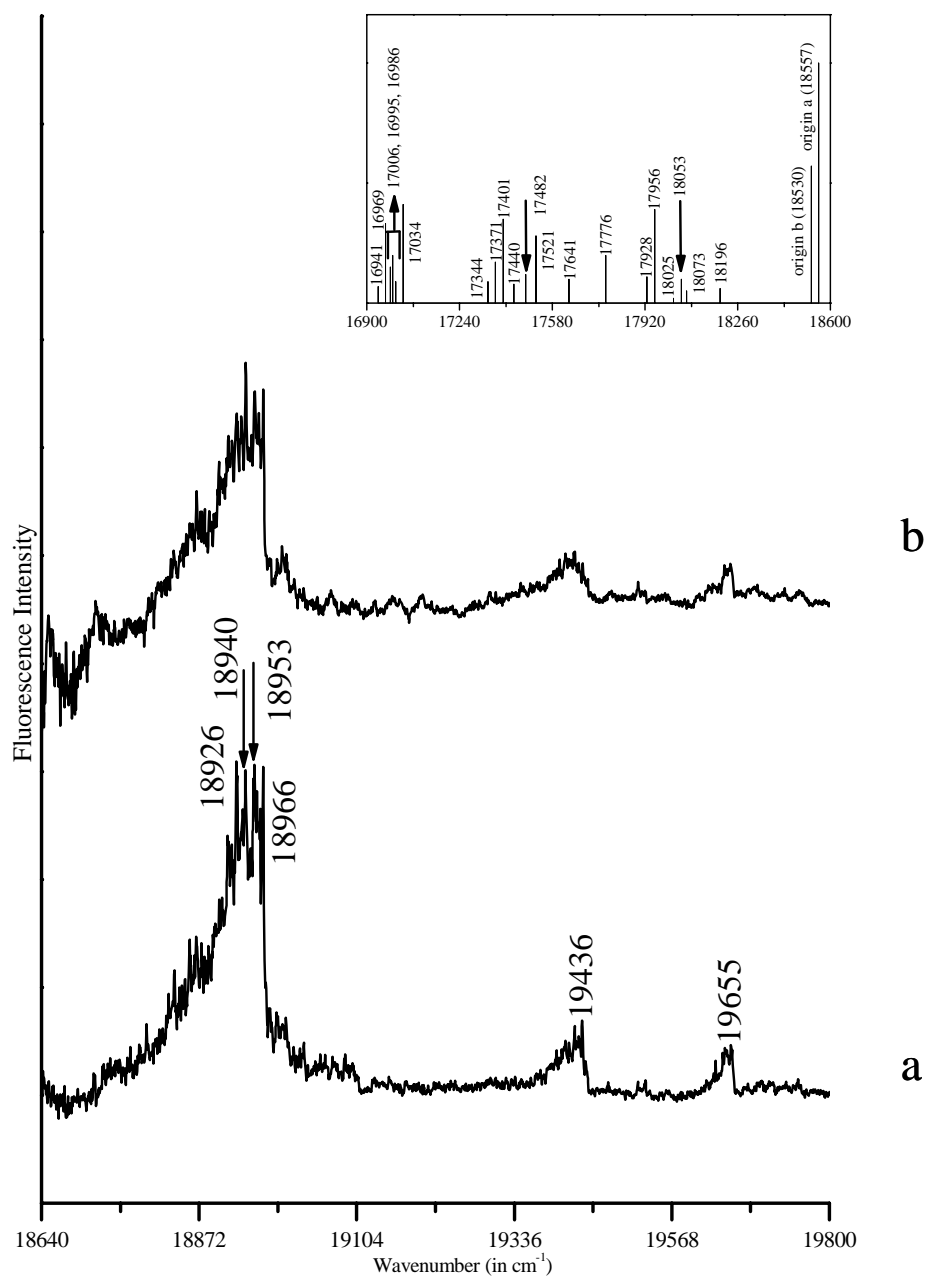


Figure 1. Laser-induced fluorescence excitation spectra observed when the mixture of (a) 1,4-dihydronaphthalene and oxalyl chloride and (b) 1,2-dihydronaphthalene and oxalyl chloride were photolysed at 308 nm. Insert figure shows the fluorescence stick spectrum of α -hydronaphthyl radical in a low-temperature naphthalene crystal (ref.1)

1. C. W. Jacobsen, H.-K. Hong and S. J. Seng J. Phys. Chem. 82, 1537, 1978.