Chemical Physics 2003 vol.287 N3, pages 377-389

# Time-resolved EPR study of radicals from 2,2-dimethox--2-phenylacetophenone in ethylene glycol after flash photolysis

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## Abstract

The dynamic behaviour of transient free radicals generated by laser pulse photolysis (with λ = 351 nm) of 2,2-dimethoxy-2-phenylacetophenone (DMPA) in ethylene glycol solutions have been studied by time-resolved EPR at room temperature. A main result of the study is a suitable evaluation method for radical systems with CIDEP in the case of very close hyperfine lines and hence with a overlap of several signals. The evaluation of single EPR time-profile signals requires in this case to take in account also the influence of the near resonance positions, what successfully has been done. The formation and decay of the two spin polarized radicals, 7,7-dimethoxy-benzyl (R1) and benzoyl radical (R2), has been observed. For R1 the relaxation time T2 was determined with a good accuracy and the rate constants k1 and k2 were estimated by fitting the time evolution of the EPR signal at resonance and near resonance positions of the field using the Bloch equations and direct Fourier transform analysis. Radicals from DMPA in the high viscous solvent ethylene glycol have been proved to be an excellent model system for this study however the treatment is applicable also for other systems. 

http://dx.doi.org/10.1016/S0301-0104(02)01025-X