Magnetic field effect in bulk recombination of radicals

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Magnetic field and spin effects in radical recombination reaction in a bulk of solvent are considered. The scale of the magnetic field effect and the influence of the hyperfine interactions as well as paramagnetic relaxation on its magnitude is estimated. The effect of ultrahigh magnetic field (UMF, tens of Tesla) on the recombination kinetics of short-lived radicals in the liquid phase is studied. The influence of the mechanism of equilibrium thermodynamic alignment of spins of the unpaired electrons of the radicals in UMF on the rate of spin-selective radical recombination is considered. The recombination rate constants are calculated by use of the theory of diffusion-controlled reactions in solution.

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