Reaction of hydroxyl radicals with ammonia in liquid water at elevated temperatures

The reaction of hydroxyl radical with ammonia in aqueous solutions has been studied by pulse radiolysis in the temperature range 20-200-degrees-C. The rate constant of the reaction was determined by monitoring the decay of the OH radical absorption at 260 nm for different concentrations of ammonia. At room temperature the rate constant is $\left(9.7 \pm 1\right) \times 10^7$ dm$^3$ mol$^{-1}$ s$^{-1}$. In the whole range of temperatures the rate constant follows Arrhenius law with an activation energy of $\left(5.7 \pm 1\right)$ kJ mol$^{-1}$. The protective effect of dissolved hydrogen on the radiolytic decomposition of ammonia is discussed.

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