Theoretical and experimental data on ion nuclear relaxation in liquids offer detailed information concerning molecular dynamics and structure of solvent [1-4]. Ions affect a medium they are dissolved in. Simple neutral particles, namely noble gas atoms, change the state of neighbouring molecules to a much less extent. Noble gas nuclear relaxation has been studied for liquid noble gases [5], for ordinary liquids only Xenon nuclear relaxation was studied [6-8]. This work presents the results obtained for the longitudinal relaxation time $T_1$ of $^{83}$Kr and $^{131}$Xe nuclei and chemical shifts of $^{83}$Kr and $^{129}$Xe nuclei in aqueous solutions. "Spectrally pure" xenon and krypton with natural content of isotope was used for all measurements. Liquids with gases dissolved were kept under pressure up to 35 atm for Xe and 10 atm for Kr in thickwalled quartz ampules, concentrations of Xe being ~0.1 M and Kr ~0.02 M. The measurements were made on Brucker WM-250 Spectrometer. Chemical shifts $\delta$ were determined relative to a signal in gas phase extrapolated to zero pressure. A positive $\delta$ value means the shift of a resonance to lower fields in comparison with a standard. The accuracy of measurements was 0.02 ppm for $\delta$ and 5% for $T_1$.

Ripmeester and Davidson [9] have shown that in clathrate hydrates Xe atoms occupy cages of two types: large ones (I) where distance from a cage center to a nearest water molecule oxygen atom equals $r_I(Xe - O) = 4.33$ Å and small ones (II) having $r_{II}(Xe - O) = 3.91$ Å and presents two signals with chemical shifts $\delta_{I} = 151$ ppm and $\delta_{II} = 238$ ppm. When temperature is 25°C or higher and pressure is less than 35 atm clathrates in water are not revealed visually, one observes a single resonance of $^{129}$Xe and $^{83}$Kr at $\delta_{H_2O}$. 
Fig. 1. Chemical shift of $^{129}$Xe nuclei as a function of temperature in pure H$_2$O –○, in H$_2$O + 0.1 m CsF –▲, and in H$_2$O + 10 m MeOH –■.

Fig. 2. Chemical shift of $^{83}$Kr nuclei as a function of temperature in H$_2$O –○, and in D$_2$O –●.