

Colloid Journal of the Russian Academy of Sciences: Kolloidnyi Zhurnal 1998 vol.60 N2, pages 226-230

---

## **Influence of aerosil on the nuclear magnetic relaxation and translational mobility of dimethyl sulfoxide**

Pimenov G., Opanasyuk O., Khozina E.

*Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia*

---

### **Abstract**

The transverse (T2) and longitudinal (T1) proton magnetic relaxation times and the self-diffusion coefficients D of the dimethyl sulfoxide (DMSO) molecules in aerosil mixtures with different specific surface area were measured at different temperatures and liquid contents. The large difference between the times T1 and T2 in the systems examined is explained by the hypothesis that the molecules adsorbed on the solid surface (especially in micropores) lose some translational degrees of freedom. At high temperatures, the translational displacement of DMSO molecules is determined by the relative time of their residence in the vapor phase. In contrast, it is the surface diffusion that determines this displacement at low temperatures, when the lifetimes of the adsorbed molecules are longer than the times of the measurement of the self-diffusion coefficient. © 1998 MAK Hayka/Interperiodica Publishing.

---