Polydimethylsiloxanes (PDMS) belong to a group of polymers containing a silicon – oxygen skeleton with methyl groups on the silicon atom. Pure PDMS at room temperature looks like transparent liquid of resin consistency. Extraordinary properties of siloxanes in the comparison with other organic polymers (i.e. high thermal stability, chemical unreactivity, practically slightly absorptive of water) have been employed for many years in the building and cosmetic industry, manufacture of medical devices, medical devices components (impress form prosthesis of teeth or at formation implants of human organ) [1].

We present measurements of the magnetic relaxation time $T_1$ as a function of temperature [2], results of Differential Scanning Calorymetry [3] and Rheology.

NMR measurements of $T_1$ were made on a Bruker CXP spectrometer operating at the frequency of 200 MHz using inversion-recovery method.

This report contains also molecular dynamics study of modified PDMS by means of rheological measurements. The purpose of the study was to establish the influence of modifier on rheological behaviour of this polymeric system. Experiments were made at the wide range of temperature (153 K – 243 K) at the frequency from 1 to 100 rad/s using an Ares rheometer.

