Since 1960, a liquid becoming strongly magnetized in the presence of a magnetic field, called ferrofluid, is known. This colloidal liquid made of ferro-
or ferrimagnetic nanoparticles, with diameter in range 10-20 nm, suspended in a carrier fluid. This work focuses on the study of the viscoelastic properties of a selected ferrofluid – the steady-state and dynamic properties of the fluid with comparison to a standard fluid
(basis fluid, etc.) and a MR fluid. Rheological measurements are carried out using a commercial rheometer. A magnetic cell for this rheometer is designed and built. In this
magnetic cell the experiments are realized, the whole system is calibrated and the experiments performed. The ferrofluid APG513a, MR-fluid and reference fluid were used.

Study of normal stresses differences (N1,N2) in liquids is carried out. According to derived theoretical model, the course of N1 and N2 should be strongly dependent on the field –
this was studied directly by measuring of the normal forces or indirectly applying the Laun's rule. A good accordance of theory and experiment was found and an anisotropic behaviour
of ferrofluid was studied. The shear-thinning ability of the ferrofluid in normal direction for
shear experiment is found to be much stronger than in shear direction. In dynamical mode, the ferrofluid in magnetic field behaves similarly according to time-temperature
superposition principle - a shift factor according to WLF theory can be found for time-magnetic field superposition. The fluid becomes shear-thickening according
to complex viscosity for higher frequencies which is in contrast to steady-state measurements. A creep experiments contain an information about longer relaxation
times which corellates with relation of shorter parts of the built chains. Viscosity in teh creep experiment was comparable to steady-state shear mode.