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**The acoustical research of shear viscoelastic properties of nanoparticles suspensions**

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The acoustical research of some physical properties of nanoparticles suspensions has been carried out in this work. Mechanical properties of the SiO<sub>2</sub> and YAG particles suspensions have been investigated. Resonance method is used for measurement of visco-elastic properties (shear modulus and shear viscosity) of the suspensions. It was shown that the viscosity and elasticity depend on size and concentration of particles. Colloid suspension of nanoparticles of silica dioxide (SiO<sub>2</sub>) and yttrium alumina garnet doped by neodymium (Nd:YAG) are synthesized. The shear viscoelastic properties of the colloid suspensions have been measured by acoustical method. The researching of colloid suspension of SiO<sub>2</sub> nanoparticles of different concentration by the acoustical resonance method is shown that viscosity and shear modulus decrease with nanoparticle concentration increasing. The nonlinear behavior of viscosity and elasticity in depending on shear influence amplitude has been shown. Investigation of viscosity of suspensions of Nd:YAG nanoparticles in ethanol in depending on concentration has been carried out. The decreasing of shear modulus of the suspensions with concentration decrease has been shown. The work was supported by RFBR 05-02-16584a and 07-02-90103-Mong-a.