

**THEORETICAL AND EXPERIMENTAL INVESTIGATION
TO IMPROVE PARTICLES SEPARATION IN LIQUID**

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The review of nowadays existing devices for purification of blood showed that division of multicomponent liquids by means of a standing sound wave happens in microchannel devices. Determination of necessary frequencies for works, limit values of acoustic pressure, which is maintained by covers of elements of blood, and other physical parameters, which influence them. For this purpose, we used, as an example, a piezoceramic bowl in which it is possible to make an opening for a supply and removal of liquid.

Design of process of separation in Comsol Multiphysics was the first step. For design was used the piezoelectric ceramics of the PZT4-brand. The frequencies investigated by us for liquid separation: 200 kHz, 400 kHz and 1,4 MHz (Fig 1).

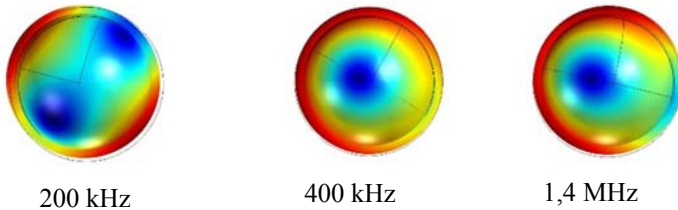


Figure 1 - Distribution of different particles of blood at change of frequency of a signal

For carrying out physical experiences used synthetic substitute of blood which on viscosity and density answers necessary parameters. As blood cells was used Zeolite - soluble particulate mineral, with a particle size of 14-18 microns. (Fig. 2). Signal frequency, the most effective, equaled 398 kHz.

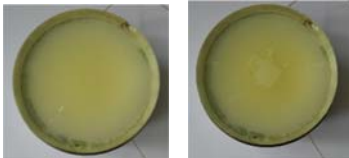


Figure 2 - A bowl with a piezoceramic basis for carrying out division of multiphase liquid: a) before giving of a signal, b) after action of an ultrasonic wave