

Development of Viscosity Sensor using Surface Acoustic Wave

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In this study, we studied about measurement possibility using new patterned device of SH-SAW more than 50MHz. We tried to prove the relationship of the surface acoustic wave (SAW) and non-Newtonian fluid for development the sensor to measure the viscosity. The experimental results, we known that the output frequency velocity comes to be fast because of the perturbation happens in the solution. When the viscosity of the glycerol solution increased, the phase shift, delay time and insertion loss increased. So, we decided that insertion loss happens, when viscosity of glycerol solution increase, and phase shift and delay time happen by insertion loss. Also, when various concentration of glycerol solution was added in 100MHz type, the sensor showed 48.9, 69.4, 107.4, 134.3 and 185.1 kHz frequency shift at 10, 30, 50, 70 and 90 % glycerol solution compare with distilled water. So, we could measure more than 50MHz type using new type sensors.