

# Love wave sensor based on PMMA/ZnO/glass structure for liquids sensing

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**Abstract :** PMMA/ZnO/glass structure was investigated to enhance Love mode sensor sensitivities. The phase velocities and the attenuation of the acoustic wave propagating along the PMMA /30° tilted c-axis ZnO/glass structure contacting a viscous non-conductive liquid were calculated for different PMMA and ZnO guiding layer thicknesses, added mass thicknesses, and liquid viscosity and density. The sensor velocity and attenuation sensitivities were also calculated for different environmental parameters. The resulted sensitivities to liquid viscosity and added mass were optimized by adjusting the ZnO and PMMA guiding layer thickness corresponding to a sensitivity peak. The present analysis is of importance in manufacturing and applications of the PMMA-ZnO-glass structure Love wave sensors for the detection of liquids properties, such as viscosity, density and mass anchored to the sensor surface.

**Keywords :** Love wave sensor, surface acoustic waves, ZnO-PMMA