Abstracts

Humidity Sensor Using Surface Acoustic Waves Propagating Along Layered Structures

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A surface acoustic wave (SAW) sensor for measurement of humidity in ambient atmosphere is presented. The majority of the SAW sensors has utilized the effect of mass loading. In this paper, we propose a new SAW humidity sensor that based on the changes in the film conductivity rather than the mass. The phase velocity and propagation loss were computed for the SAW propagating on a piezoelectric substrate, which is coated with a hygroscopic conductive polymer. In experiments, a 30 MHz dual SAW delay line fabricated on 128° YX LiNbO/sub 3/ was coated with the sodium salt of polystyrene sulfonate. This hygroscopic polymer coating caused the SAW velocity change of 20 m/s per 10% in the relative humidity. The response was quite linear in the range from 40 to 80% RH.

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