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Title:	Horizontally polarized surface acoustic waves for applications in liquid sensors
Abstract:	<p>Surface acoustic waves (SAW) with horizontal type of polarization, i.e. mechanical displacements parallel to the substrate surface, are very attractive for liquid sensors. In the paper, few types of horizontally polarized (HP) waves, which are potentially useful for applications in liquid sensors, will be described and compared. The first type, pure shear horizontal SAW (SH-SAW), exists in symmetric orientations of some crystals, for example, in quartz and langasite. These waves are most widely used in liquid sensors today. Such waves can be efficiently generated by interdigital transducers (IDT) and trapped by periodic metal gratings. Then few examples of quasi-shear and quasi-longitudinal HP waves will be presented. These waves exist in some non-symmetric orientations, due to anisotropy, and can provide higher propagation velocity and higher electromechanical coupling than SH-waves, with negligible attenuation when such wave has leaky wave nature. Finally, two examples of HP waves with pure longitudinal displacements on the surface will be presented and discussed. One of them exists in most of crystals (LN, LT, LGS etc.), due to negative curvature of the slowness surface around certain orientations. Another example can be found only in materials with strong acoustic anisotropy (e.g. in quartz). The horizontal type of polarization, typical for all analyzed types of waves, is confirmed by the plots visualizing wave motions, which follow the wave propagation. These plots also demonstrate typical features of each wave.</p>