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Influence of $LiNbO_3$ crystal cut (X/Z) on the performance of a Ti: $LiNbO_3$ waveguide-based biosensor

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Planar optical Ti: $LiNbO_3$ (Z-cut/X-cut) waveguides are proved to be very interesting optoelectronic devices especially when they are used like signal transducers in optical biosensing. The use of Z-cut and X-cut and the comparison between them are frequently in optoelectronics but are rare in the field of biosensors. In this work, a comparison between two different platforms for biomolecules detection will be done. The first platform uses an X-cut $LiNbO_3$ crystal and the second uses a Z-cut one. After several tests, we have observed that the Z-cut platform induced many more losses and therefore a strong attenuation of the signal.

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