

5. Conclusions

In this work, we have demonstrated the promise of nanocrystalline metal oxide film coated SOI MRRs for low power, compact, reasonably sensitive and low cost integrated optical gas sensing. This demonstrates that metal oxides, which have been extensively used in electrical gas sensors can also be exploited for integrated optical gas sensing. It is shown that ethanol vapor concentrations below 100 ppm can readily be detected with an SOI MRR coated with a nanocrystalline ZnO film. Metal oxides can be doped with molecules selective to different gases. With future advancements in micro-patterning techniques, such selective films can efficiently be coated on several MRRs to achieve integrated and multiplexed multi-gas sensing on an optical chip.

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