



Fig. 9. Peak electric field at the output of the TPPWG for different output gaps B_{out} .

crystal. In any case the good agreement between different measurements indicate that very high values of the THz field at the tip of the waveguide were achieved. For the output gap of 20 μm we estimated a value of over 1.4 MV/cm. Even higher values are expected for smaller output gaps.

5. Conclusions

We have investigated field enhancement properties of the TPPWG and we have showed that a field enhancement of over 20 is possible, resulting in the THz peak electric field exceeding 1.4 MV/cm for output gaps of 20 μm . The field values have been measured using two methods: free-space electro-optic sampling and THz enhanced second harmonic generation. The obtained values agree with each other and also with predictions from numerical simulations. Even higher values of the peak THz field are expected for smaller output gaps. The tight concentration of high intensity THz radiation can be potentially applied in exploration of nonlinear THz phenomena, deep-subwavelength imaging, and allow for development of compact optoelectronic devices.

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