

# Third Harmonic Generation in Thin NbOI<sub>2</sub> and TaOI<sub>2</sub>

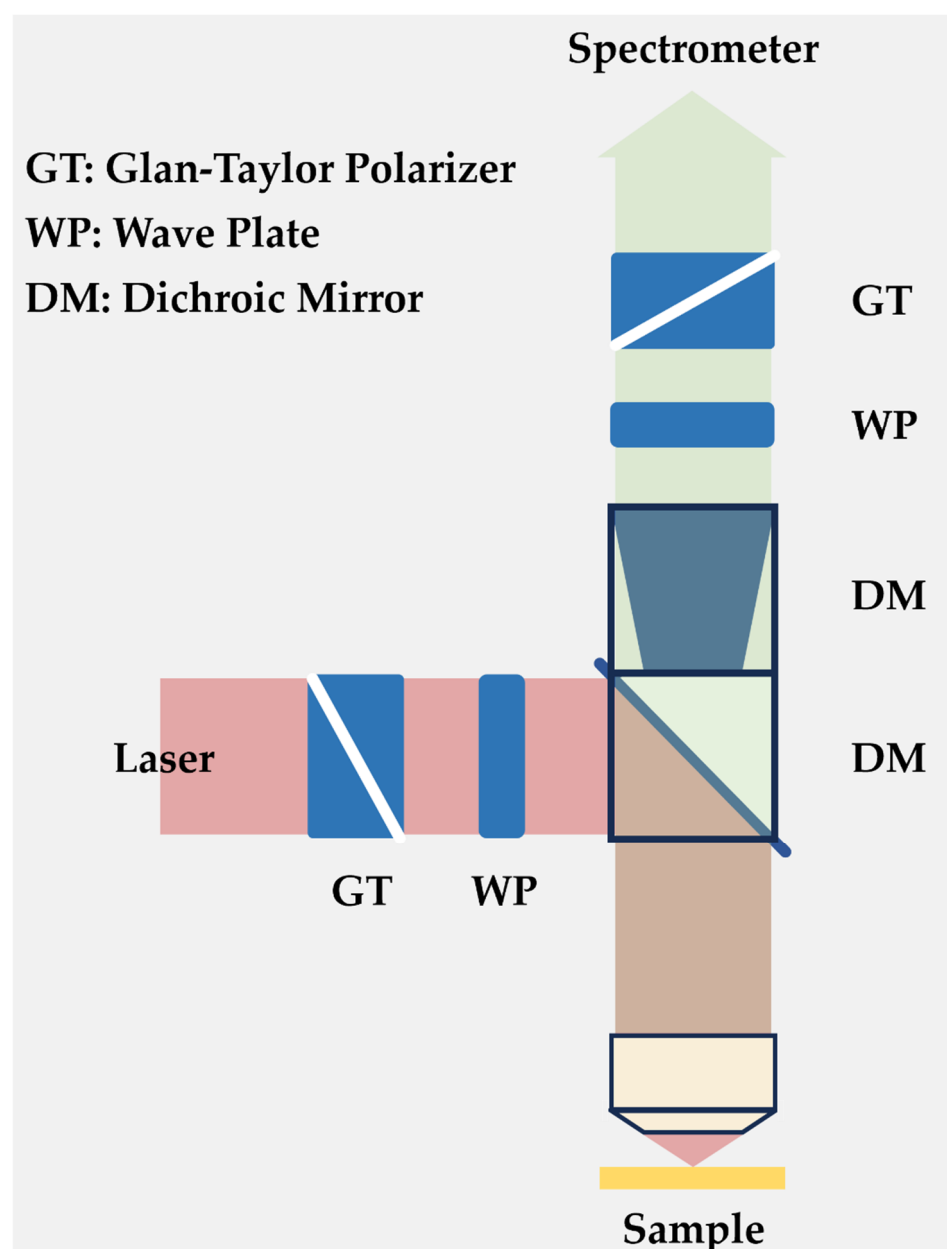
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## Experimental setup



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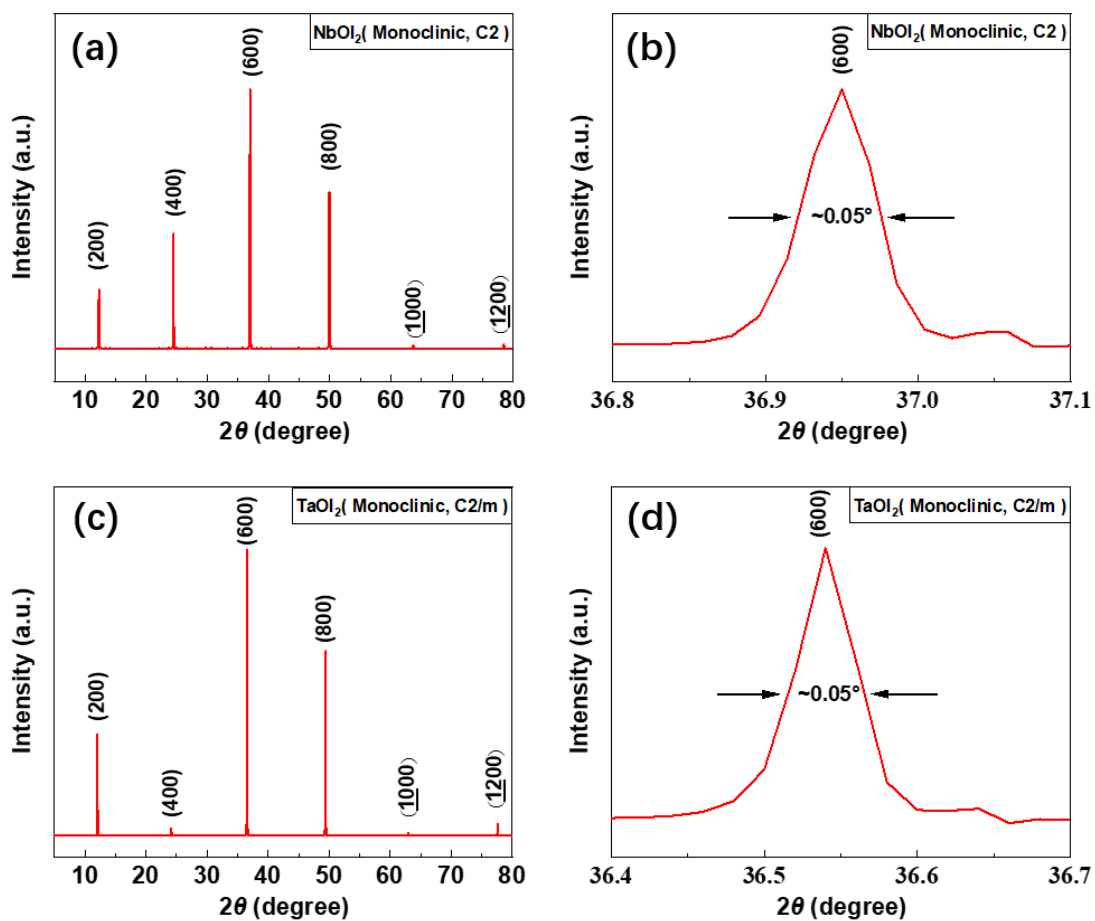
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**Figure S1.** Experimental setup for the THG and SHG measurement.

## XRD measurements



**Figure S2.** XRD of the synthesized NbOI<sub>2</sub> and TaOI<sub>2</sub> single crystal. (a). XRD pattern of as-grown NbOI<sub>2</sub> single crystal. (b). Enlarged view of the (600) peak in figure S1a shows, the FWHM is only 0.05°. (c). XRD pattern of as-grown TaOI<sub>2</sub> single crystal. (d). Enlarged view of the (600) peak in figure S2c, the FWHM is only 0.05°.

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