

# Time-Resolved Second Harmonic Generation Imaging of Atomically-Thin MoS<sub>2</sub>

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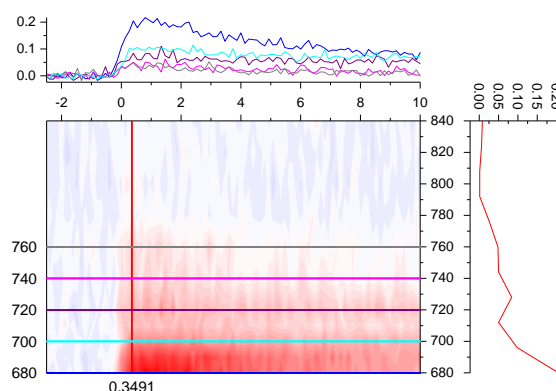
## Abstract

Time-resolved second harmonic generation (tr-SHG)<sup>1</sup> spectroscopy has been adopted for studying surface physics, charge transfers, and orientation changes of 2D materials. In this work, we introduce a tr-SHG microscopy operated by nano-joule scale pulses and application of it to study the electron /phonon dynamics of few-layered MoS<sub>2</sub> films under submicron lateral resolution. The pump-probe microscopic system based on tr-SHG allowed us to capture the difference in the ultrafast dynamics from the different chiral orientation of flakes as well as even numbered layers. We strongly believe that the tr-SHG microscopy would play a crucial role in understanding the ultrafast carrier dynamics of low dimensional materials and its hybrids with a great fidelity.

## References

- [1] W.A. Tisdale, K.J. Williams, B.A. Timp, D.J. Norris, E.S. Aydil, X.-Y. Zhu, *Science*, v328 (2010) 1543.

## Figures



**Figure 1:** Pseudo colour diagram of time resolved second harmonic generation from single layered MoS<sub>2</sub> film.