

Carrier dynamics of 2D materials resolved by time-resolved SHG microscopy

Hyunmin Kim (hyunmin.kim@dgist.ac.kr)

Companion Diagnostics & Medical Technology Research Group, DGIST, Daegu, 42988,
Korea

Time-resolved nonlinear spectroscopy has been extensively exploited to study ultrafast carrier dynamics of 2D materials. In this work, we introduce a time resolved second harmonic generation (tr-SHG) microscopy to study the electron/phonon dynamics of atomically thin MoS₂ nanosheets. The pump-probe type time-dependent sequential tr-SHG imaging allowed us to vividly monitor the orientation-dependent feature of electron/phonon dynamics in a submicron scale lateral resolution. We strongly believe that the tr-SHG microscopy should pave a critical way towards understanding of the ultimate time-dependent physics of quantum materials and its complexes.

