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Sum frequency generation microscopy for imaging chirality[1] NA JI, Department of Physics, University of California, Berkeley, KAI ZHANG, HAW YANG, Department of Chemistry, University of California, Berkeley, YUEN-RON SHEN, Department of Physics, University of California, Berkeley — Optically active sum frequency generation microscopy was demonstrated for the first time. Using films of solution of chiral 1,1'-bi-naphthol molecules with microstructures, we showed that sum frequency generation microscopy can image molecular chirality with three-dimensional sectioning capability and sub-micron spatial resolution. Because the image contrast originates from the intrinsic chirality of the system, no staining is required. Our microscopy scheme also allows the simultaneous detection of two-photon fluorescence. As a result, optically active sum frequency generation microscopy can be potentially very useful for live cell imaging. Preliminary results of applying this technique to DNA conformation study will also be described.

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