

CARS microscopy with all fiber based lasers
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We present a compact CARS microscope based on a widely tunable picosecond Er: fiber laser. Intense and bandwidth-limited 1-ps pump pulses at a center wavelength of 775 nm are generated via frequency mixing within the broadband fundamental at 1.55 μm . Narrowband Stokes pulses are obtained by frequency shifting of solitons in a highly nonlinear bulk fiber and subsequent second harmonic generation. The tuning range from 850-nm to 1100-nm gives access to vibrational resonances between 1150- cm^{-1} and 3800- cm^{-1} [1]. In addition slight modification of the fiber based excitation opens ways for new schemes of background-free CARS microscopy. First imaging applications of biological samples will be demonstrated.

[1] G. Krauss, T. Hanke, A. Sell, D. Träutlein, A. Leitenstorfer, R. Selm, M. Winterhalder, and A. Zumbusch „Compact coherent anti-Stokes Raman scattering microscope based on a picosecond two-color Er: fiber laser system”, *Opt. Lett.*, **34**, 2847-2849 (2009)