

# COHERENT ANTI-STOKES RAMAN SCATTERING (CARS) MICROSCOPY IN LIVING CELLS

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During the last decade, ultrasensitive microscopy has become one of the most important tools in biophysics. Most prominent among the various techniques is confocal fluorescence microscopy. It is a very widespread technique with which sensitivities down to the single molecule detection limit can be achieved. Fluorescence microscopy however suffers from the disadvantage that the sample needs to be labeled. We therefore developed Coherent Anti-Stokes Raman Scattering (CARS) microscopy as a non-linear optical technique suited for live cell microscopy. It generates contrast on basis of the vibrational spectra of the sample molecules and can thus be used for microscopical imaging without the need to use external staining. Because of the low scattering of the near-IR excitation wavelengths used, CARS microscopy also holds promise for whole tissue investigations. Here, we will present new applications to imaging of live cells and organisms.