

# The Review of Laser Engineering

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### Development of Coherent Anti-Stokes Raman Scattering Microscopy

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**Abstract:** New multiphoton microscopy using CARS (Coherent Anti-Stokes Raman Scattering) spectroscopy is described. In CARS microscopy, the image of molecular vibration that is sensitive to the molecular species and conformation is obtainable without staining with three-dimensional resolution of sub-micrometer. In this article, optical property of CARS microscopy by the diffraction theory and the developed system using a picosecond tunable laser are described. The multi-focus excitation using a rotating-microlens array enables high speed spectral imaging.

**Key Words:** [Nonlinear spectroscopy](#), [Ultra-fast laser](#), [Raman spectroscopy microscopy](#), [CARS](#)

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