FORTHCOMING PAPERS

Measurements of Velocity Using a Lenticular Grating

T. Ushizaka, Y. Aizu, T. Asakura (Japan)

A new method is reported for measuring the velocity using a lenticular grating. The principle of the method is theoretically described on the basis of transmission-grating velocimetry. The theoretical studies are performed to estimate the deflection and collection characteristics of the light passing through the lenticular grating. The method is used to measure the velocity of a rotating random pattern. The experimental results show the usefulness of the method for measurements of the velocity.

Optical Frequency Doubling of a Single-Mode Dye Laser in an External Ring Resonator

N. Wang, U. Gaubatz (F. R. Germany)

Optical frequency doubling of a single-mode cw Rhodamin 6G ring dye laser is performed with a thin angle-tuned $LiIO_3$ Brewster cut crystal in a stabilized passive ring resonator. A conversion efficiency of $\eta = 5$ mW uv/320 mW fundamental input power was achieved at $\lambda = 603$ nm.

Selective ir Laser Chemistry of CDF_3 in Natural Fluoroform

V. Parthasarathy, S. K. Sarkar, K. V. S. Rama Rao, J. P. Mittal (India)

Selective decomposition of CDF_3 at natural abundance level (≈ 150 ppm) in fluoroform has been achieved by infra-red multiple-photon excitation at moderate substrate pressure using 100 ns FWHM CO_2 laser pulses. Effects of energy fluence, number of laser pulses, buffer gas pressure and substrate pressure on decomposition yield and bulk selectivity are reported and discussed.

Detection of Atomic Oxygen by Laser-Induced Fluorescence Spectroscopy at 130 nm

H. F. Döbele, M. Hörl, M. Röwekamp, B. Reimann (F.R. Germany)

VUV radiation generated by stimulated Raman scattering from H_2 and tunable around 130 nm is applied to the detection of atomic oxygen produced in a flow-tube. Concentrations in the range of 10^{10} to 10^{11} O-atoms per cm^3 lead to fluorescence signals that can easily be detected on a nanosecond timescale. We deduce that oxygen impurities generated by plasma-wall interaction in present-day tokamak experiments should be measurable with spatial and temporal resolution applying this VUV source.

Subpicosecond Pulse Generation in Synchronously Pumped Energy Transfer Dye Lasers

M. Kaschke, U. Stamm, K. Vogler (German Democratic Republic)

We describe the relatively efficient generation of picosecond pulses in an energy transfer dye laser synchronously pumped by an argon-ion laser and a Q-switched and modelocked cw-Nd^{3+}:YAG laser, respectively. Maximum tuning range from 550 to 700 nm has been achieved. In both cases considerable pulse shortening in the spectral region of the donor emission was obseved.

Undamped Undulation Superposed on the Passive Q-Switching Pulse of a CO_2 Laser

M. Tachikawa, K. Tanii, M. Kajita, T. Shimizu (Japan)

An undamped undulation superposed on the pulse tail of the passive Q-switching is observed using HCOOH gas as a saturable absorber. The pulse shapes with the undulation are nicely reproduced through the rate-equation analysis in which the laser gain medium is described as a three-level system. Good agreements between the observation and the calculation are also obtained in the dependences of the period and the width of passive Q-switching pulse on laser parameters. The mechanism of the undulation is interpreted as the relaxation oscillation attributed to the relaxation from the lower laser level. The collisional rate constant of HCOOH molecule is also obtained.

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Invited Paper

Contributed Papers