

Optical Switching of Organic Single Crystal Composed of Excited State Intramolecular Proton Transfer Molecules

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가

(Excited - State Intramolecular Proton Transfer)

4

가

가

가

(1).

가

(2).

acetic acid 2 - {4 - [2 - (2 - hydroxy - phenyl) - 4,5 - diphenylimidazol - 1 - yl] - phenyl} - ethyl ester (HPI - Ac)

Ac HPI - 2 mm x 10 mm x 2 mm

1

Mode -

locked Nd:YAG laser (Quantel YG900; 35 ps, 10 Hz) 3 355 nm

가

543 nm

He - Ne

laser (cw)

가

DC

가

enol

가

가

keto

가

keto

가

가

Keto

enol

DC

가

2

HPI -

Ac

keto

exponential

2 ms

10 ms

10 ns 가 Nd:YAG laser 355 nm

keto

가

633 nm He - Ne laser (cw)

3.5 ms

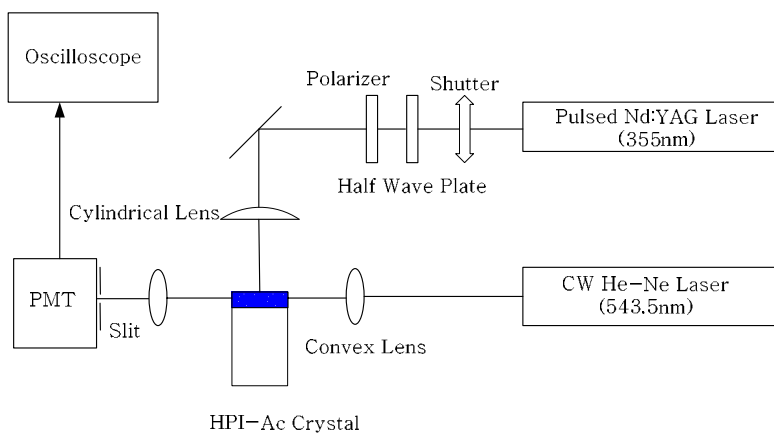
16

ms

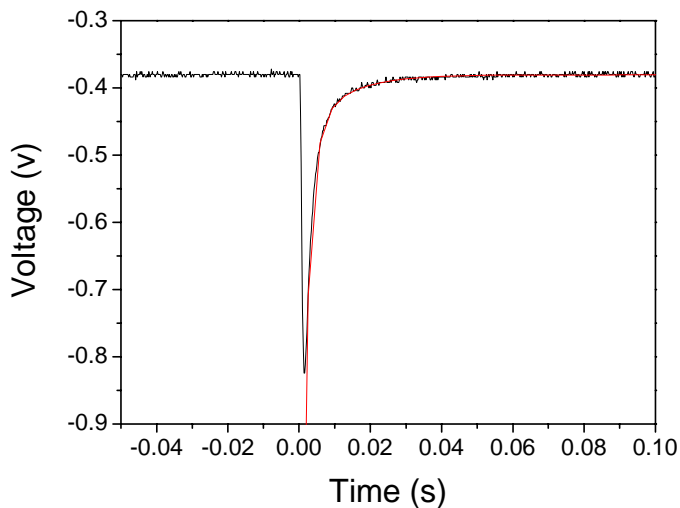
HPI - Ac

keto

pump - probe



1 Experimental setup of optical switching



2 Optical switching effect of HPI - Ac crystal

1. S. Kim, S. Y. Park, I. Yoshida, H. Kawai, T. Nagamura, "Amplified Spontaneous emission from the film of Poly(aryl ether) Dendrimer encapsulating excited-state intramolecular charge transfer dye", J. Phys. Chem. B, 106, 9291(2002).
2. M. Cazzanelli, D. Kovalev, L. Dal Negro, Z. Gaburro and L. Pavesi, " Polarized Optical gain and Polarization narrowing of Heavily oxidized Porous Silicon", Phys. Rev. Lett., 93, 207402 - 1,(2004)