Bulletin of the Russian Academy of Sciences: Physics 2012 vol.76 N3, pages 295-298

Femtosecond laser control of intramolecular vibrations in a liquid

Nikiforov V., Shmelev A., Safiullin G., Lobkov V., Samartsev V.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

Optical control of coherent intramolecular oscillations in chloroform CHCl3 and dimethyl sulfoxide (CH 3) 3SO is attained experimentally under normal conditions by means of femtosecond polarization spectroscopy. Nonresonant excitation of the medium is accomplished by a sequence of two linearly polarized laser pulses. The state of the medium is probed by the third pulse via the optical Kerr effect. We show that control over the vibrational dynamics of molecules on a sub-picosecond scale can be achieved by varying the delay between the excitation pulses and their relative intensity. © Allerton Press, Inc., 2012.

http://dx.doi.org/10.3103/S1062873812030215