

# The Temporal Dipole Moment of Solute Molecules Undergoing Charge Transfer

V. I. Tomin and A. Krzysztofowicz

Institute of Physics, Pomeranian Pedagogical University,  
76-200 Slupsk, Arciszewskiego str. 22B, Poland

Reprint requests to Prof. V. I. T.; Tel/Fax: (1033)-59-8405-339, E-mail: tomin@pap.edu.pl

Z. Naturforsch. **59a**, 476 – 480 (2004); received April 20, 2004

*Dedicated to Professor Jozef Heldt on the occasion of his 70th birthday*

Important information about a geometrical transformation of solute molecules undergoing charge transfer in the excited state could be obtained from the knowledge of its dipole moment change in time, while experimental methods allow to obtain only stationary values of dipole moments for both the local excited and the charge transfer states.

On the basis of the theory of solvatochromism the relation for a time dependence of dipole moment on the correlation function for instant spectra kinetics has been deduced. Time dependence of the electric dipole moment of dimethylaminobenzonitrile in a polar solvent is presented. The initial and the final values of the dipole moments are close to those obtained by means of stationary spectroscopy methods.

*Key words:* DMABN; Dipole Moment; Luminescence; Local-excited and Charge Transfer States; Intermolecular Relaxation.