

Applied Physics Letters -- 21 November 2005

Appl. Phys. Lett. **87**, 214101 (2005) (3 pages)

Full Text: [[HTML](#) [Sectioned HTML](#) [PDF](#) (260 kB) [GZipped PS](#)] [Order](#)

Strong changes in the dielectric functions of cytosine upon molecular modification

[Yu Suzuki](#), [Ovidiu D. Gordan](#), [Simona D. Silaghi](#), and [Dietrich R. T. Zahn](#)

Institut für Physik, Technische Universität Chemnitz, 09107 Chemnitz, Germany

[Anett Schubert](#) and [Werner R. Thiel](#)

Institut für Chemie, Technische Universität Chemnitz, 09107 Chemnitz, Germany

[Christoph Cobet](#) and [Nobert Esser](#)

Institute of Analytical Sciences, 12489 Berlin, Germany

[Walter Braun](#)

Berliner Elektronenspeicherring-Gesellschaft für Synchrotronstrahlung mbH, 12489 Berlin, Germany

(Received 7 July 2005; accepted 7 October 2005; published online 14 November 2005)

The DNA base cytosine and its variant 1-allylcytosine were deposited as thick layers onto silicon substrates using organic molecular beam deposition. The dielectric functions of these materials were measured in the vacuum ultraviolet range from 4.0 to 9.5 eV using synchrotron radiation. In the experiments, the slight modification of the molecules results in very pronounced differences in the optical response. This was unexpected in the light of time dependent density functional theory calculation predicting a very similar optical response for both molecules. We attribute the substantial change in the optical response to stronger intermolecular interaction upon the molecular modification. ©2005 American Institute of Physics

[doi:10.1063/1.2132087](#)

PACS: 87.14.Gg, 87.15.Kg, 33.20.Ni, 87.80.-y [Additional Information](#)

View ISI's Web of Science data for this article: [[Source Abstract](#) | [Related Articles](#)]
