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Ph.D. Program in Electronics, Computer Science and Electrical Engineering

SEMINAR

Terahertz-Time Domain Spectroscopy (THz-TDS) and Applications

Prasanta K. Datta
IIT Kharagpur, India

Tuesday, 11 July 2023, h. 2 p.m.

Magenta Seminar Room (D Floor)

Abstract - Abstract: The talk summarizes the terahertz generation, detection and time-domain spectroscopy as a potential method for the simultaneous determination of real and imaginary part of material dielectric constants. As an example, combinational phonon modes in crystalline GaSe are determined using Terahertz time-domain spectroscopy with an aim to determine optimum doping concentration of impurities like Chromium and Indium for subsiding phonon modes. A combined methodology of Terahertz spectroscopy and Density functional theory based simulations will be discussed for a molecule (Diglycidylether of bisphenol A, which is an important ingredient of epoxy resin) to determine its molecular vibration frequency and associated configuration. The talk will also discuss on detection of cancer & wound healing for biomedical applications with the dispersion and absorbance spectra of different rat skin tissue in the range 0.5-3 THz.

Bio - P. K. Datta joined Indian Institute of Technology Kharagpur in 2000 and is currently Professor and Head of the Department of Physics there. He has developed Ultrafast Science Laboratory with funding from several Govt. agencies. He did his postdoctoral work in the Department of Electronics of the University of Pavia during 1996-98 on cascaded second order optical nonlinearity and used it in a laser cavity for generation of mode-locked picoseconds laser pulses. Currently he is working on transient absorption spectroscopy, THz spectroscopy, time-resolved magneto-optical effect and ultrafast optical nonlinearity. He has supervised 15 PhD students and has published 140 papers in internationally referred journals.

Organizer

Prof. Ilaria Cristiani

Prof. Antonio Agnesi

Ph.D. Coordinators

Prof. Ilaria Cristiani