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Prof. **Christoph Schick**

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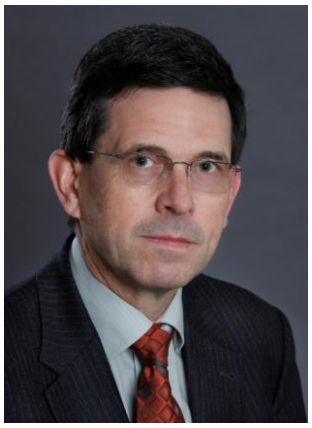

CV

Christoph Schick is Professor emeritus and was Head of the Polymer Physics Group at the Institute of Physics of the University of Rostock from 1992 to 2019. He studied Polymer Physics at the Technische Hochschule Leuna-Merseburg (Germany) and received his Ph.D. in 1980 for research in the field of glass transition with Prof. E. Donth as his mentor. As a postdoc, he became interested in the interplay between glass transition and crystallization in polymers. He completed his habilitation in this field in 1988. Since then, his research has focused on advanced calorimetry, like temperature-modulated or fast scanning, applied to polymers, metals, and other substances. He is interested in crystallization, nucleation, melting, evaporation, and glass transition in these materials.

He co-authored more than 475 publications, which received about 19,000 citations. In addition, Christoph Schick received five awards from different thermal analysis societies all over the world, between 2006 and 2014.

15-16 Aprile 2024

Teams: "A-type Phd course - Prof Christoph Schick" (code: ay31qs0)

ore 14-16

A type Course

Developments and applications of high-speed scanning calorimetry

Abstract

The past three decades have witnessed the rapid development of fast scanning calorimetry (FSC), a novel calorimetric technique mainly employing micromachined sensors.

The key advances of this technique are the ultrahigh scanning rate, which can be as high as 10-10^6 K/s, and the ultrahigh sensitivity, with a heat capacity resolution typically better than 1 nJ/K. Nanocalorimetry has attracted much attention in materials science, where it is applied to perform quantitative analysis of rapid phase transitions, particularly on fast cooling. Another emerging area of application of FSC is physical chemistry, with a focus on the thermophysical properties of thermally labile compounds. Quantities like fusion temperature, fusion enthalpy, sublimation, and vaporization pressures and enthalpies of such molecules became available. This lecture shortly reviews the development of FSC and summarizes its applications to various materials ranging from polymers (including proteins) to pharmaceuticals.

Furthermore, FSC, coupled with structural characterization techniques, such as polarized optical (POM) and atomic force (AFM) microscopy, as well as infrared spectroscopy (IR), is presented. Finally, current challenges and future outlooks are discussed.

Information on the specific Team to be used will be provided in due time. Contact person: Dario Cavallo (dario.cavallo@unige.it)