Prof. Dr. Arnulf Materny

Jacobs University Bremen
Campus Ring 1
28759 Bremen

E-Mail: a.materny@jacobs-university.de

Arnulf Materny was born in Münchberg, Germany on January 16, 1962. He studied Physics at the "Universität Bayreuth". In 1988 he received his Diploma for his research on the topochemical solid-state polymerization of diacetylene single crystals. He then started his doctoral research under the supervision of Prof. Wolfgang Kiefer at the "Bayerische Julius-Maximilians Universität Würzburg" (JMU). In 1992 he received his "Dr. *rer. nat.*" from the Physical Chemistry Department with distinction. In his research work he concentrated on the investigation of chromism effects in polymers, which he studied by combining absorption, luminescence, linear and nonlinear Raman spectroscopy.

In 1993/1994 he was postdoc at the Caltech, Pasadena, U.S.A. There he started to work in the field of "femtochemistry" in the group of Prof. Ahmed H. Zewail. Research topics where the femtosecond time-resolved investigation and control of the NaI dissociation reaction and the study of caging dynamics for iodine in high-pressure rare-gas environment.

Having returned to Würzburg, he started to investigate the applicability of four-wave mixing techniques to the study of ultrafast dynamics of different molecular systems. In 1998 he finished his "Habilitation" (Dr. *rer. nat. habil.*) and became "Privatdozent" at the Physical Chemistry Institute of the JMU, supported by a Heisenberg Fellowship awarded to him by the German Research Association (DFG).

In 2001 he was appointed Full Professor of Chemical Physics at the International University Bremen (renamed to Jacobs University Bremen in 2007). His research group focusses onto two research fields. The Raman group performs frequency-domain studies on different systems especially in biochemistry/medicine (cancer research) and food chemistry. A central point of interest is the investigation and application of surface-enhanced Raman scattering (SERS). This is also the link to the femto group. Here, research on the dynamics of molecules adsorbed to coin metal surfaces is performed. In this connection, the applicability of the SE effect to time-resolved four-wave mixing spectroscopy is investigated. Nonlinear techniques are the thread for most research in the femtosecond laboratory. The application of optimal control strategies to influence time-domain spectroscopy was successfully applied to selectively enhance or suppress vibrational modes in broadband coherent anti-Stokes Raman (CARS) spectra.

He has received several awards, amongst others a Kekulè Fellowship and the Hoechst Prize for his Ph.D. work, a Faculty Award by the JMU and the Heisenberg Fellowship by the DFG for his postdoc research. He has published more than 160 articles in international journals.

His interests are reading, biking and hiking — and of course his family.