Universität Bern
Institut für Angewandte Physik
Sidlerstrasse 5
3012 Bern, Schweiz

Telefon:+41 (0)31 631 89 11
E-Mail: iapemail@iap.unibe.ch
www.iap.unibe.ch

UNIVERSITÄT BERN

Seminar über Ultrafast Science and Technology

Referent/in: Dr. Anuradha Das, Institut für Angewandte Physik, Universität Bern

Titel: Molecules in Deep Eutectic Solvents

An interesting puzzle of the Nature is how do plants in extreme condition (droughts/frozen zones) sustain important chemical and physiological reactions. Recent developments show, plants contain solvents composed of various sugars, ions, amides and water,1 similar to the deep eutectic solvents (DES). DES are formed by mixing two or more room temperature solids at certain molar ratio to get a liquid at a temperature, lower than their individual melting points. The main driving force of bringing the constituents to a liquid state is extensive interspecies H-bonding. Experiments and simulations have indicated that these systems have micro domains which are spatially and temporally heterogeneous.
To understand how the heterogeneous dynamics of DES can affect simple chemical reactions, we have carried out the first pump-probe investigation of excited state dynamics of a series of charge transfer molecules in DES and compared the dynamics to conventional solvents. The salient features of steady state and transient absorption spectrum for the electron transfer reaction of DMABN [4-(Dimethylamino)benzonitrile] in acetonitrile is not very different from DES. However, the photochemical deactivation pathways of electronically excited methyl viologen (1,1'- dimethyl-4,4'-bipyridinium/MV2+) and [4,4'-azobis(pyridinium) methylsulfate] responds differently in methanol/acetonitrile/water from DES. Depending on the complexity of the components of DES, and the extent of H-bonding of the components, the charge/ electron transfer molecules show widely varying behavior in the different DES studied.

Zeit: Do, 24.10.2019 11.15 Uhr

Ort: **Hörsaal B116**, Gebäude Exakte Wissenschaften, Sidlerstrasse 5, Bern, Schweiz