Univerzita Pardubice
Fakulta chemicko-technologická
CEMNAT

Vás zvou na seminář na téma

Chalcogenide glasses and waveguides for infrared photonics

Vitreous materials composed of chalcogen elements (S, Se, Te) show large transparency windows in the infrared. Indeed, chalcogenide glasses can be transparent from the visible up to 12-15 µm in the infrared, depending on their compositions. This is due to the lower phonon energies of chalcogenides (e.g. Ge-S: 340 cm^{-1}), as compared to that of silica (Si-O: 1100 cm^{-1}) whose transparency domain is limited to 3 µm. Low phonon energies are also responsible for enhanced luminescence of rare-earth ions embedded in chalcogenide glasses. Thus, sulfide and selenide glasses exhibit light emission at wavelengths not accessible with silica glass.

In addition, chalcogenide glasses contain large polarisable atoms and external lone electron pairs that induce exceptional non-linear properties. Consequently, the non-linear properties can be 100 or 1000 times as high as the non-linearity of silica.

As far as shaping is concerned, specific chalcogenide glass compositions can be obtained in the form of bulk optics, thin films, optical fibers and channel waveguides.

The presentation will address the latest results in the following domains: mid-infrared light emission from rare-earth-doped chalcogenide glasses; chalcogenide microstructured optical fibers, especially those with enhanced non-linearities for the generation of mid-IR supercontinuum; optical sensing of molecules with chalcogenide fibers.

Přednášející: Dr. Jean-Luc Adam

Pracoviště: Univ Rennes, CNRS, ISCR (Institut des Sciences Chimiques de Rennes)
UMR 6226, Campus de Beaulieu, F-35000 Rennes, France

Čas a místo: středa 14.09. 2022, 10:00-11:30, místnost CB / 03004, nám. Čs. legií 565, Pardubice

Univerzita Pardubice

MINISTERSTVO ŠKOLSTVÍ, MLÁDEŽE A TĚLOVÝCHOVY

CEMNAT Pardubice