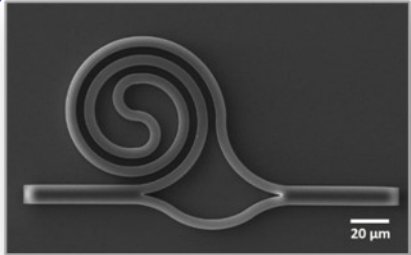
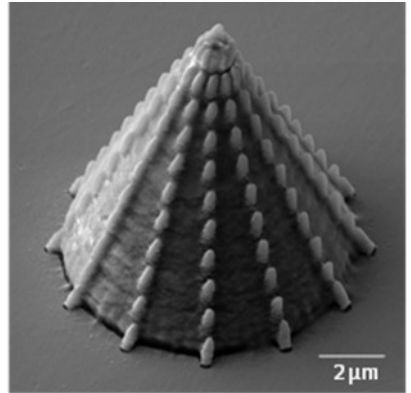


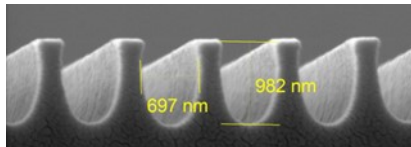
Laser technologies / laser lithography



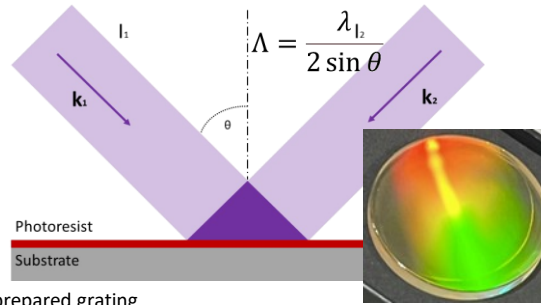
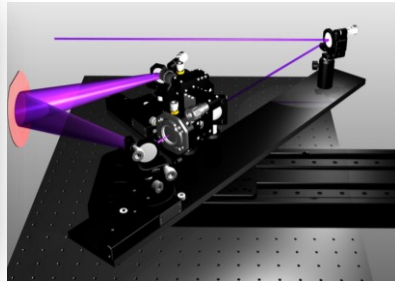
Photonics on a chip



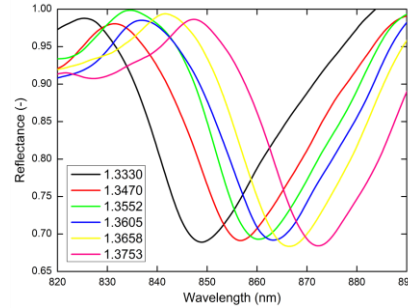
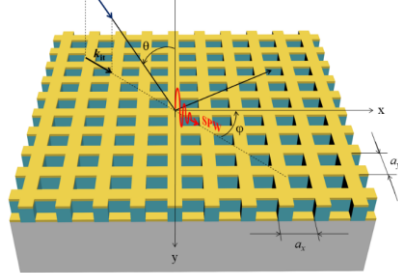
Plasmonics



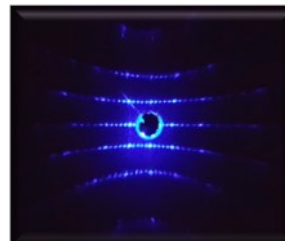
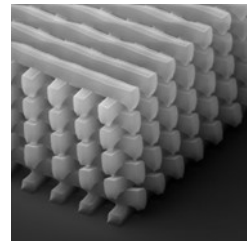
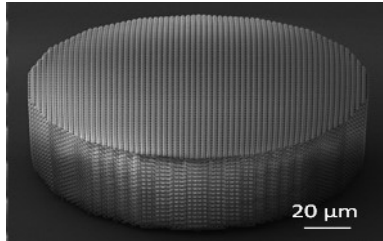
Gratings



Laser interference lithography, principle and prepared grating

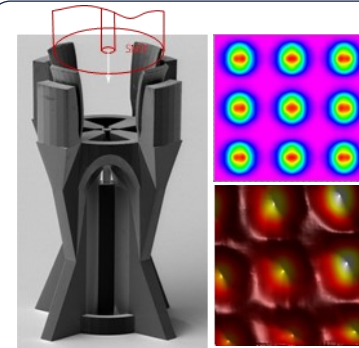


Plasmonic structures for sensors created by laser interference lithography

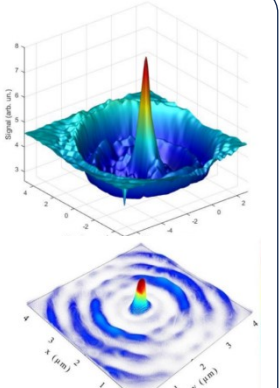
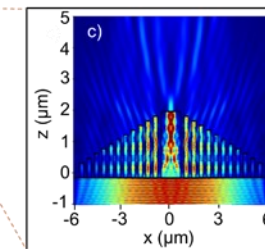
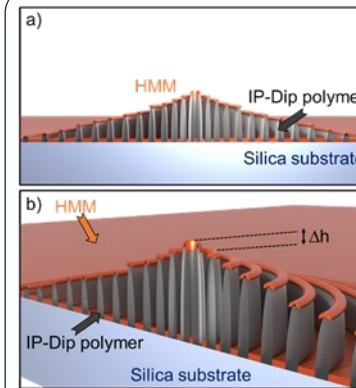
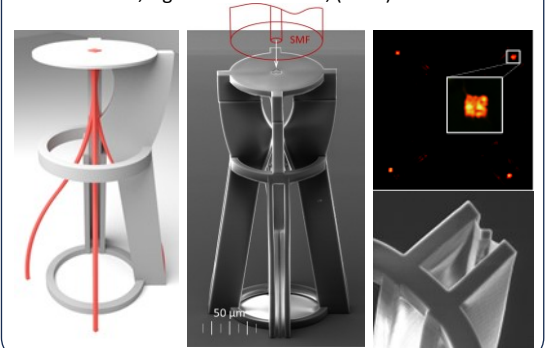


3D woodpile structure prepared by laser lithography and Laue diffraction

RESULTS Optical splitters in 3D



P. Gaso et.al, Lightwave Technol **13**, (2023)



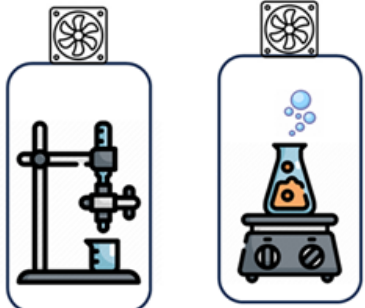
P. Micek et.al, Nanophotonics **14**, (2024) / Near-field probes on Fresnel geom

<https://fyzika.uniza.sk>

Material and acoustic team

Lab BB422 / Impact of nanostructures on materials engineering

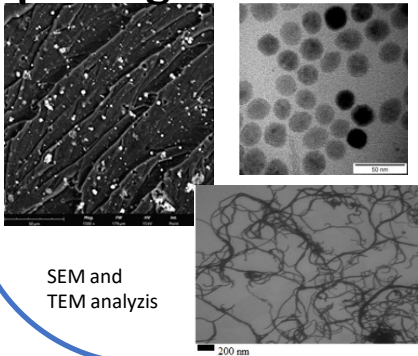
Preparing sample



Ultrasonic needle

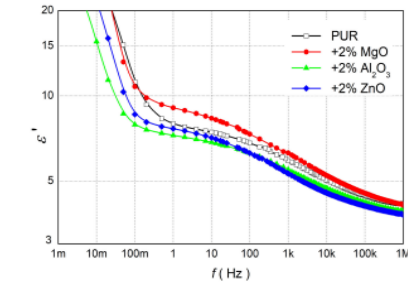
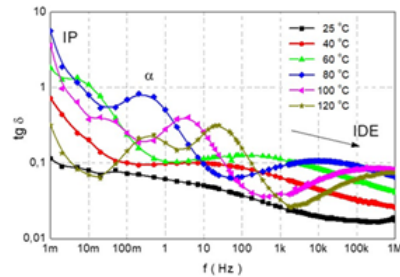
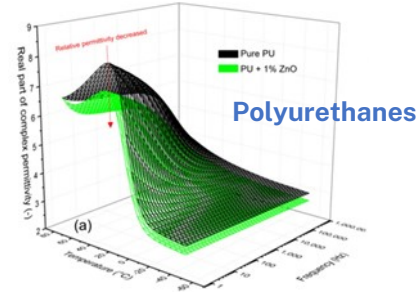
Magnetic stirrer in laboratory vacuum dryer

Technologies Deposition, grinding, plating



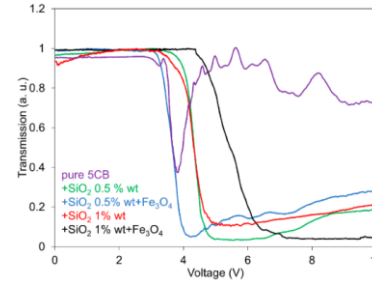
SEM and TEM analysis

Dielectric and acoustic spectroscopy

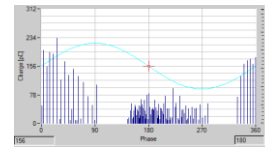
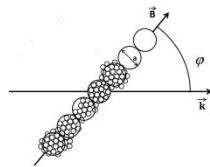
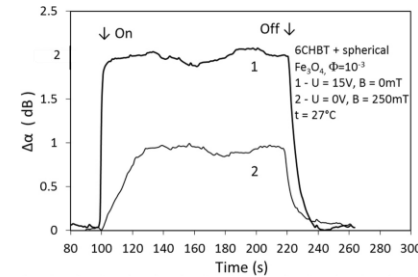


Š. Harďon et al, IEEE access **12**, 2024 / Fabrication and broadband dielectric study

Liquid crystals

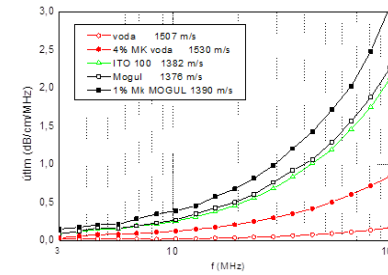


P. Bury, et al. J. Magn. Magn. Mater. **423**, 2017 / Effect of spherical mag. particles on liquid crystals

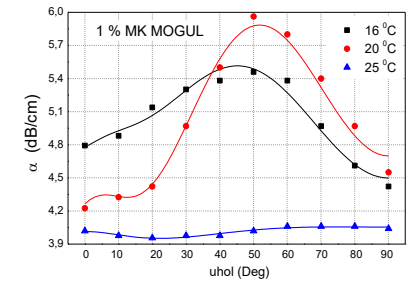


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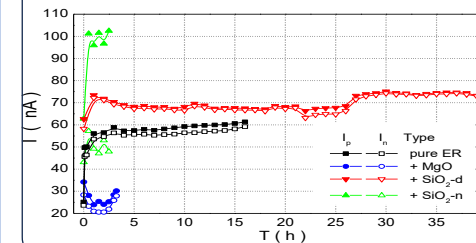
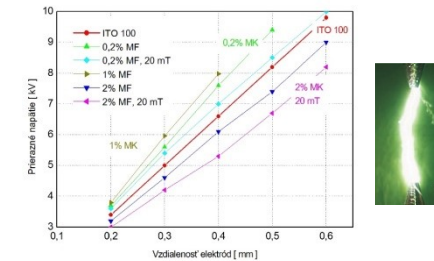
Magnetic fluids



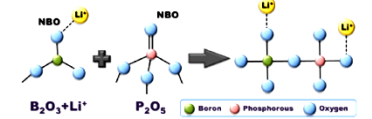
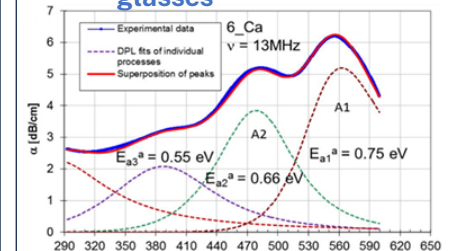
J. Kúdelčík, et al. J. Intell. Mater. Syst. Struct. **27**, 2016 / Acoustic spectroscopy of magnetic fluids



Discharge development



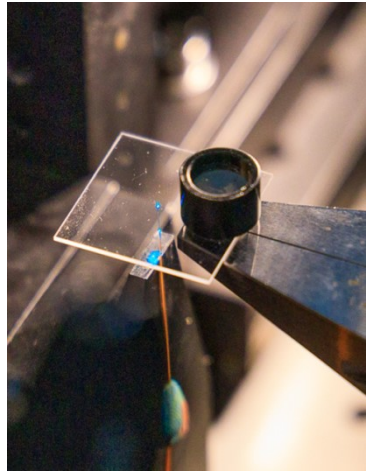
Ion-conducting glasses



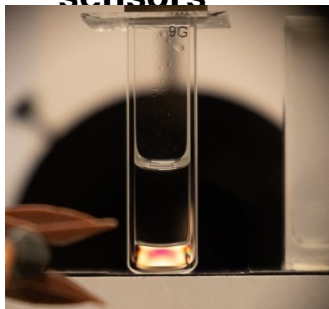
P. Hockicko, et al. J. Non-Cryst. Solids **498**, 2018 / The internal friction of lithium and sodium borophosphate glasses

Fiber photonic team

Lab BB421 / Fiber Elite Developers for Sensors and Technology

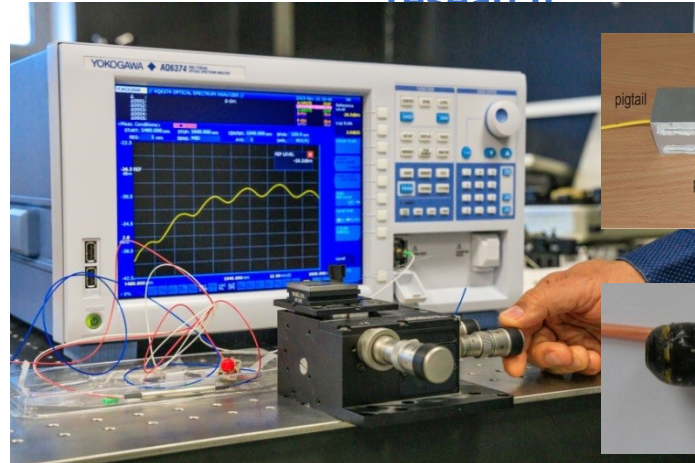


Fiber optics & sensors

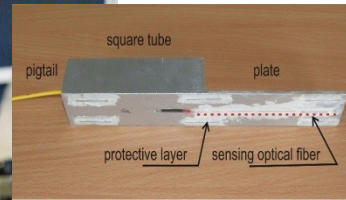


Optical materials

Fiber technologies / sensor and optical materials research



Spectral domain analysis of fiber sensors , principle and prepared



Fiber sensor for Railway

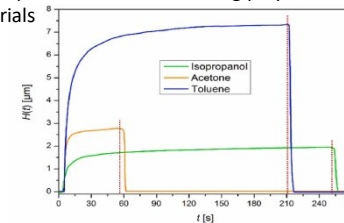


Gastro-fibroscope fiber sensor



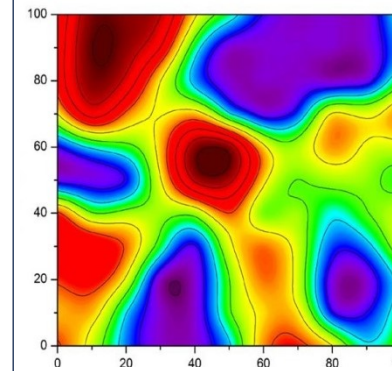
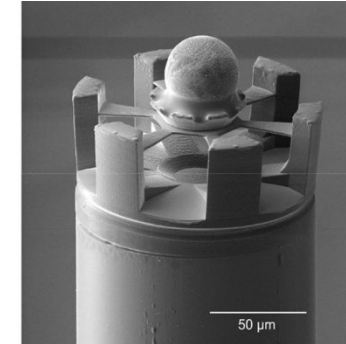
Optical materials characterisation by interferometry

Fiber-optic sensor for monitoring polymers materials



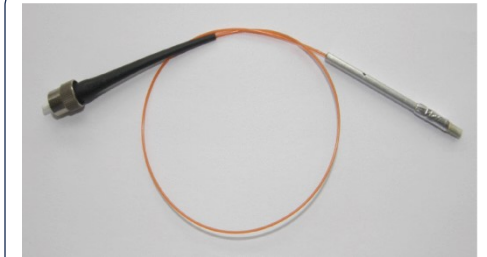
RESULTS

Fiber sensor of Magnetic field



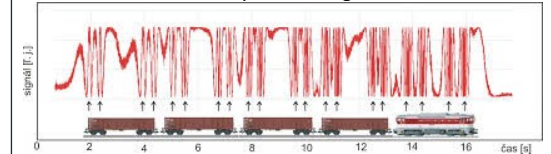
M. Goraus et.al, Appl. Surf. Sci **560**, (2021)

A fiber-optic sensor for monitoring arterial pulse waves at pulse points of the vascular tree.



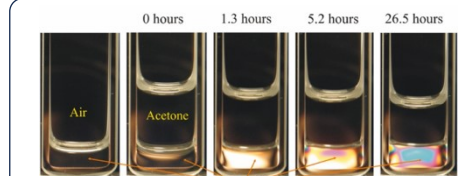
I. Martinec et.al, IEEE sensor Jour. **24**, (2024)

Fiber sensor for Railway monitoring



D. Kacik et.al, Optic. And Laser Tech. **140**, (2021)

A method for inducing birefringence in PDMS by absorption of organic solvent liquids.



N. Tarjanyí et.al, Optic. Materials **160**, (2025)

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