

UNIVERSITY OF ŽILINA

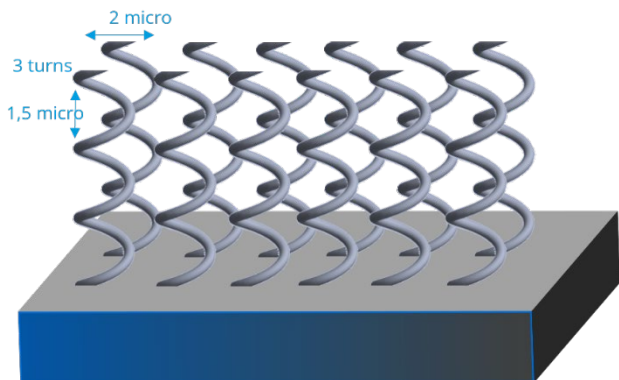
FACULTY OF ELECTRICAL ENGINEERING AND INFORMATION TECHNOLOGY

3D printing task

Topic: „Chiral microstructure“

Goal:

In recent years, the tailoring of plasmonic near fields has become important in the field of nanophotonics. If we combine chirality and plasmonics, we open up a unique field of study with significant potential for photonic and biomedical applications. The principle lies in the fact that chiral molecules interact differently with circularly polarized light, absorbing left- and right-handed circular polarization to different extents. This interaction can be enhanced by coupling chiral molecules with plasmonic nanostructures.



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One of the most promising applications of chiral plasmonics lies in its potential for ultrasensitive detection of chiral molecules. Many naturally occurring biomolecules, including amino acids, sugars, and nucleotides, are chiral and often exist in only one of the two possible enantiomeric forms. This highlights the importance of enantiomer detection and separation, as well as the need for stereoselective synthesis.

The following sub tasks will be due:

- Research on chiral microstructures
- Defining the functionality and physical requirements
- Creating a 3D model using CAD software (Autodesk Inventor, Blender, SolidWorks, ...)
- Selecting appropriate 3D printing methods and materials
- Printing and testing different designs, measuring transmittance of prepared structures

Responsible

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