



IPM

Universität für Bodenkultur Wien  
Department für Materialwissenschaften  
und Prozesstechnik

# Master thesis:

## Structure and mechanical properties of roots

### Background:

Literature repeatedly emphasized that fine roots make a significant contribution to the stability of soils. The aim of this master thesis is to investigate whether there are anatomical differences that can distinguish between fine roots and roots and how do they differ root types in structure and their mechanical properties.

### Aim:

The aim of the thesis is to examine a relation between structure and mechanics of roots. The working hypothesis is that the microfibril angle is optimized by the plant for a particular mechanical stress like e.g. shear forces.

### Methods:

Small angle X-ray Scattering (SAXS), Scanning Electron Microscopy, tensile tests

Beginning: From April  
2016

Duration: 6-8 Months

### Contact:

Dr. Harald Rennhofer (IPM)  
[Harald.Rennhofer@boku.ac.at](mailto:Harald.Rennhofer@boku.ac.at)  
+43 – 1 – 47654 - 5159

Institut für Physik und Materialwissenschaften (IPM), BOKU Wien  
In Kooperation mit dem Institut für Ingenieurbiologie und Landschaftsbau (IBLB), BOKU Wien