UseCase.0016 (1.1)

Materials Catalog

Keywords: material, dispersion, absorption, formula based, sampled, programmable
Description

• This use case demonstrates how the material catalog can be used within VirtualLab.
• An overview of the possibilities to access material information will be given.
• It is shown how materials can be loaded from catalog and saved for further using.
• The material catalog can be accessed via the corresponding ribbon item in the catalog ribbon:
The material catalog contains materials of standard material catalogs of glasses, metals and thin films, partly named according to a vendor.

The catalog is organized in categories.

VirtualLab allows the definition of multiple categories for each material.

Some often used materials (e.g. Air, Fused Silica, Water), that are not assigned to specific categories are collected in „Miscellaneous“.

Infrared and X-ray materials are categorized as well.
Material Preview – Diagram

- The preview of a material can be used to visualize the dispersion and absorption properties of the selected material.
- The minimum and maximum wavelength are listed at the bottom of the preview.
- The diagram page shows the wavelength dependency or energy dependency.
- This diagram can be configured for adapting the visualization of the properties.
Material Preview – Diagram

- The diagram can be configured to show the real refractive index and/or absorption data depending on wavelength or energy.
- For absorption, the user can select whether alpha or kappa shall be viewed.
- In addition, the user can specify the coloring and thickness of the curves to display.
In the tab Additional Information the user can access supplementary information on the selected material.

Here the state of matter is shown.

Also the valid wavelength ranges for refractive index and absorption are listed. (separately at the top, and combined at the bottom)
On this tab also a small calculator is available.

It can be used to calculate the numerical values for refractive index and absorption for a user defined wavelength.

It is also possible to calculate the transmittance for a given thickness of the material.
Store Materials Into Catalogs

- By editing a material the user can specify the characteristics of the material.
- After this is done, the material can be saved as user-defined catalog entry by clicking on the save to catalog button.
Catalog Access to Material Catalog

- Materials are typically used to define media.
- Within the edit dialog of an optical medium the user can select the base material.
- The material can be
  - Visualized
  - Edited
  - Loaded from Catalog
Summary

• Materials are a basic building block to set up optical systems.

• The catalog concept allows to use a large database of already defined materials as well as user-defined ones.

• The preview of the materials within the catalog gives a good insight of the selected materials and its properties.