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:
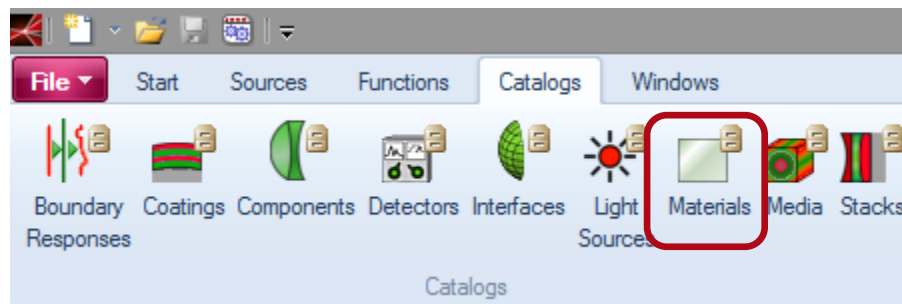
Material Catalog
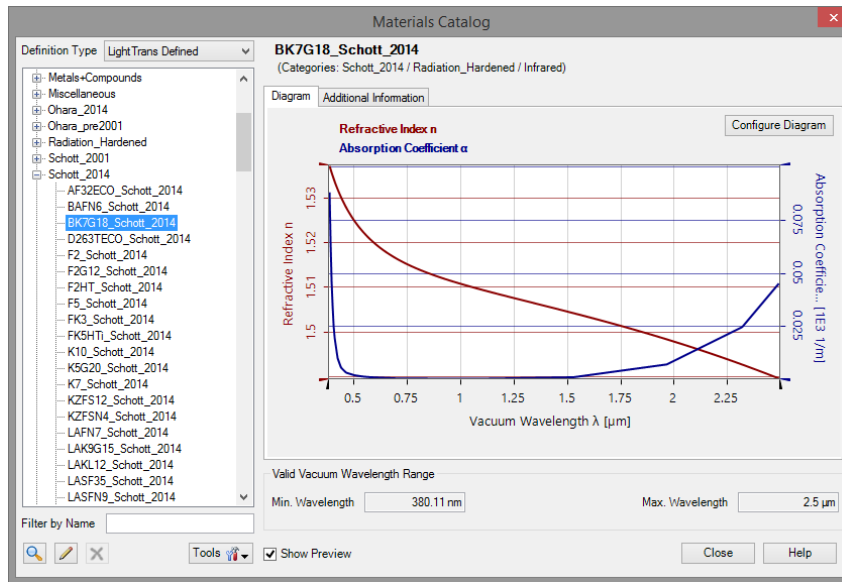
- The material catalog contains materials of standard material catalogs of glasses, metals and thin films, partly named according to a vendor.

- 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
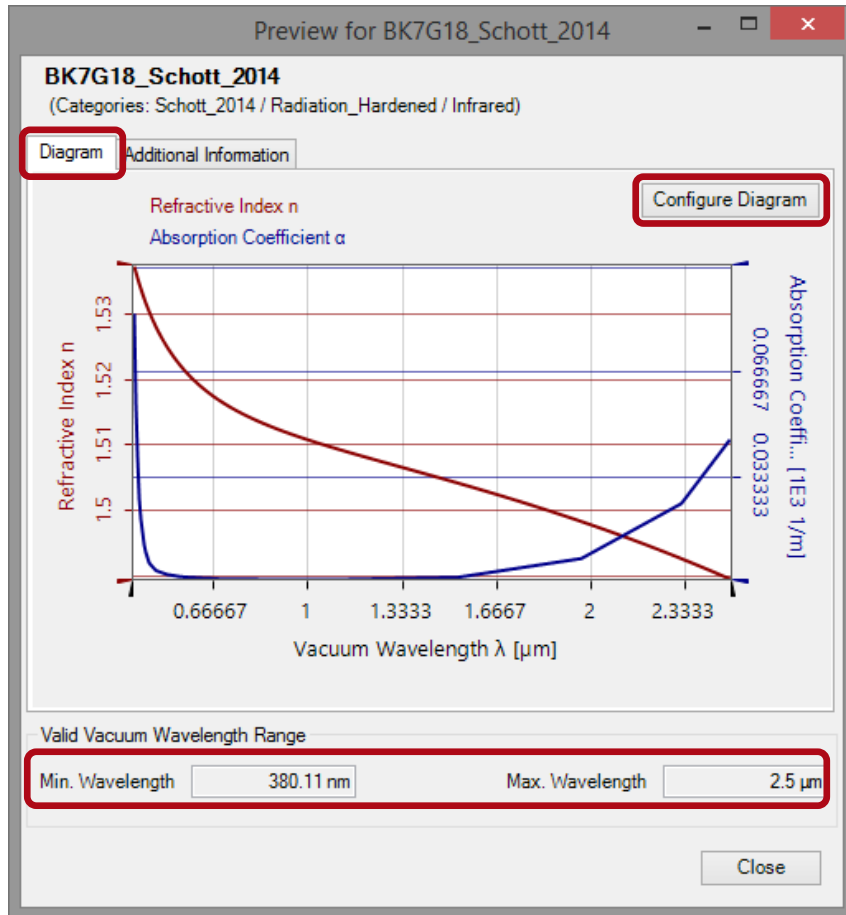
- The preview of a material can be used to visualize the dispersion and absorption properties of the selected material.

- 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
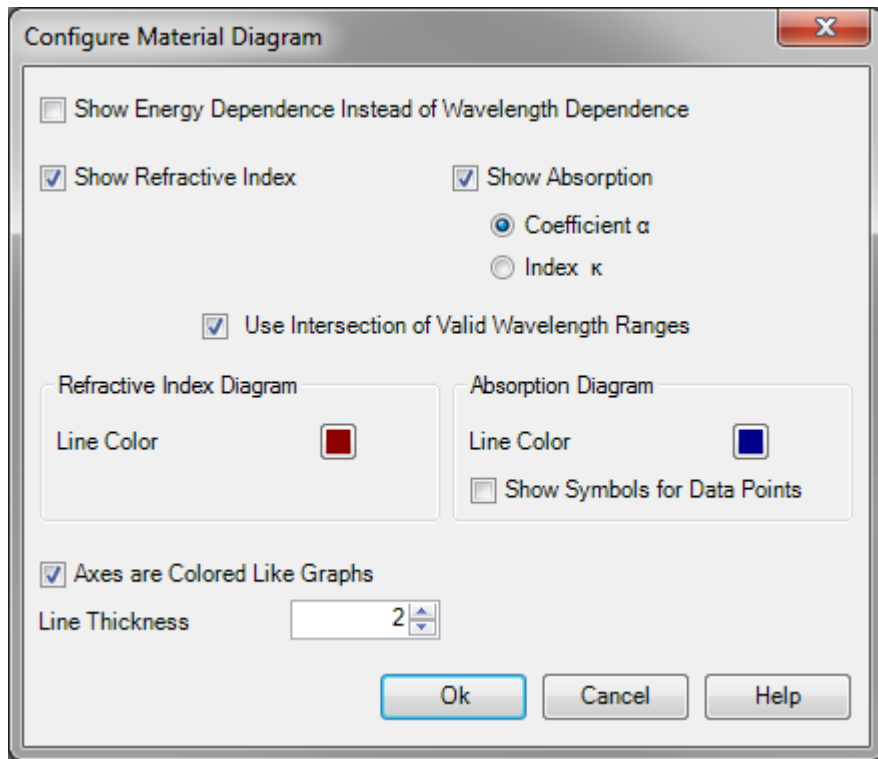
- The diagram can be configured to show the real refractive index and/or absorption data depending on wavelength or energy.

- 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.

Material Preview – Additional Information
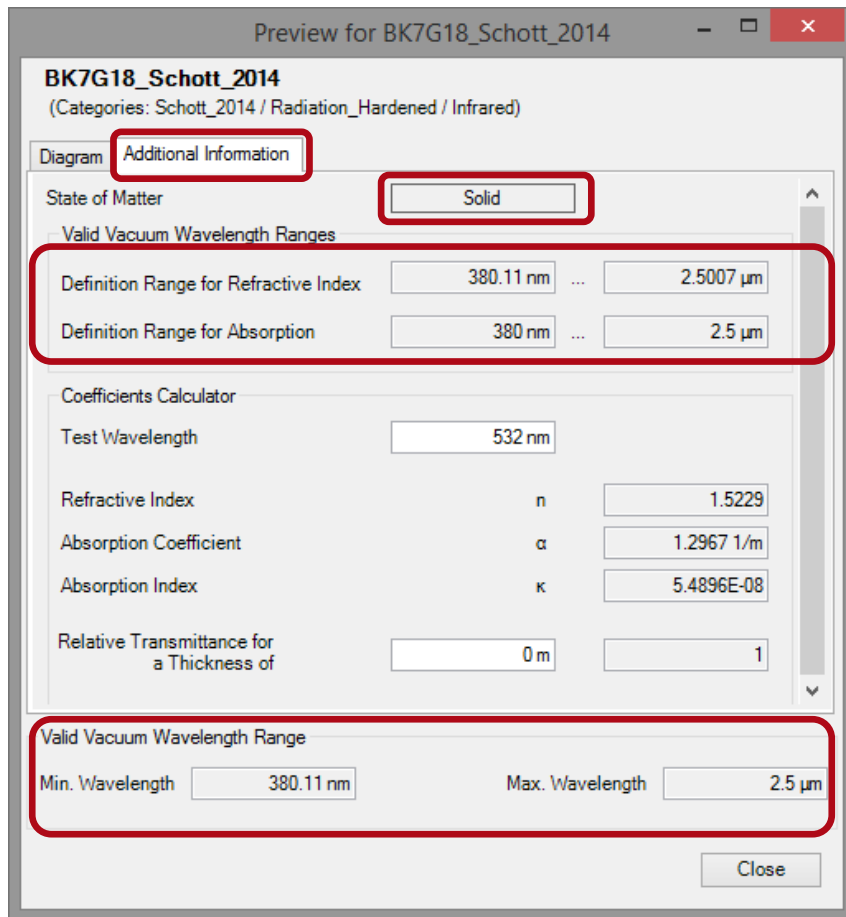
- In the tab Additional Information the user can access supplementary information on the selected material.

- 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)

Material Preview – Additional Information
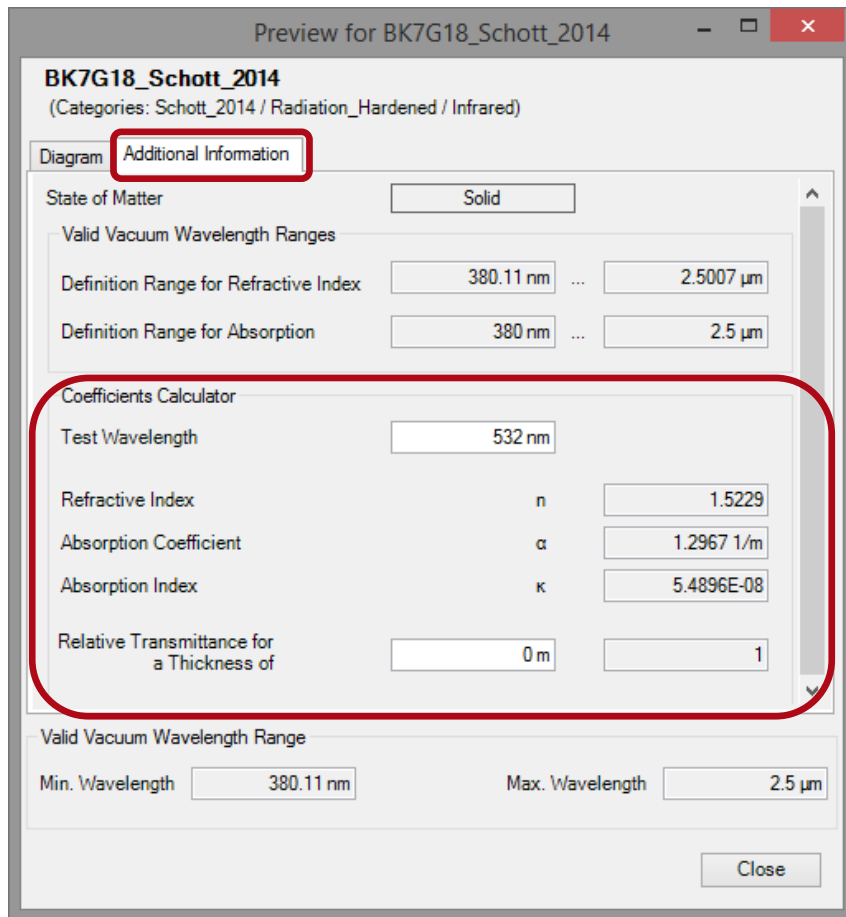
- On this tab also a small calculator is available.

- 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.
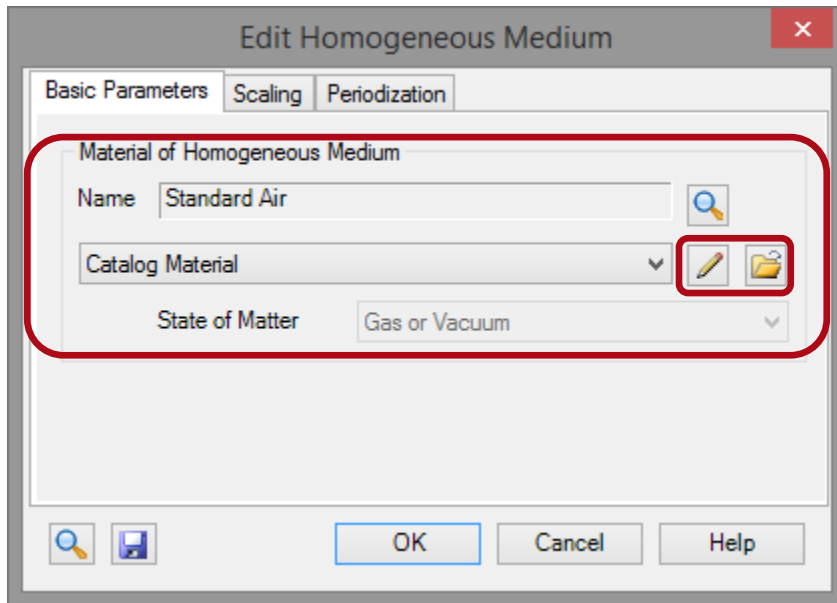
Store Materials Into Catalogs
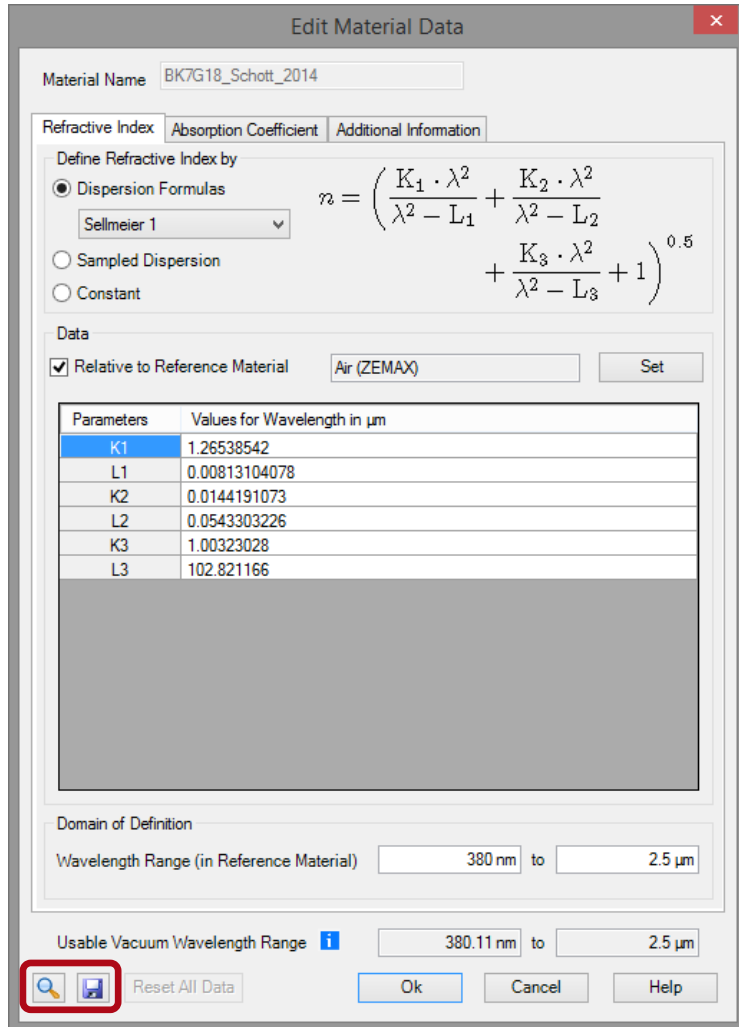
- By editing a material the user can specify the characteristics of the material.

- 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 a 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.