

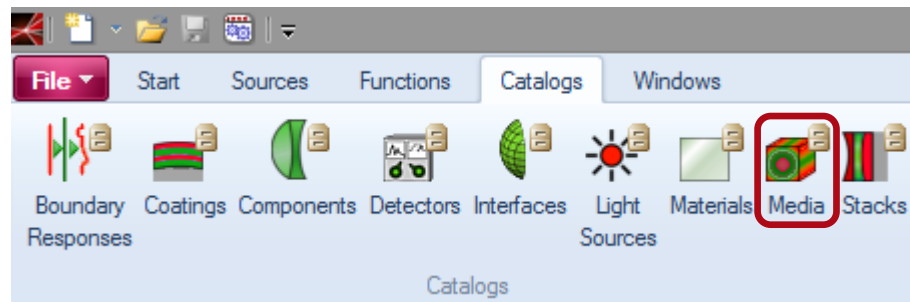
UseCase.0017 (1.0)

## Media Catalog

**Keywords:** optical medium, material,  
homogeneous, inhomogeneous

# Description

- This use case explains how the media catalog of VirtualLab shall be used.
- Media can be homogeneous or inhomogeneous.
  - Homogeneous media are defined by materials from the materials catalogs.
  - Inhomogeneous media are typically defined by materials and an refractive index modulation.
- The media catalog can be accessed by the corresponding item in the catalog ribbon.

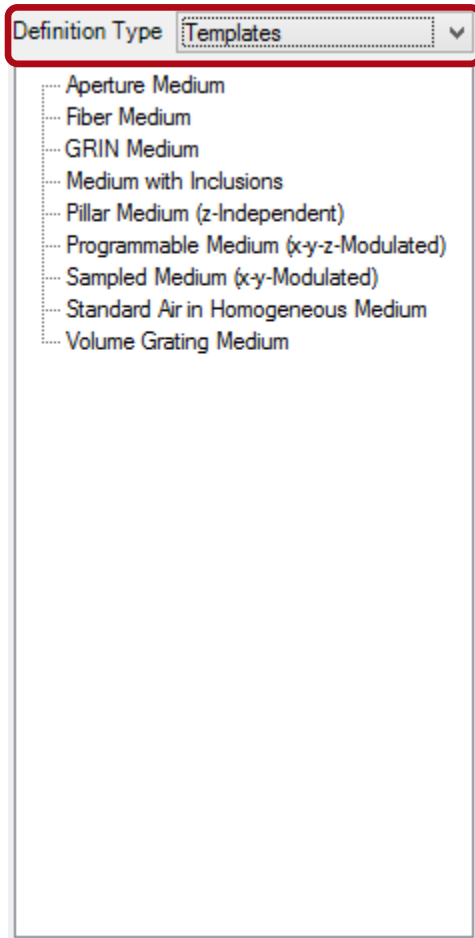


# Media Catalog

The screenshot displays the 'Media Catalog' window with the following components:

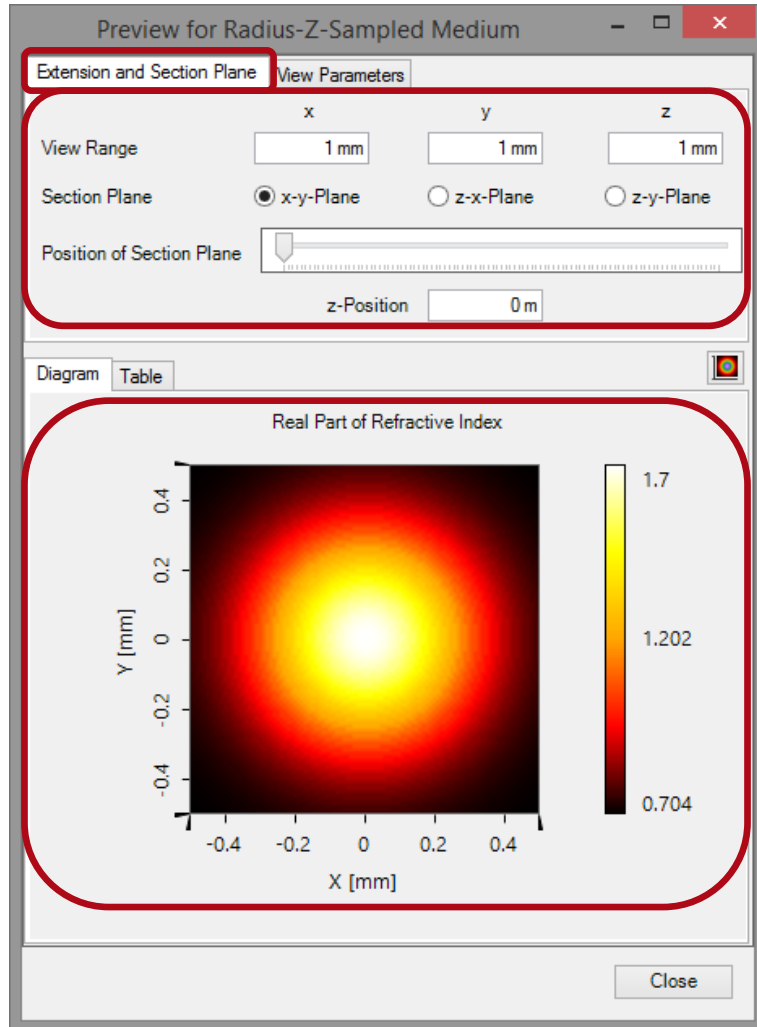
- Definition Type:** Light Trans Defined
- Extension and Section Plane:** View Parameters
- View Range:** x = 1 mm, y = 1 mm, z = 1 mm
- Section Plane:**  x-y-Plane,  z-x-Plane,  z-y-Plane
- Position of Section Plane:** z-Position = 0 m
- Media List:**
  - Aperture Media
  - GRIN Media
  - Homogeneous Media
    - Fused\_Silica in Homogeneous Medium
    - Standard Air in Homogeneous Medium
    - Water in Homogeneous Medium
  - Pillar Media
  - Sampled Media (x-y-Modulated)
  - Samples for Programmable Media
    - Coated Slanted Grating Medium
    - Hexagonally Gridded Medium (x-y-Modulated)
    - Linear Temperature Gradient (X-direction)
    - Radius-Z-Sampled Medium
    - Thom Grating Medium
  - Volume Grating Media
    - Fiber Bragg Grating Medium
- Filter by Name:** [Empty text box]
- Diagram/Preview:** Real Part of Refractive Index. The plot shows a color gradient from dark blue (1.0003) to light yellow (1.0003) across the X and Y axes, both ranging from -0.25 to 0.25 mm. The color scale is labeled with 1.0003 at the top and bottom.
- Buttons:** Tools, Show Preview (checked), Close, Help

# Media Catalog – Templates



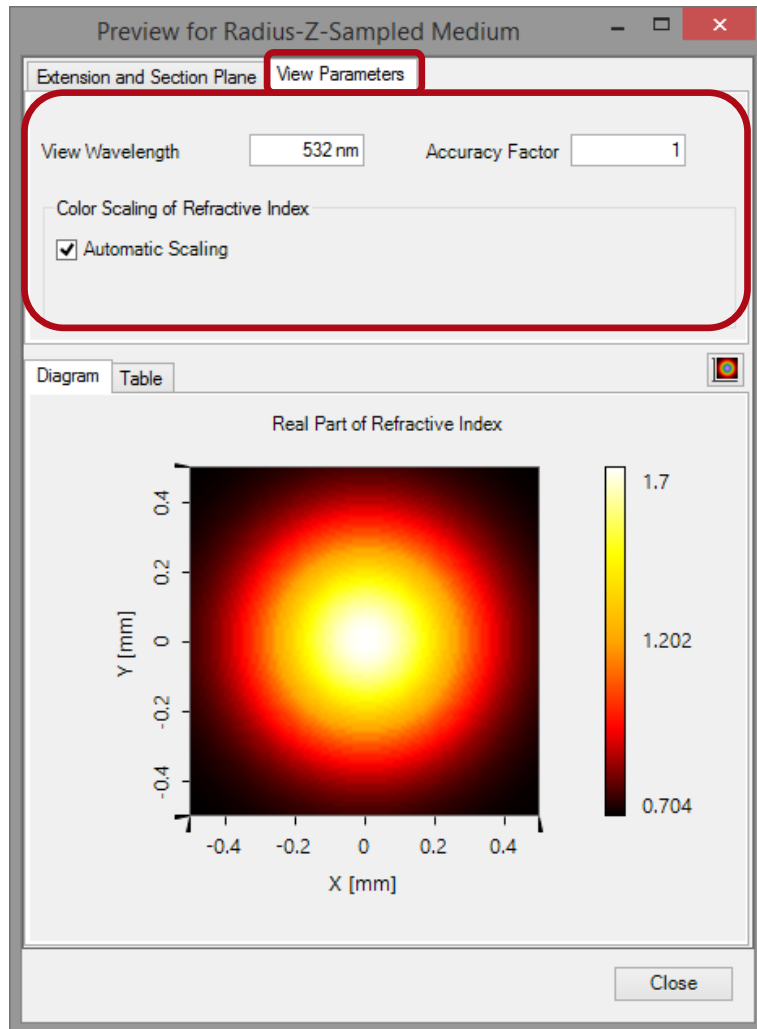
- In the templates the following types are available:
  - Aperture medium
  - Fiber medium
  - GRIN medium
  - Inclusion medium
  - Pillar medium
  - Sampled medium
  - Programmable medium
  - Homogeneous medium
  - Volume grating medium

# Media Preview



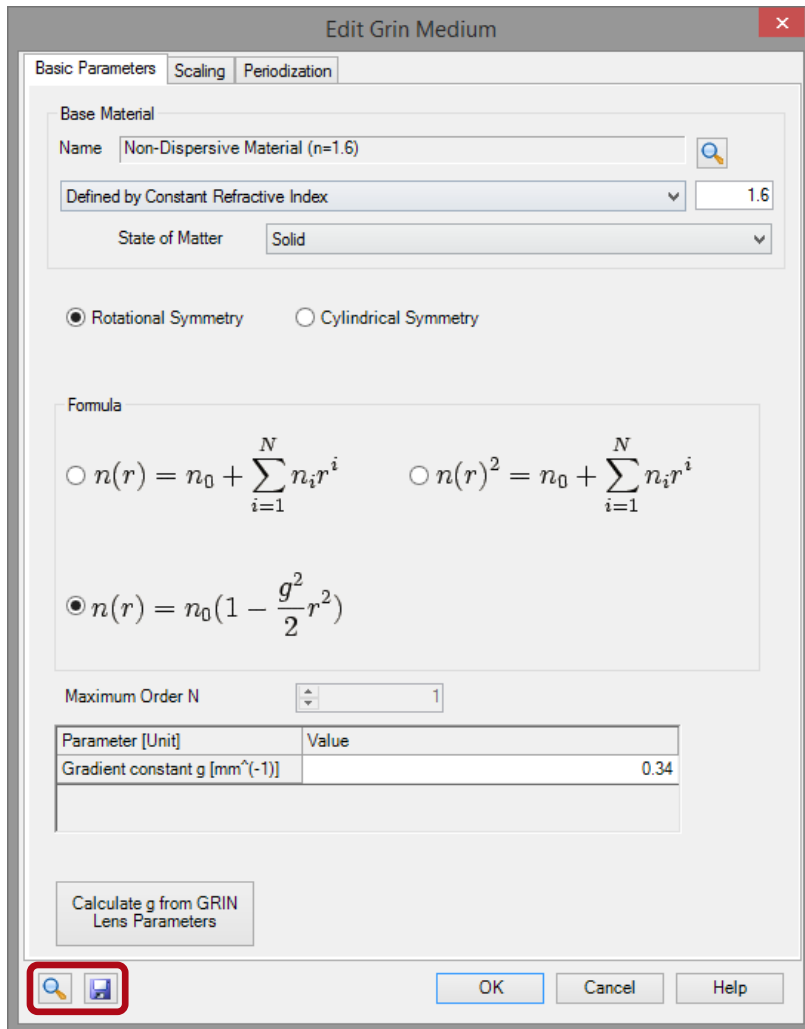
- The preview of the medium shows the 2D refractive index distribution of the selected medium.
- The user can define the extension of the area to be visualized.
- In addition the user can define the orientation of the plane to view in 3D space.

# Media Preview



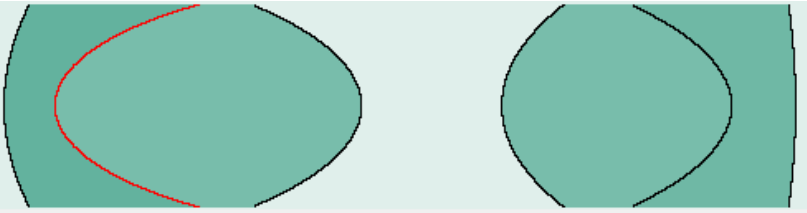
- For the visualization of the medium the user can specify additional view parameters.
- The user can define the
  - Wavelength
  - Accuracy factor (linear scaling of the data points to be evaluated)
  - Scaling (automatic scaling, or manual scaling with user defined minimum/maximum value)

# Store Media Into Catalogs



- By editing a medium the user can specify the characteristics of the medium (including possible base material and modulations).
- After this is done, the medium can be saved as user-defined entry in the catalog by clicking on the save to catalog button.

# Catalog Access to Media Catalog



Index	Distance	Position	Type	Homogeneous Medium	Comment
0	0 m	0 m	Conical Interface	N-SF6HT in Homogeneo	Enter your comr
▶ 1	2 mm	2 mm	Conical Interface	N-BAF10 in Homogen...	Enter your comr
2	12 mm	14 mm	Conical Interface	Standard Air in Homoger	Enter your comr
3	5.4794 mm	19.479 mm	Conical Interface	N-BAF10 in Homogeneo	Enter your comr
4	9 mm	28.479 mm	Conical Interface	SF10 in Homogeneous M	Enter your comr
5	2.5 mm	30.979 mm	Conical Interface	Standard Air in Homoger	Enter your comr

- The media catalog can be accessed on every position within the VirtualLab where a medium needs to be specified.
- Adjacent the table within the edit dialog of the optical interface sequence (OIS) component is shown, which is one example for the access to the media catalog.



# Summary

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- Optical media are used to define the distribution of refractive indices (and absorption values) between optical surfaces.
- The media catalog allows to store user-defined media into a database, which can be accessed on all relevant dialogs within VirtualLab.
- The preview of the media within the catalog gives a first impression of the selected media. This is especially helpful for index-modulated (inhomogeneous) media.