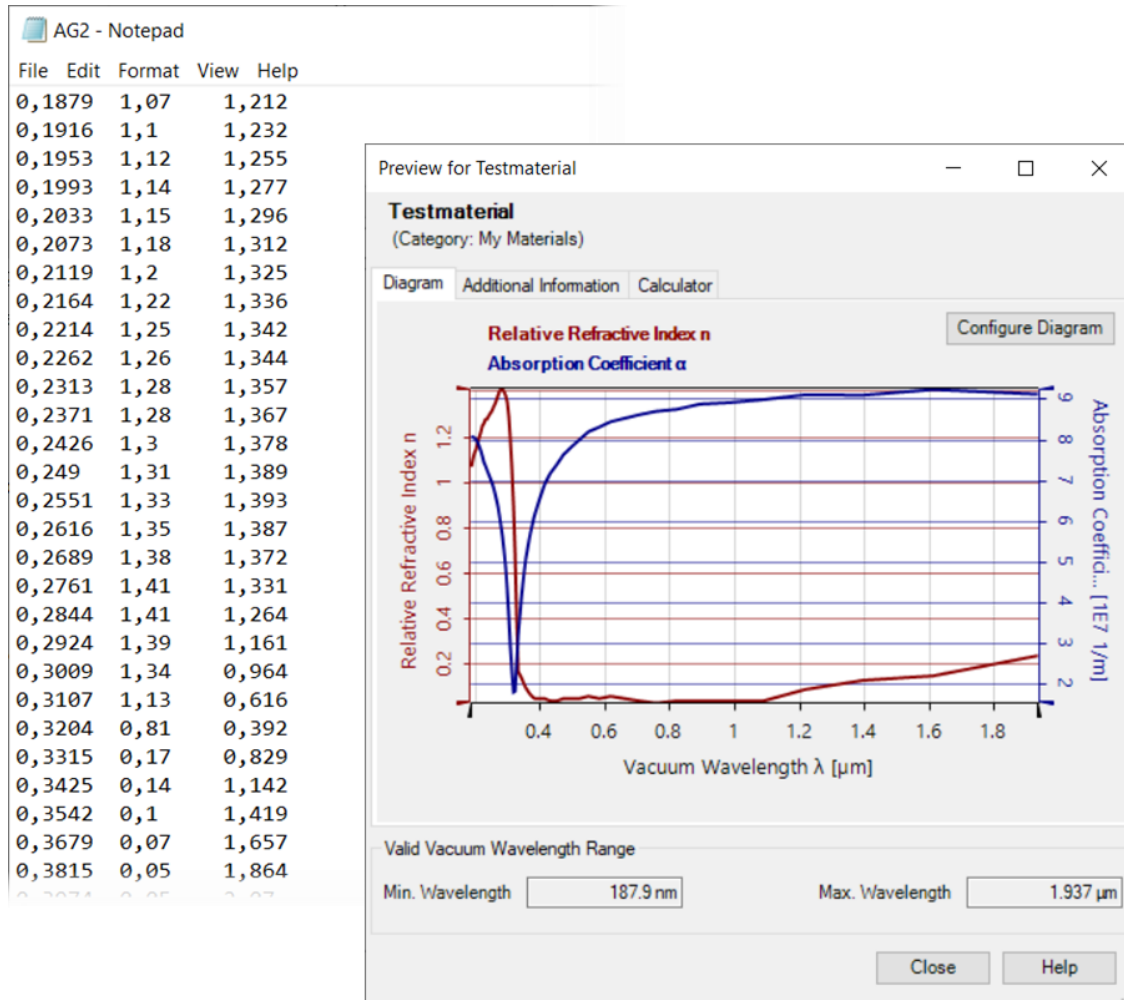


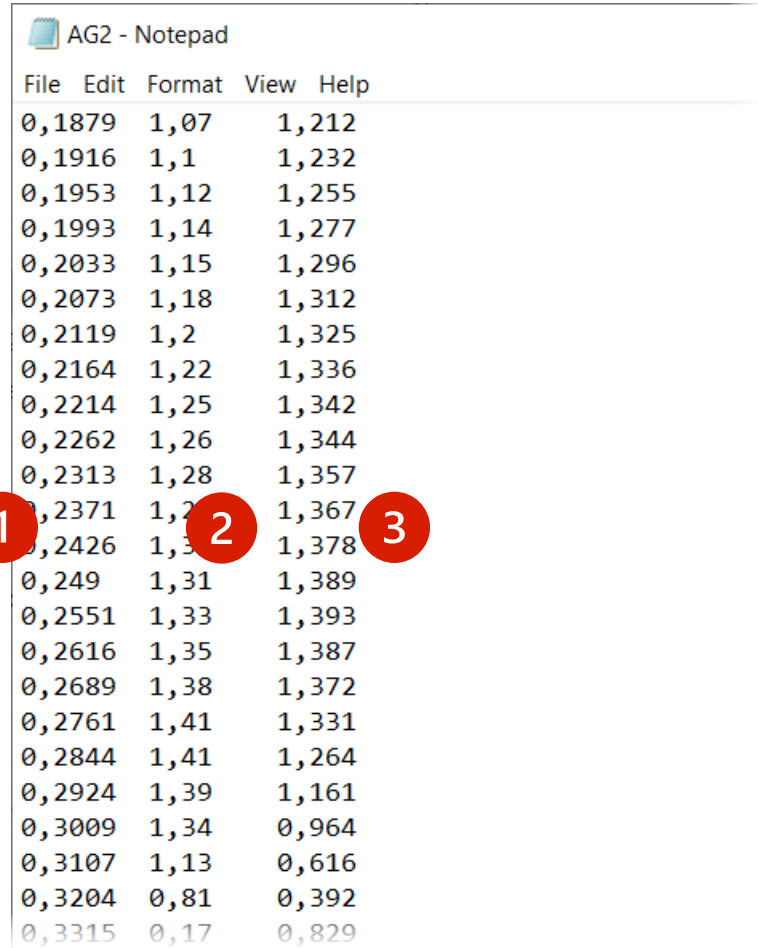
Import Material Data into VirtualLab Fusion

Abstract



To model an optical system accurately, it is essential to use precise material properties. In case of thin layers or more complex materials, the actual refractive index may differ from the values found in literature. Hence it is required to measure the complex refractive index of the regarding material and import the data into VirtualLab Fusion. The workflow to import complex material data is shown in this document.

Material Data Format

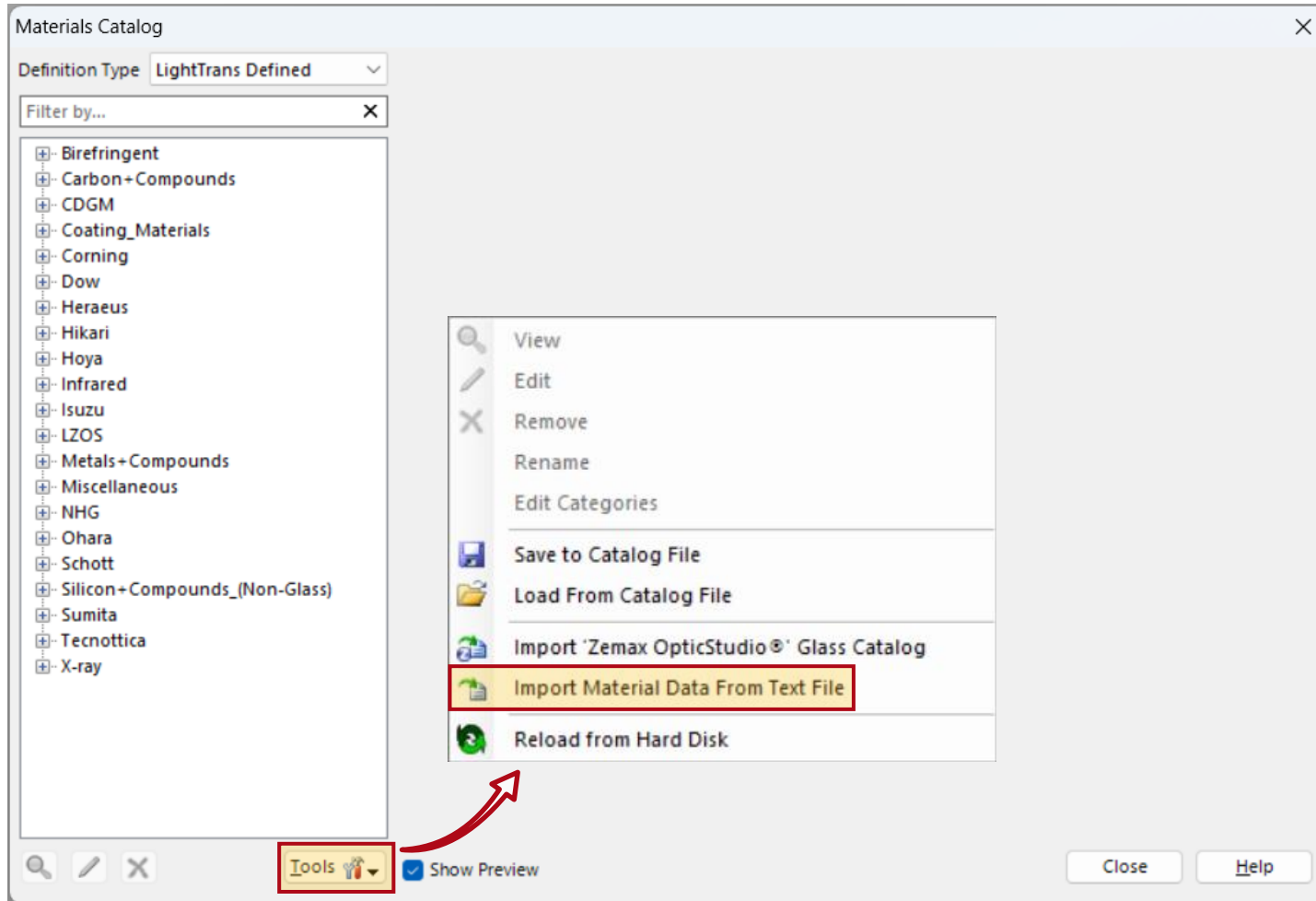


File	Edit	Format	View	Help
0,1879	1,07	1,212		
0,1916	1,1	1,232		
0,1953	1,12	1,255		
0,1993	1,14	1,277		
0,2033	1,15	1,296		
0,2073	1,18	1,312		
0,2119	1,2	1,325		
0,2164	1,22	1,336		
0,2214	1,25	1,342		
0,2262	1,26	1,344		
0,2313	1,28	1,357		
0,2371	1,2	1,367		
0,2426	1,3	1,378		
0,249	1,31	1,389		
0,2551	1,33	1,393		
0,2616	1,35	1,387		
0,2689	1,38	1,372		
0,2761	1,41	1,331		
0,2844	1,41	1,264		
0,2924	1,39	1,161		
0,3009	1,34	0,964		
0,3107	1,13	0,616		
0,3204	0,81	0,392		
0,3315	0,17	0,829		

For the import wizard, material data could be written using the format shown on the left and include the following information:

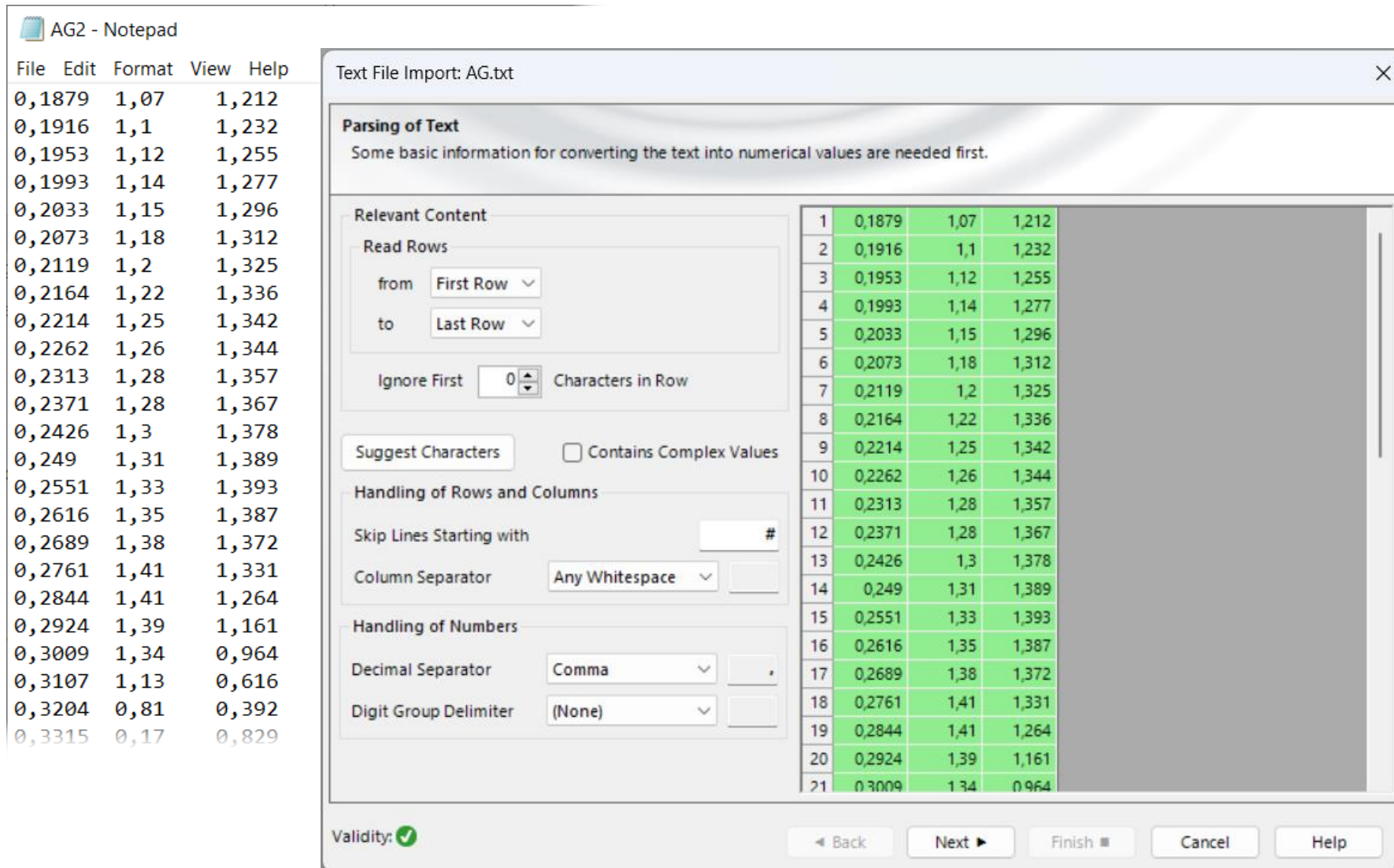
- (1) ascending wavelength λ
- (2) refractive index n
- (3) absorption coefficient κ

Import via Wizard



In the *Materials Catalog*, open the import wizard and select the text file containing the material data.

Interpret Text Strings as Numbers



AG2 - Notepad

File Edit Format View Help

0,1879	1,07	1,212
0,1916	1,1	1,232
0,1953	1,12	1,255
0,1993	1,14	1,277
0,2033	1,15	1,296
0,2073	1,18	1,312
0,2119	1,2	1,325
0,2164	1,22	1,336
0,2214	1,25	1,342
0,2262	1,26	1,344
0,2313	1,28	1,357
0,2371	1,28	1,367
0,2426	1,3	1,378
0,249	1,31	1,389
0,2551	1,33	1,393
0,2616	1,35	1,387
0,2689	1,38	1,372
0,2761	1,41	1,331
0,2844	1,41	1,264
0,2924	1,39	1,161
0,3009	1,34	0,964
0,3107	1,13	0,616
0,3204	0,81	0,392
0,3315	0,17	0,829

Text File Import: AG.txt

Parsing of Text
Some basic information for converting the text into numerical values are needed first.

Relevant Content

Read Rows
from First Row
to Last Row

Ignore First 0 Characters in Row

Suggest Characters ☐ Contains Complex Values

Handling of Rows and Columns

Skip Lines Starting with #

Column Separator Any Whitespace

Handling of Numbers

Decimal Separator Comma

Digit Group Delimiter (None)

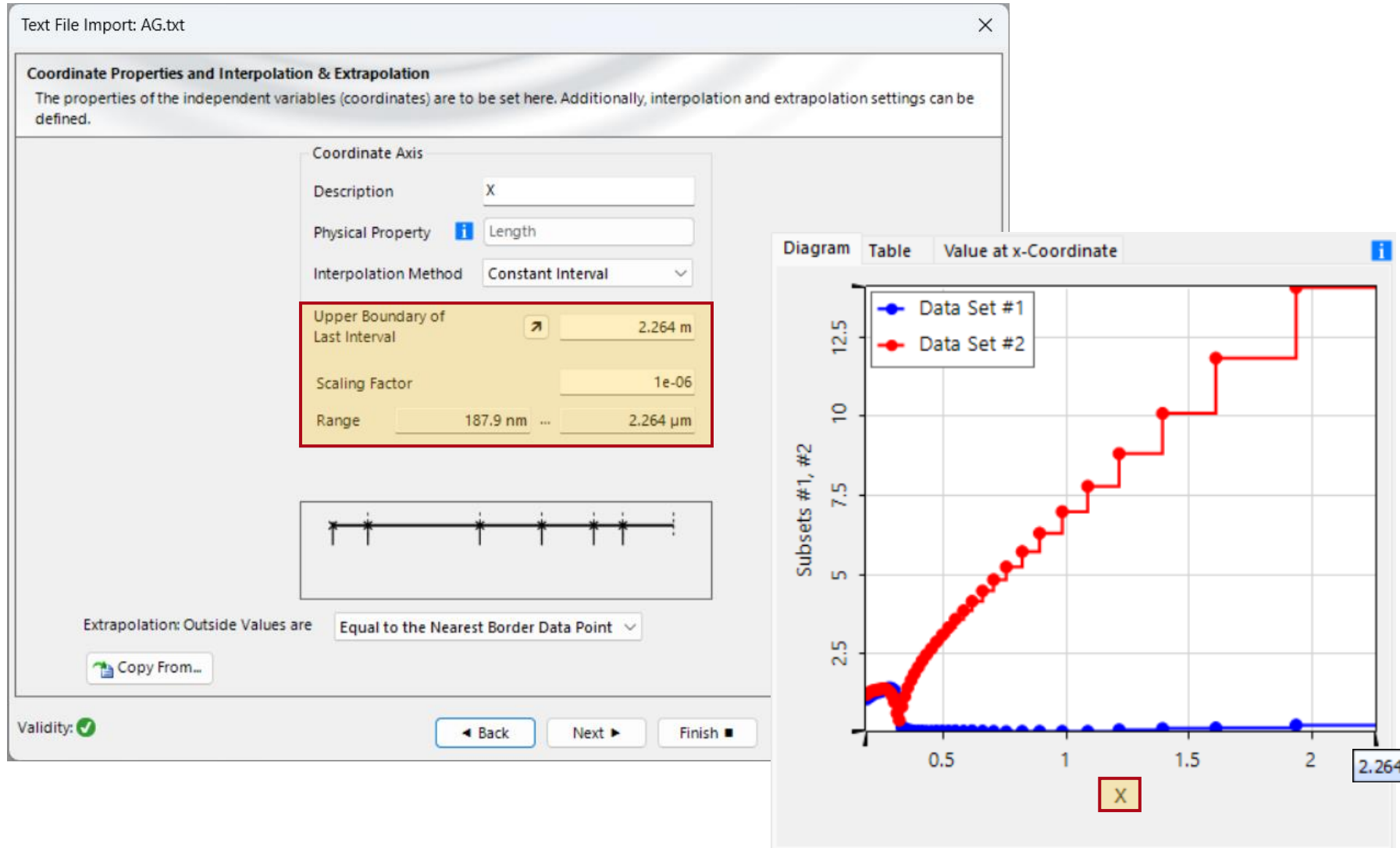
Validity:

Back Next Finish Cancel Help

1	0,1879	1,07	1,212
2	0,1916	1,1	1,232
3	0,1953	1,12	1,255
4	0,1993	1,14	1,277
5	0,2033	1,15	1,296
6	0,2073	1,18	1,312
7	0,2119	1,2	1,325
8	0,2164	1,22	1,336
9	0,2214	1,25	1,342
10	0,2262	1,26	1,344
11	0,2313	1,28	1,357
12	0,2371	1,28	1,367
13	0,2426	1,3	1,378
14	0,249	1,31	1,389
15	0,2551	1,33	1,393
16	0,2616	1,35	1,387
17	0,2689	1,38	1,372
18	0,2761	1,41	1,331
19	0,2844	1,41	1,264
20	0,2924	1,39	1,161
21	0,3009	1,34	0,964

To interpret text strings as numbers, it is necessary to provide the basic information from the text file. In this example, the *Decimal Separator* is a comma, the *Column Separator* is whitespace, and all numbers are real values, so the option *Contains Complex Values* should be left unchecked.

Coordinate Setting



For this non-equidistance 1D data array, the maximum value of the x-coordinate is automatically determined, with the default length unit being meters. To ensure that the x-axis values correspond to the wavelength of light, you need to specify the correct *Scaling Factor*.

Subset Setting

Mapping Two Sets of Data to Absorption and Refractive Index

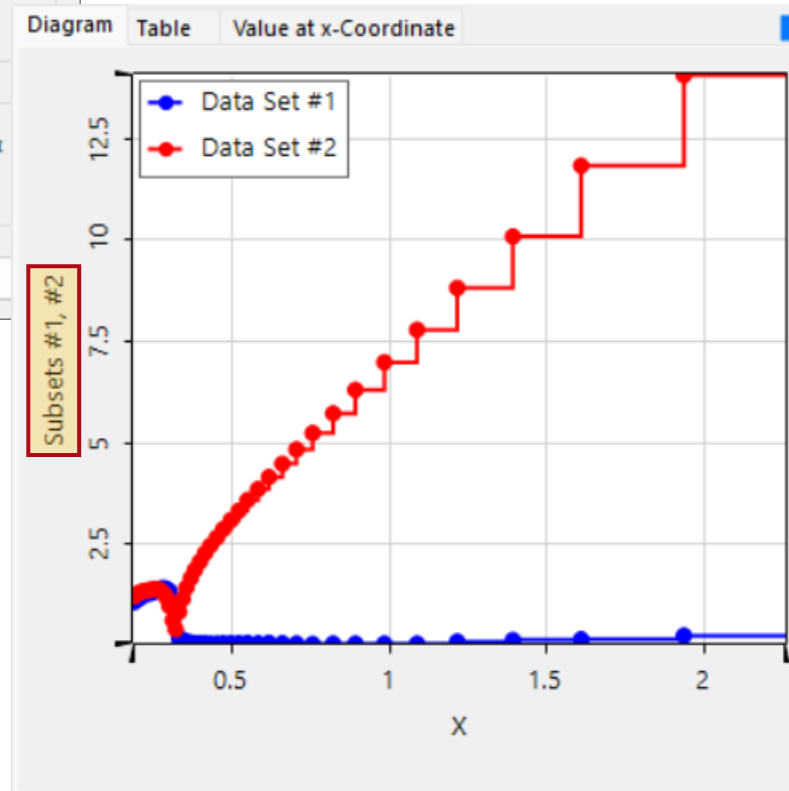
Please decide which set of data refers to the real-valued refractive index and which one to the absorption.

Data Set #1
Refractive Index

Data Set #2
Absorption

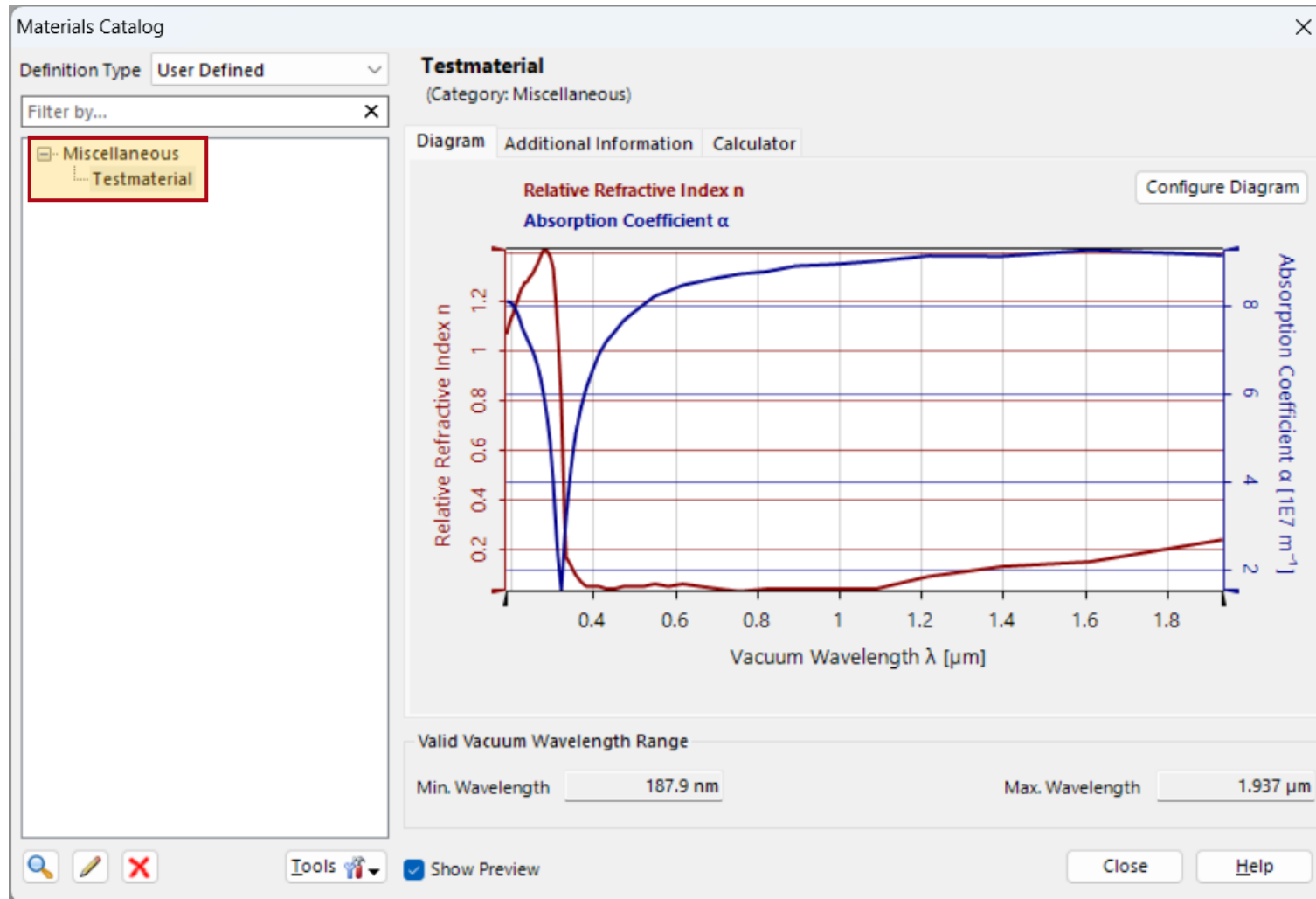
☐ Absorption Coefficient α
☒ Absorption Index κ

OK Cancel Help



In the final step of the import wizard, you can specify the properties of the imported subsets.

View in VirtualLab Fusion



Find the imported material in the *Materials Catalog*, where you can view or further edit its properties.

Document Information

title	Import of Material Data into VirtualLab Fusion
document code	SWF.0007
version	2.0
toolbox(es)	VirtualLab Fusion Basic
VL version used for simulations	2024.1 (Build 1.110)
category	Feature Use Case
