



Get Started

With SMARTOptics 7.0

software
B&W

Get started with SMARTOptics



This guide will help you to understand the basic functionality of SMARTOptics.

Click [here](#) to download the assembly for this guide.

Follow the instructions on the next pages

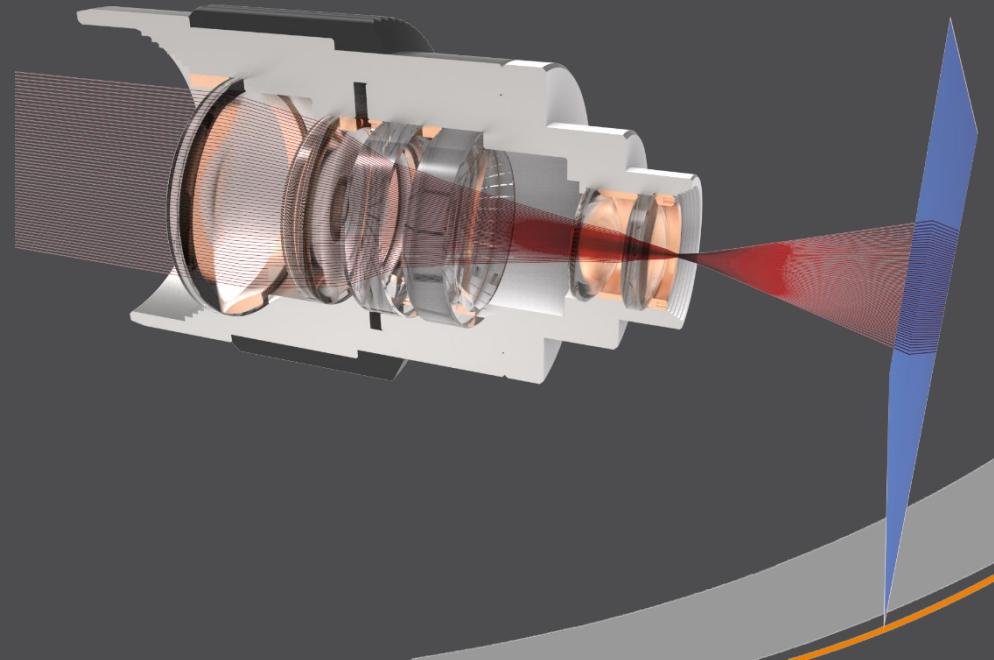
Requirements for this guide

- Creo Parametric 4.0 up to 8.0
- SMARTOptics 7.0, 7.1 and 8.0

Overview

In this guide you will learn the following skills

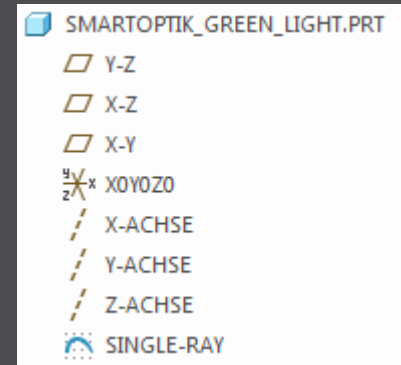
- Setup a light source
- Define your elements
 - Material
 - End
 - Absorb
 - Split
- View your results
- Output your results



Setup a light source

How to prepare your part as illuminant

- Simply add at least ONE sketched curve to your part
- Each curve in your illuminant is interpreted as one ray
- In the model tree on the right, you see a part with a “SINGLE-RAY”
- It is also possible to pattern the curve



Setup a light source

Exercise 1: Define a green illuminant

1. Open *smartoptics_get_started.asm*
2. Switch to the *SMARTOptics* tab
3. Select *Element Definition > Illuminant > Define*
4. Select *ILLUMINANT_GREEN.PRT*
5. The *Illuminant Definition* dialog opens
6. Enter *Name* and *Description* and select *Wavelength 'ne - Hg'* like shown in the image
7. Close the Dialog with *OK*
8. You are done!
Your first illuminant is defined

Illuminant Definition

ILLUMINANT_GREEN.prt

Name
Green light source

Description
ne - Hg - 546.073

Intensity
1.000000

Direction
Normal

Wavelength
ne - Hg grün 546.073

Name: ne - Hg
Description: grün
Wavelength (nm): 546.073000
Default color: grün

Color
grün ≈ 560 - 490 nm

End rays
End points
Absorb rays
Absorb points

Endless rays
Endless points
Split rays
Split points

OK Cancel

Setup a light source

Exercise 2:

Repeat exercise 1 and define a red and a blue light source like shown in the image for the other two illuminant parts.

ILLUMINANT_DEFINITION

ILLUMINANT_RED.prt

Name: Red light source

Description: nC' - Cd - 643.85

Intensity: 1.000000

Direction: Normal

Wavelength: nC' - Cd rot 643.85

Name: nC' - Cd
Description: rot
Wavelength (nm): 643.850000
Default color: rot

Color: rot ≈ 700 - 630 nm

	End rays		Endless rays
	End points		Endless points
	Absorb rays		Split rays
	Absorb points		Split points

OK Cancel

ILLUMINANT_DEFINITION

ILLUMINANT_BLUE.prt

Name: Blue light source

Description: nF - H - 486.134

Intensity: 1.000000

Direction: Normal

Wavelength: nF - H blau 486.134

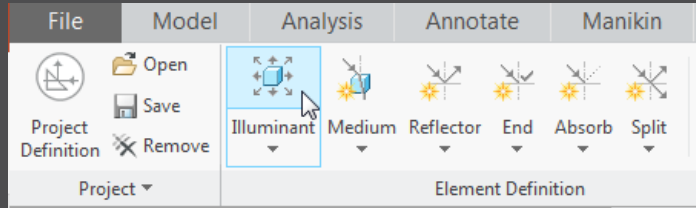
Name: nF - H
Description: blau
Wavelength (nm): 486.134000
Default color: blau

Color: blau ≈ 490 - 450 nm

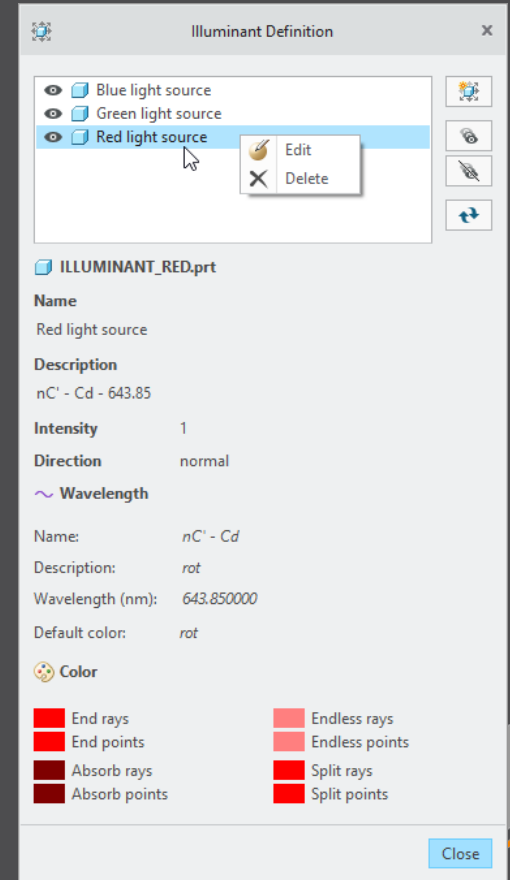
	End rays		Endless rays
	End points		Endless points
	Absorb rays		Split rays
	Absorb points		Split points

OK Cancel

Show all light sources



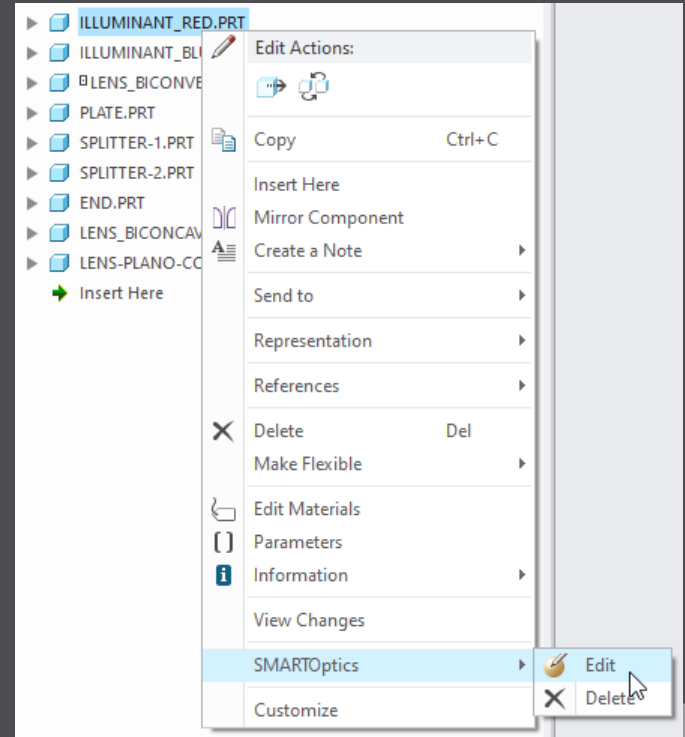
- Select *Element Definition* > *Illuminant* > *Show*
- The *Illuminant Definition* dialog with all information about your illuminants opens.
- In this dialog you have quick access to all your light sources.



Modify a light source

Exercise 3: Modify red illuminant

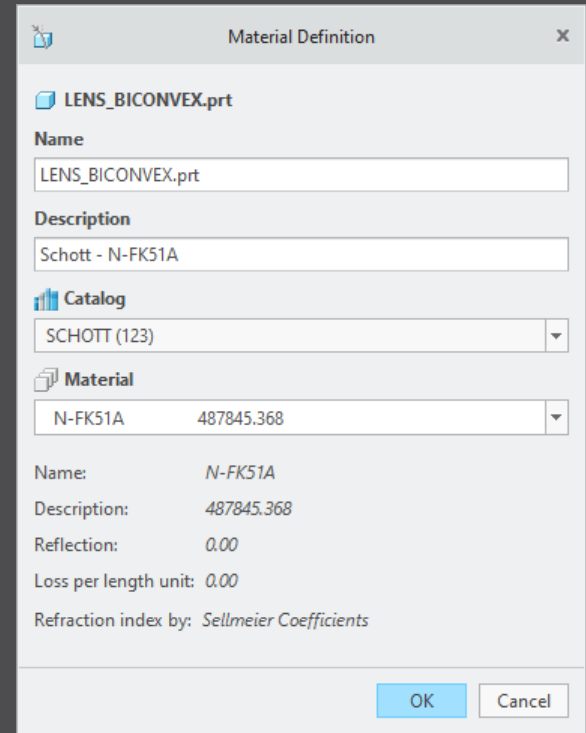
1. Right click on *ILLUMINANT_RED.PRT*
2. In the popup menu select *SMARTOptics > Edit*
3. The *Illuminant Definition* dialog opens
4. Change the *Direction* to *Normal*
5. Close the Dialog with *OK* to assign the changes.



Define your Elements - Material

Exercise 4: Define a material

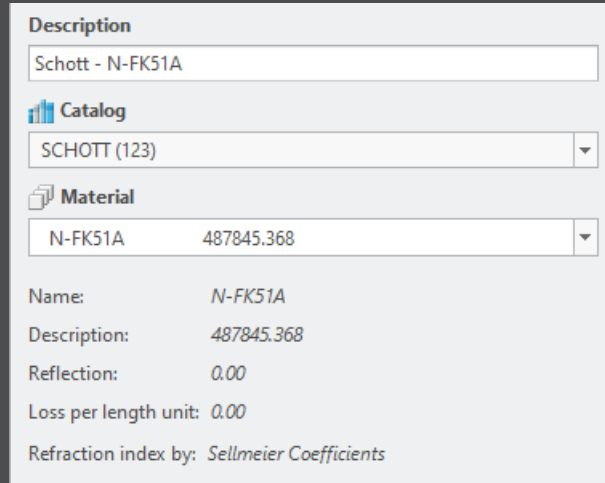
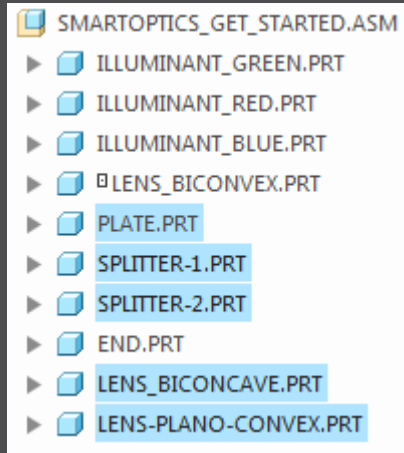
1. Select *Element Definition > Material > Define*
2. Select the *LENS_BICONVEX.PRT*
3. The *Material Definition* dialog opens
4. You can enter a *Name* and a *Description* if you want
5. Select the Schott Material *N-FK51A* for this lens
6. Note: The refraction index for this material is defined in the database by Sellmeier Coefficients.



Define your Elements - Material

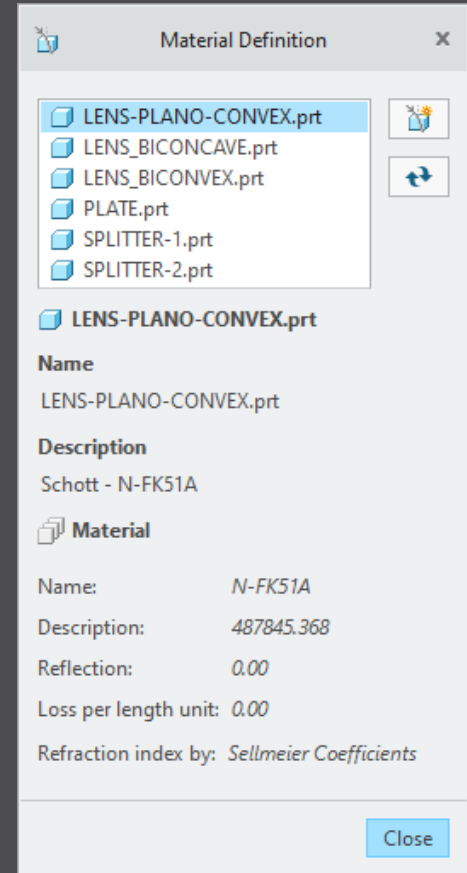
Exercise 5: Define all materials

Repeat Exercise 4 for all highlighted parts



Show all Materials

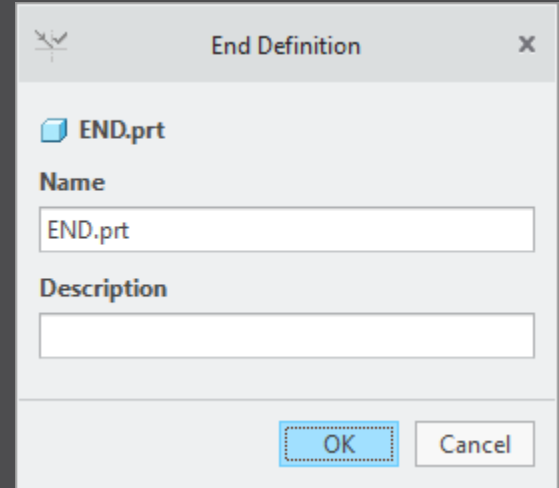
- Select *Element Definition* > *Material* > *Show*
- The *Material Definition* dialog with all information about your materials opens
- In this dialog you have quick access to all your materials



Define your Elements - End

Exercise 6: Define an End part

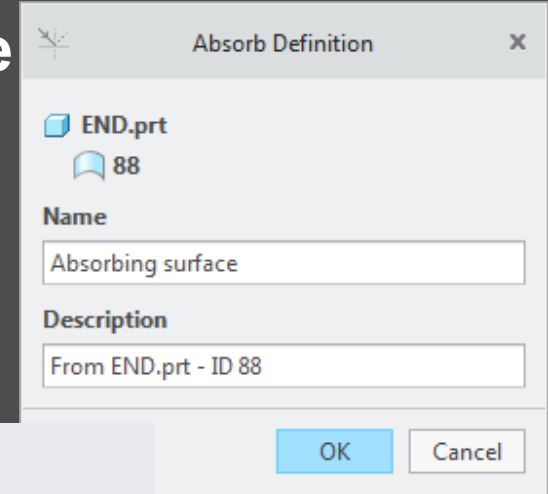
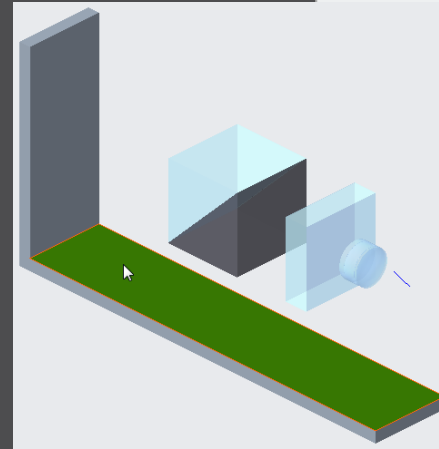
1. Select *Element Definition > End > Define*
2. Select the *END.PRT*
3. The *End Definition* dialog opens
4. You can enter a *Name* and a *Description* if you want



Define your Elements - Absorb

Exercise 7: Define an absorbing surface

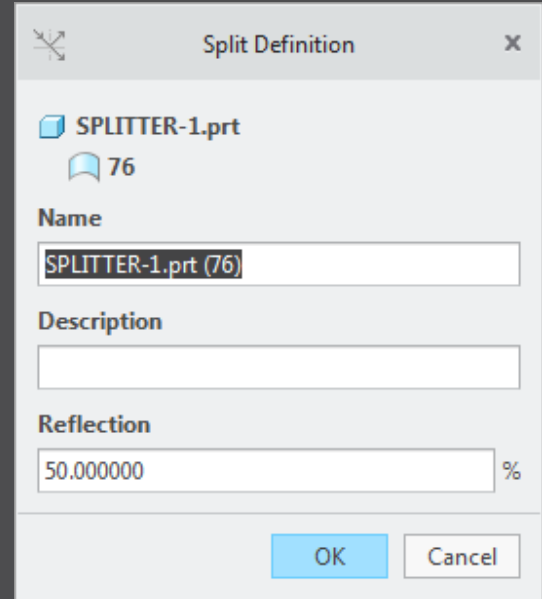
1. Select *Element Definition > Absorb > Define*
2. Select the surface shown in the image
3. The *Absorb Definition* dialog opens
4. You can enter a *Name* and a *Description* if you want



Define your Elements - Split

Exercise 8: Define two splitting surfaces

1. Select *Element Definition > Split > Define*
2. Select the connecting surface between both splitter parts.
3. The *Split Definition* dialog opens
4. You can enter a *Name* and a *Description* if you want
5. Repeat this step for the other connection surface

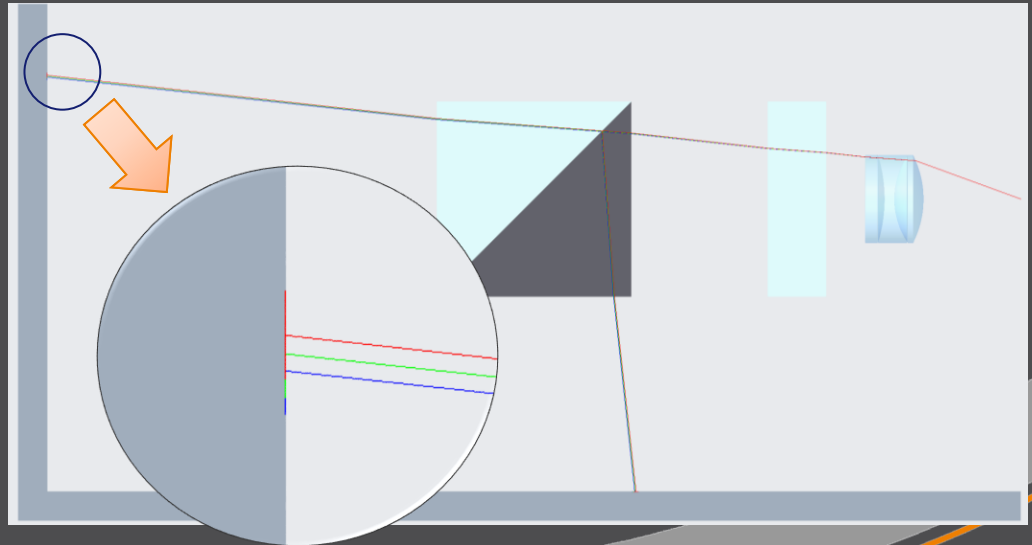
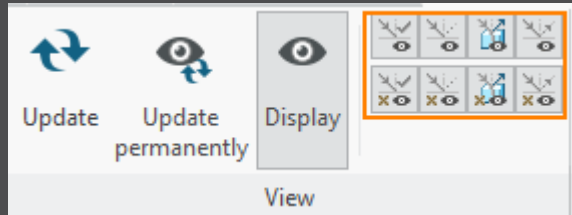


View your Results

Exercise 9: Show your results in Creo graphic window

1. Select *View > Update*
2. Select *View > Display*
3. Depending on the buttons state you can now see your results in Creo.

Note: Since we have defined 3 different wavelengths, the refraction is different for each ray.



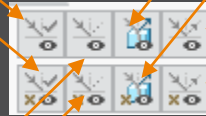
The Ray-types

End rays

*Rays which ends on the element type **End***

Diffused rays

Rays which are splitted



Absorb rays

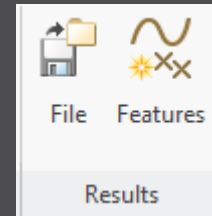
*Rays which ends on the element type **Absorb***

Endless rays

Rays with no end

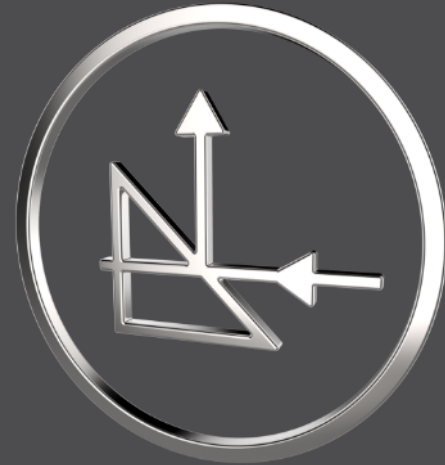
Output your Results

- What you see is what you get. Depending on your view button state, the result can be changed.
- You can output your results to *.ibl and *.pts file.
- You can output your results directly to the Creo model. Simply press a reference coordinate system and create your results.



Contact

If there are any problems, question or even concerns, do not hesitate to contact us.



Mail	smartoptics@buw-soft.de
Phone	+49 9131 – 53387 04
Address	Weisse Herzstr. 2a D-91054 Erlangen