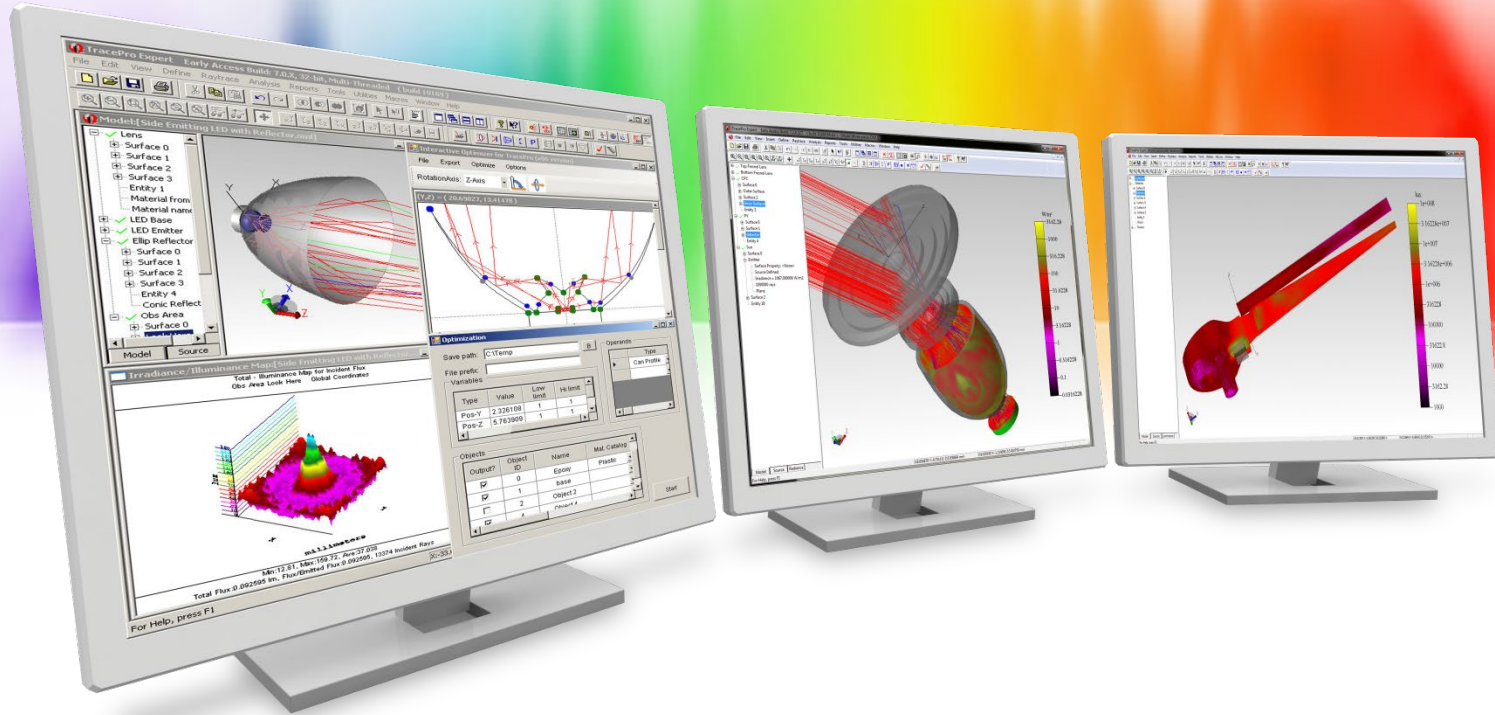


# New Features in TracePro

# New TracePro Release Numbering

- TracePro has switched to a yearly naming scheme. TracePro 2022 version 22.1 was the first release of TracePro in 2022.
- Official releases of TracePro 2022 will debut approximately every 60 days, on or around the 10<sup>th</sup> of the month, starting in February..



## New Features in TracePro 2022 22.5

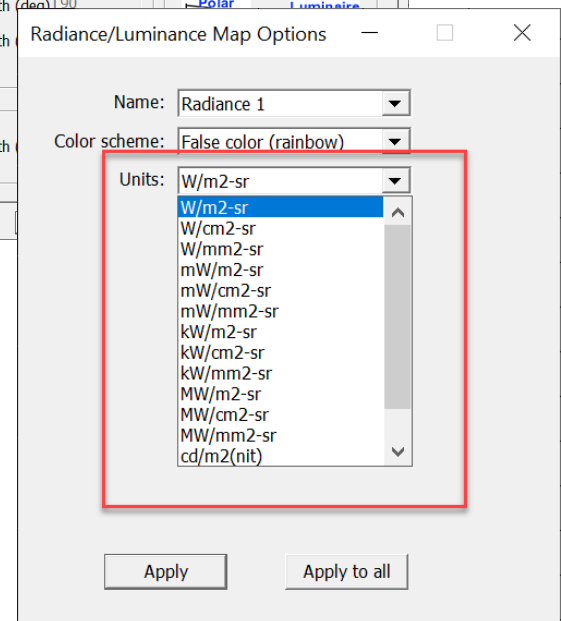
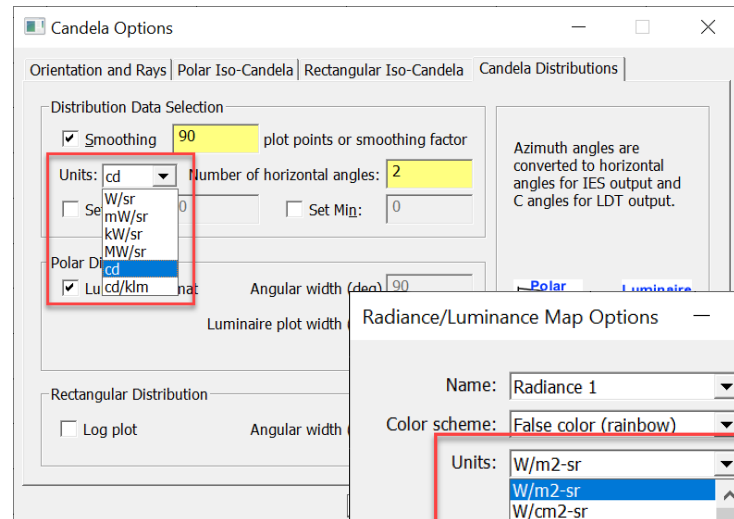
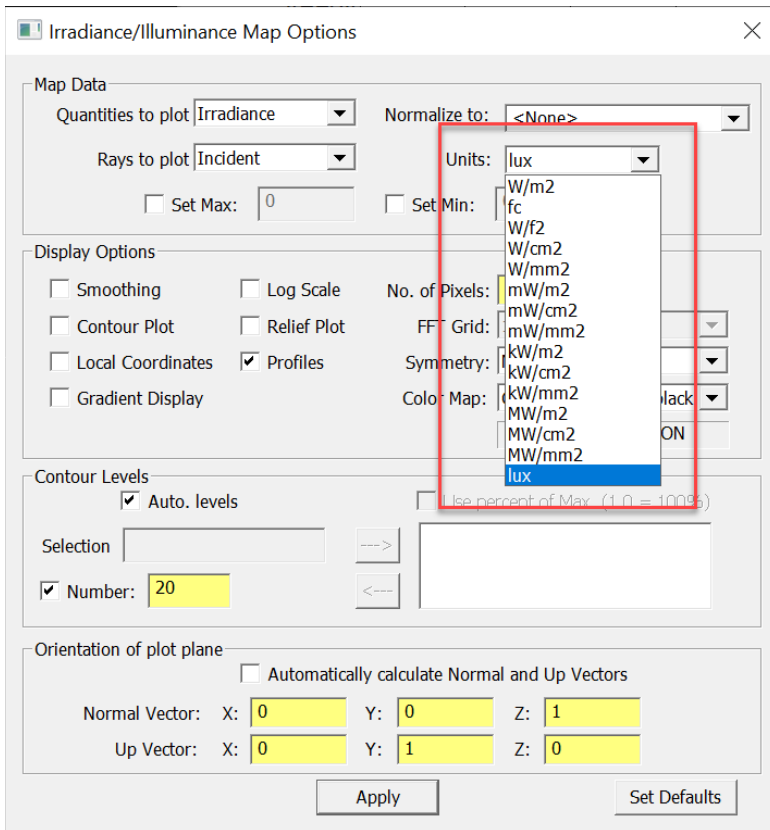
# TracePro 2022 22.5

## ➤ TracePro

- New analysis tools unit options
- Set Defaults capability added to Ray Sorting
- New RepTile geometry – tetrahedron
- Ray Sorting added to 3D Irradiance/Illuminance Map
- New capability to import multi-configuration OSLO and Zemax files
- New ability to select one or more paths and display them in the Candela Plot

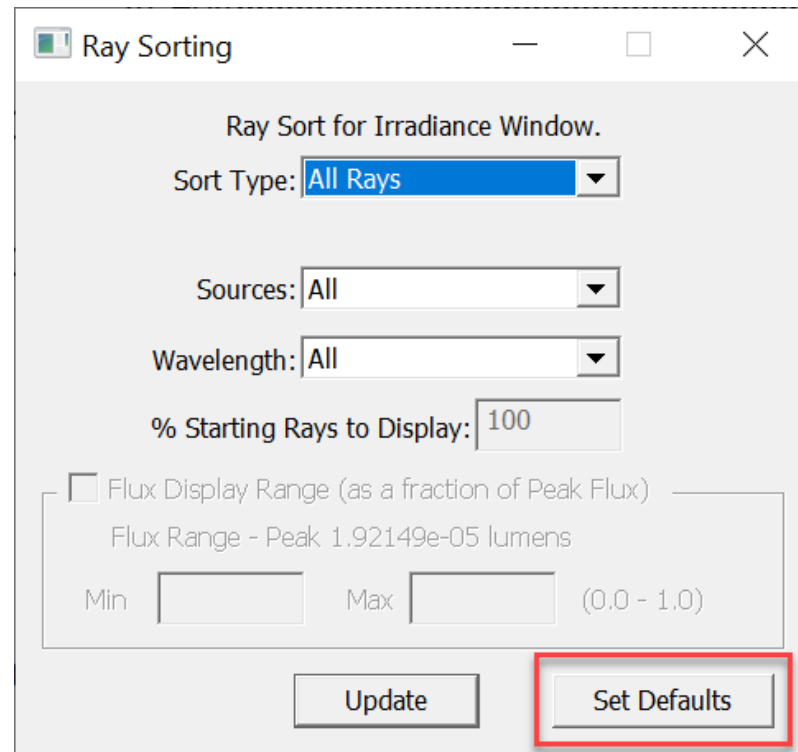
# TracePro 2022 22.5

TracePro – New unit options have been added to the analysis tools. Also, the units are now set in the appropriate Options dialog boxes.



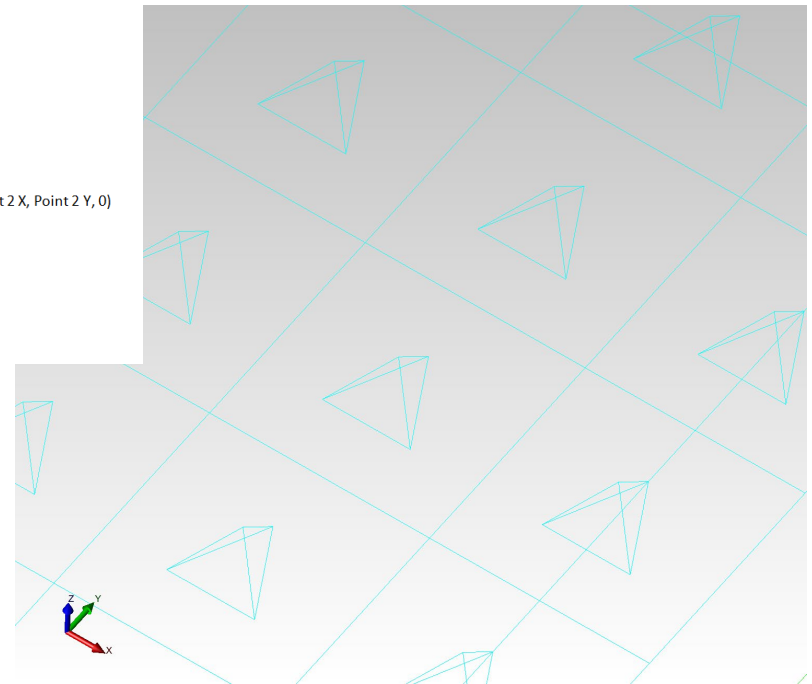
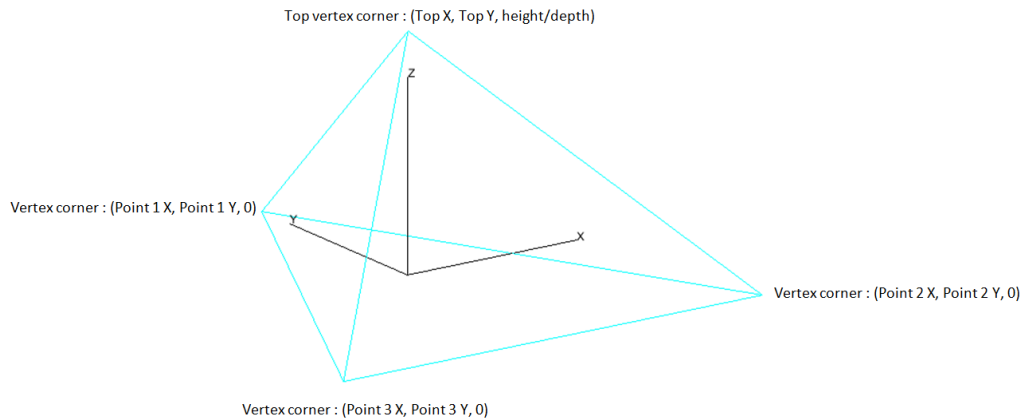
# TracePro 2022 22.5

**TracePro – Ray Sorting now has a Set Defaults option to allow users to save commonly used settings as the default values**



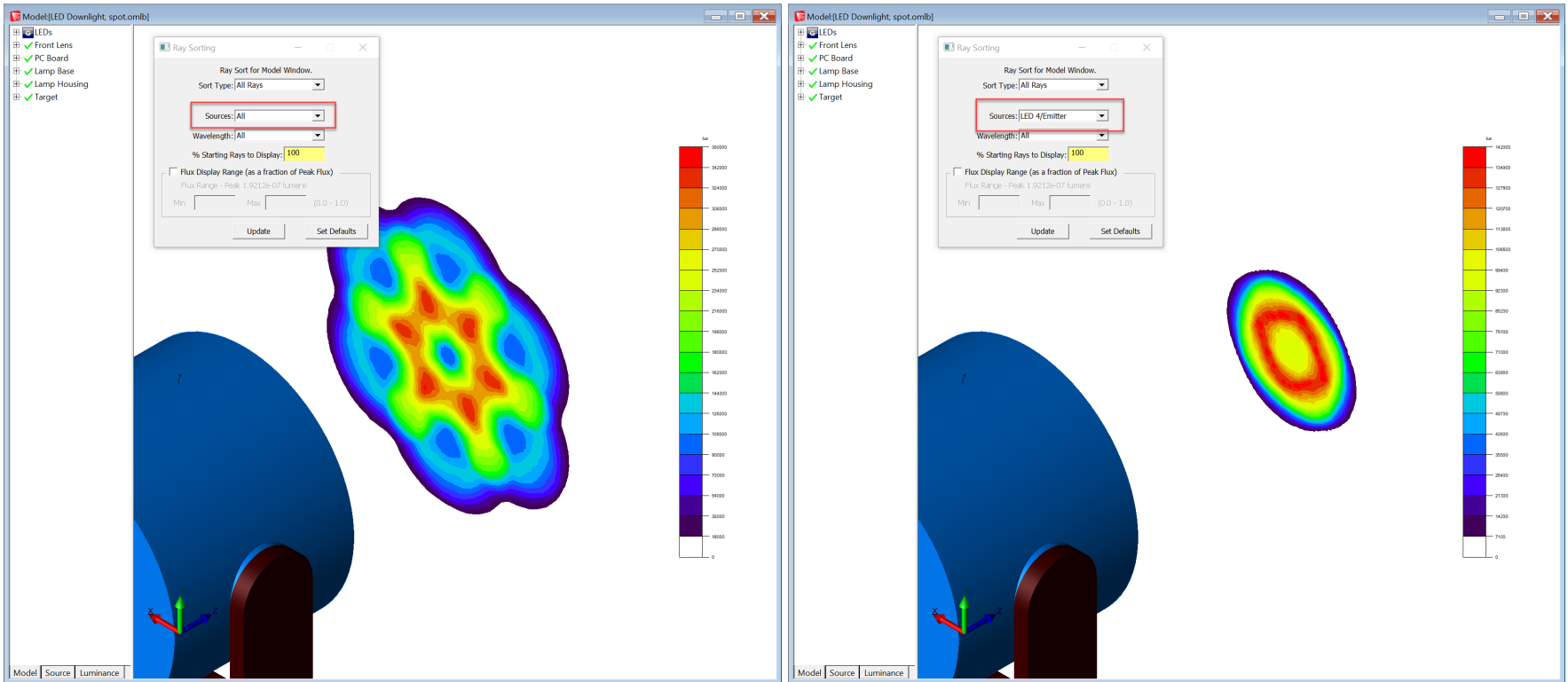
# TracePro 2022 22.5

TracePro – A new RepTile geometry type, Tetrahedron, has been added



# TracePro 2022 22.5

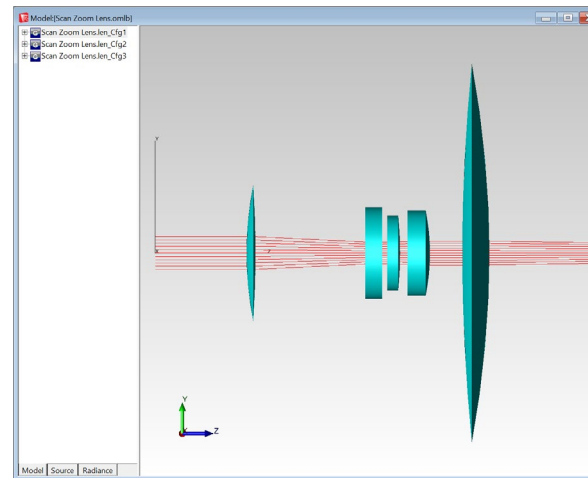
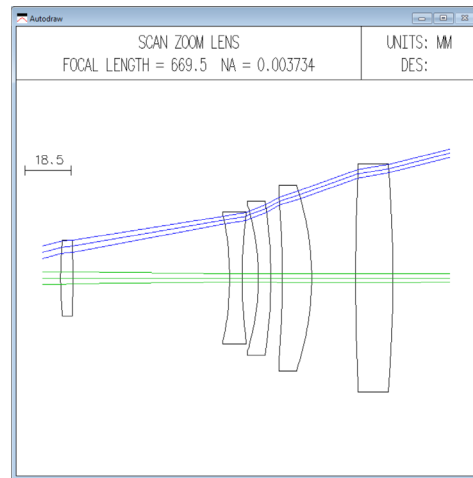
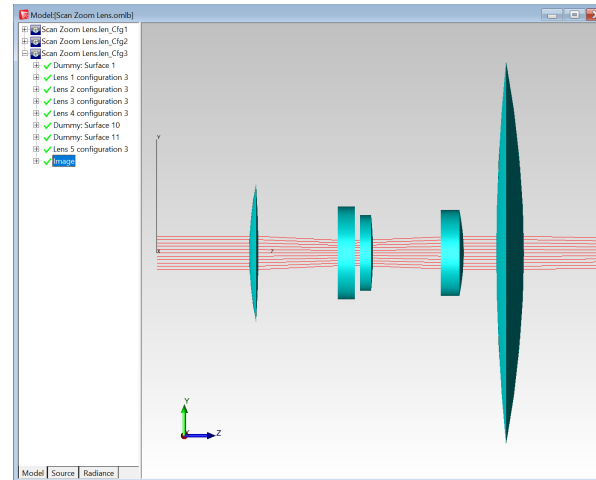
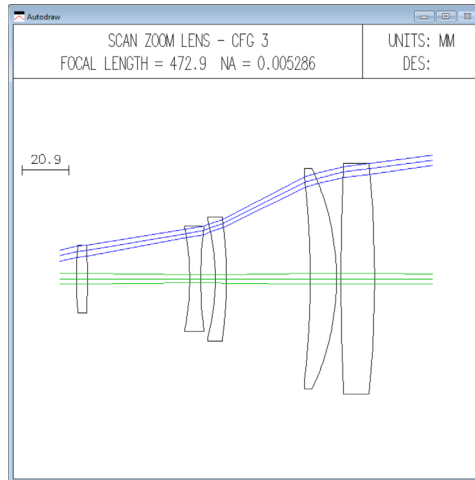
## TracePro – Ray Sorting can now be used with the 3D Irradiance/Illuminance Map





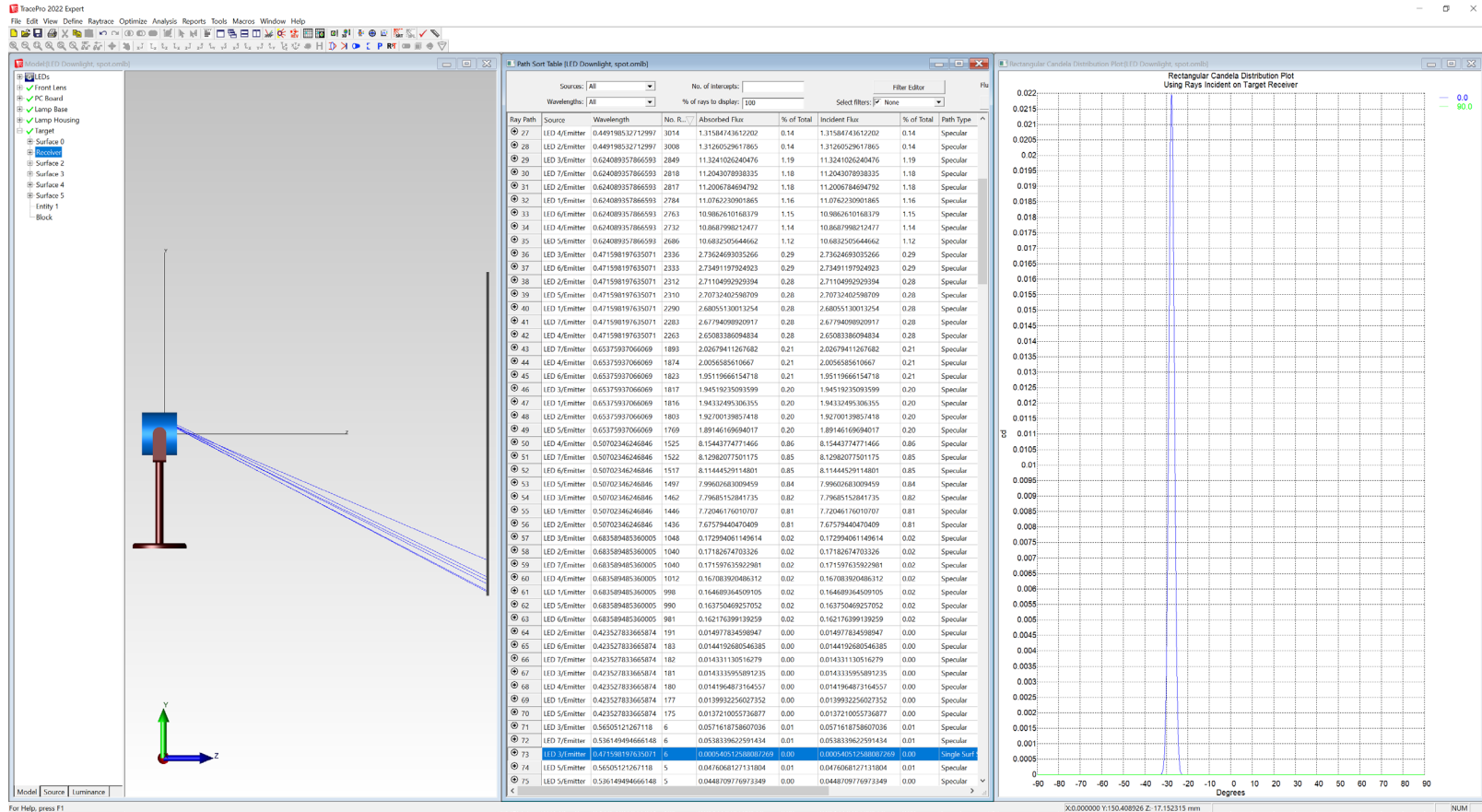
# TracePro 2022 22.5

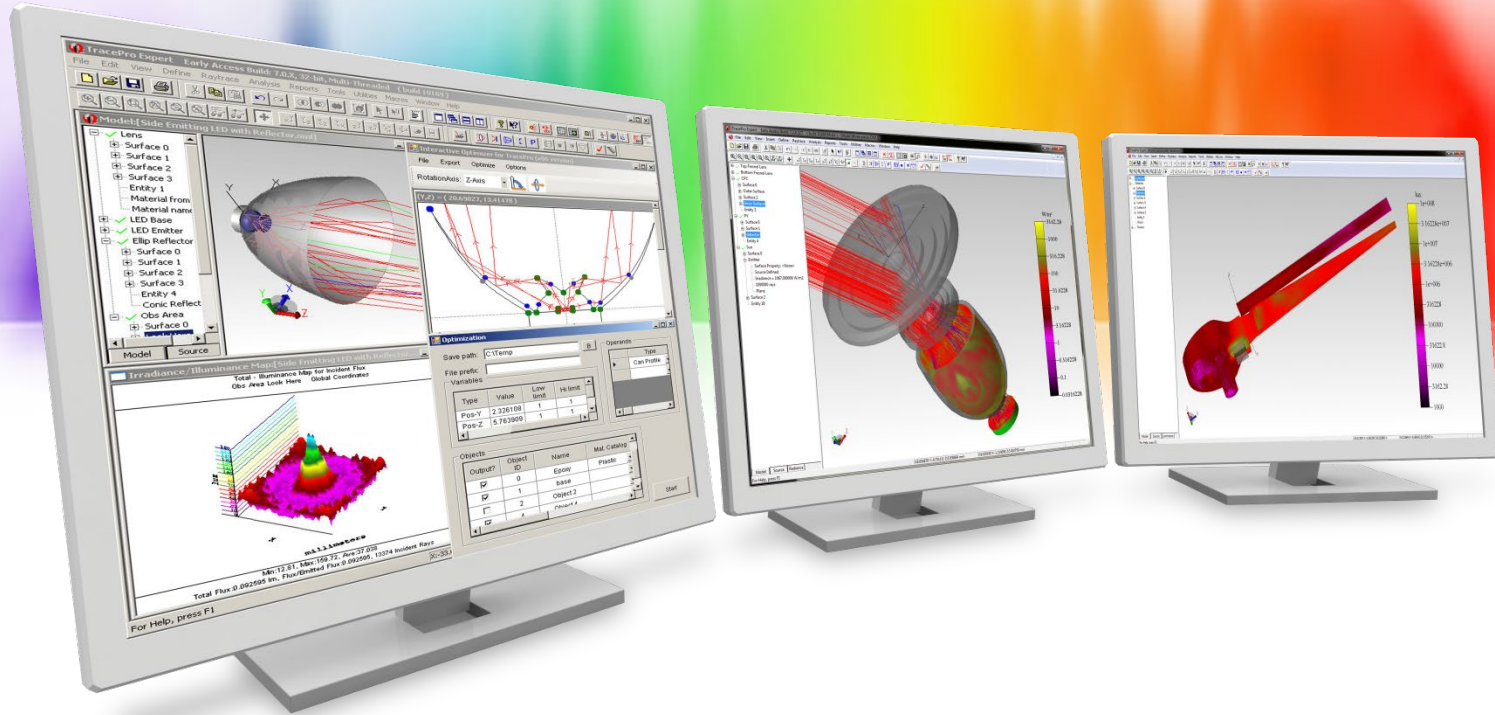
**TracePro – TracePro can now import multi-configuration files from OSLO and Zemax**



# TracePro 2022 22.5

## TracePro – Path Sorting can now be used with the Candela Plots in TracePro





## New Features in TracePro 2022 22.2

# TracePro 2022 22.2

## ➤ TracePro

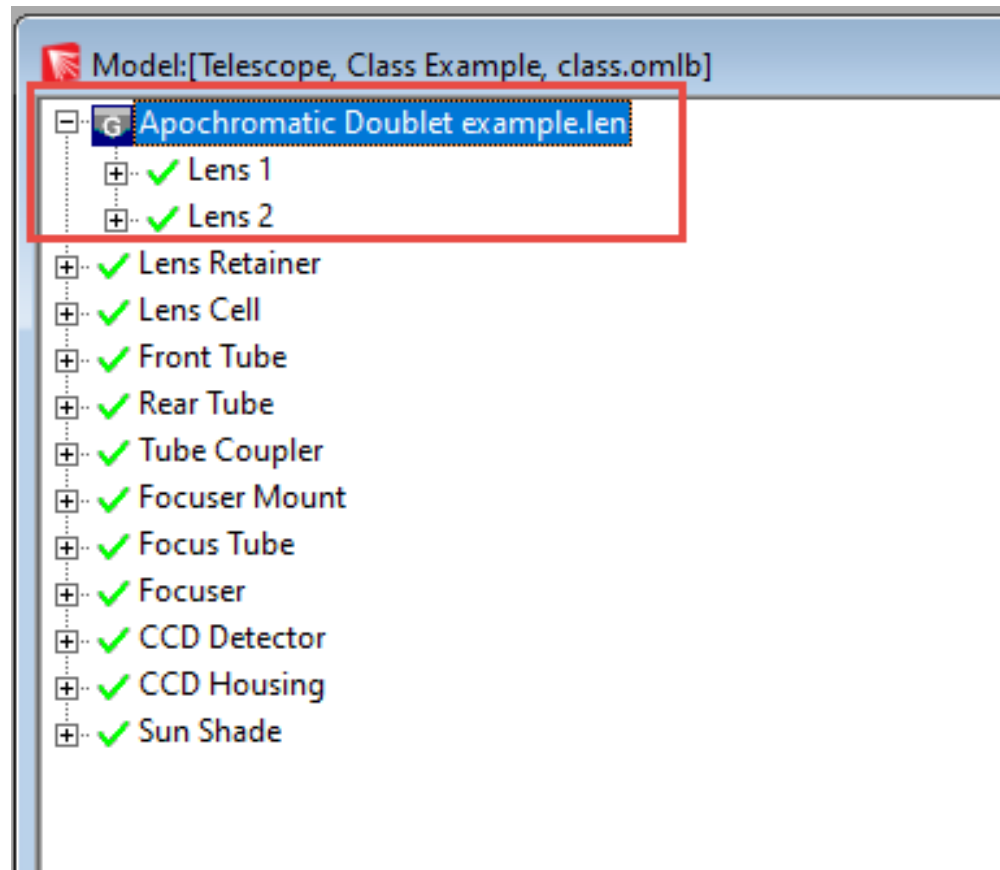
- Group for imported lenses

## ➤ Light Source Builder

- Convert Lucidshape and Zemax rayfiles to TracePro rayfile format

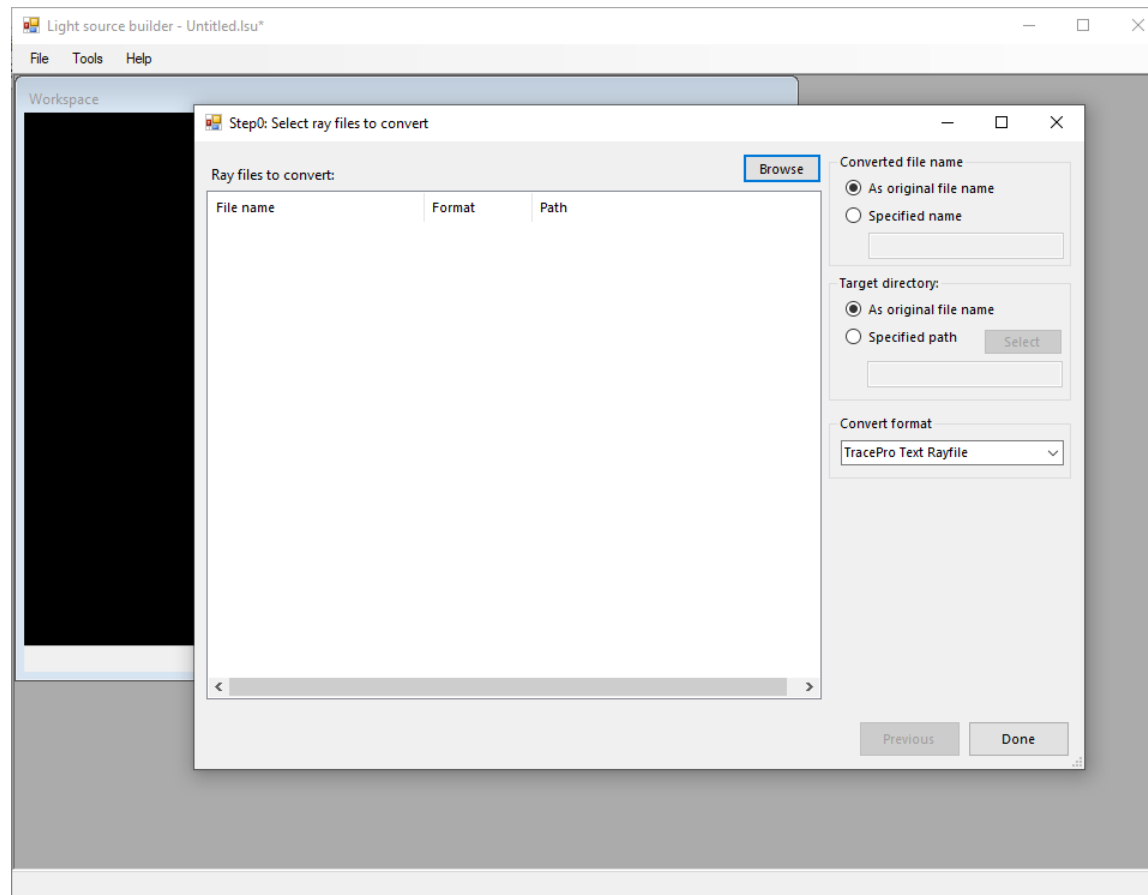
# TracePro 2022 22.2

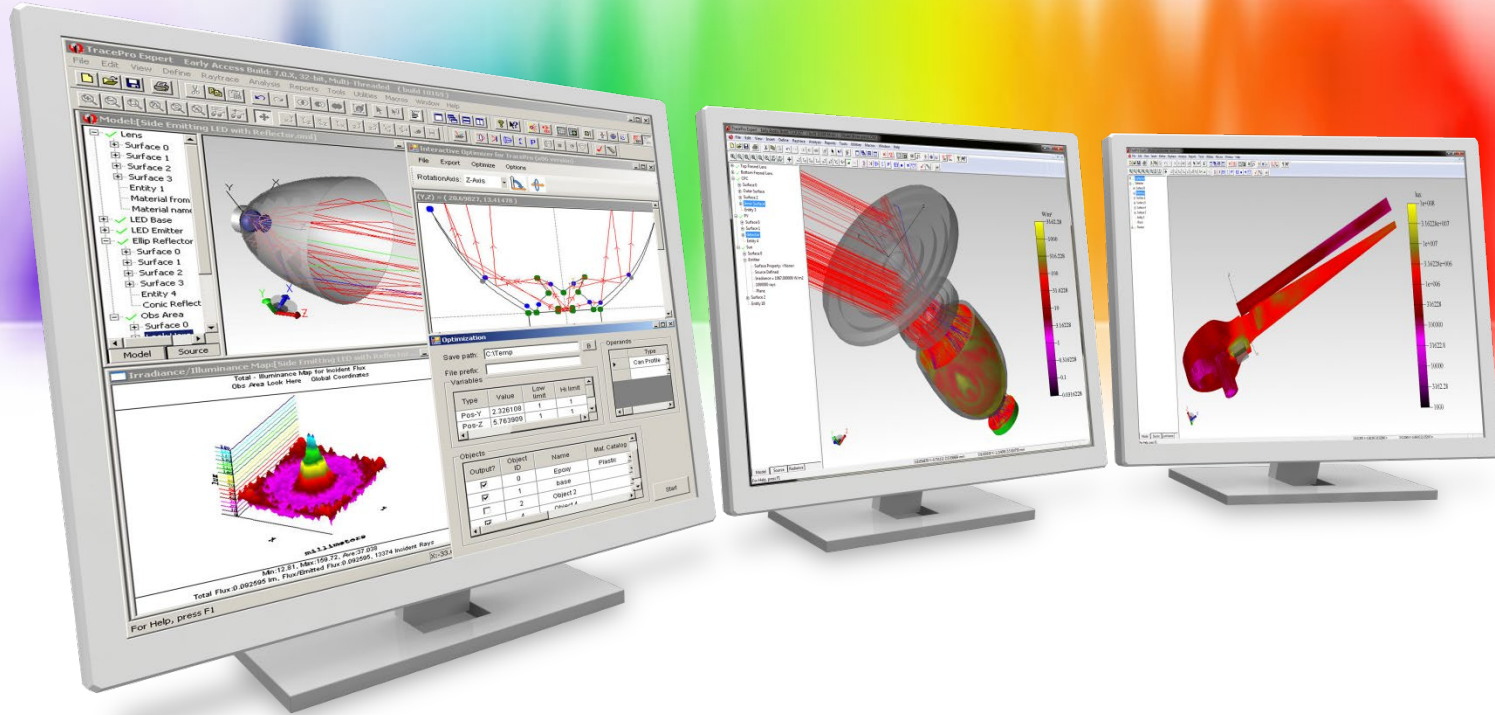
TracePro – Imported lenses are now placed in a new group in TracePro. The name of the lens file will be the name of the group in TracePro.



# TracePro 2022 22.2

**Light Source Builder – New ability to convert LightTools, Lucidshape, and Zemax rayfiles to a TracePro rayfile format**





## New Features in TracePro 2022 22.1

# TracePro 2022 22.1

## ➤ TracePro

- New geometric modeler
- New surface types and aperture shapes for the Lens Element
- New All-mouse mode
- New dynamic highlighting and tooltips for identifying surfaces
- New file format \*.OMLB
- STEP and IGES translators now included at no charge
- New CAD importers included at no charge
- New Environment options for Material and Bulk Scatter

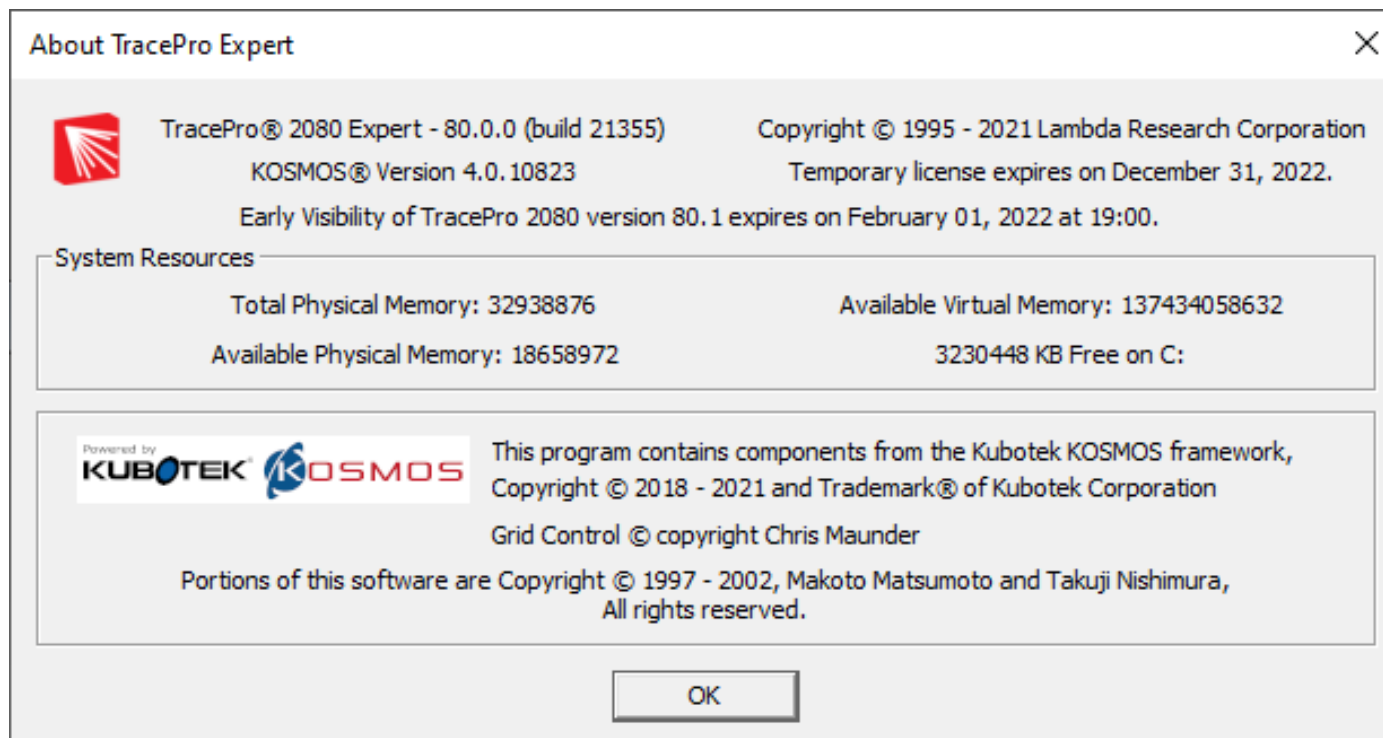
## ➤ Light Source Builder

- New source builder utility for making many different source types



# TracePro 2022 22.1

**TracePro – New Kosmos® KCM® geometric modeler made by Kubotek3D® gives TracePro the capability to model asymmetric and free-form optical surfaces with the accuracy required for optical ray tracing.**



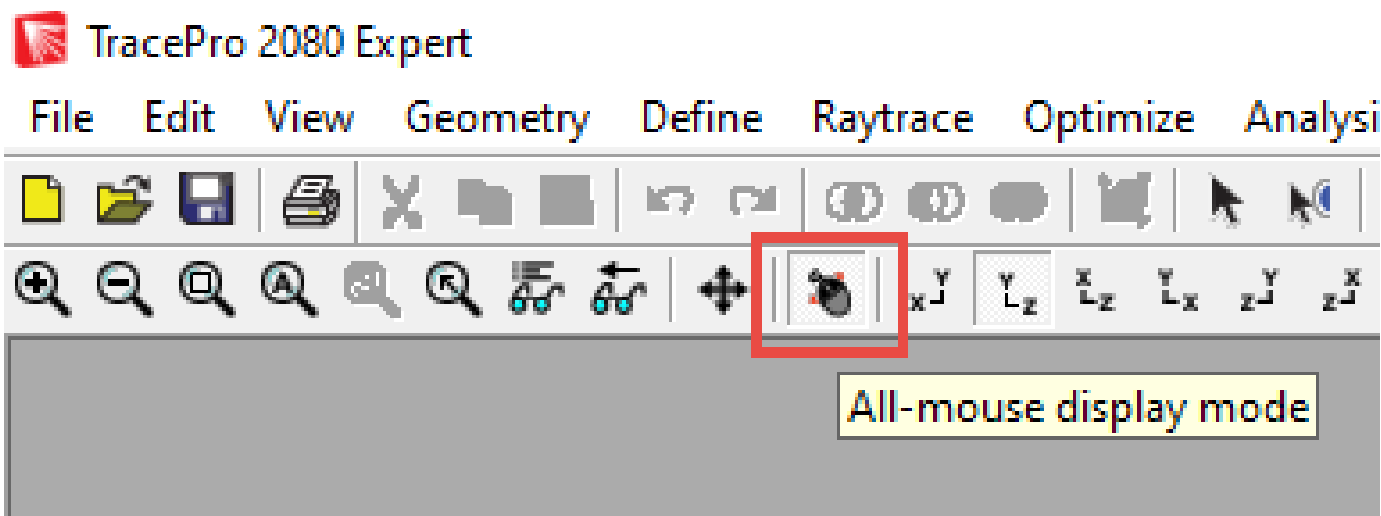
# TracePro 2022 22.1

**TracePro – CAD translators and importers included at no additional cost**

- **CAD Translators**
  - **STEP**
  - **IGES**
  - **SAT**
  
- **CAD Importers**
  - **SOLIDWORKS**
  - **NX/Unigraphics**
  - **Inventor**
  - **Creo/Pro-E**
  - **SolidEdge**
  - **CATIA v4 and v5**

# TracePro 2022 22.1

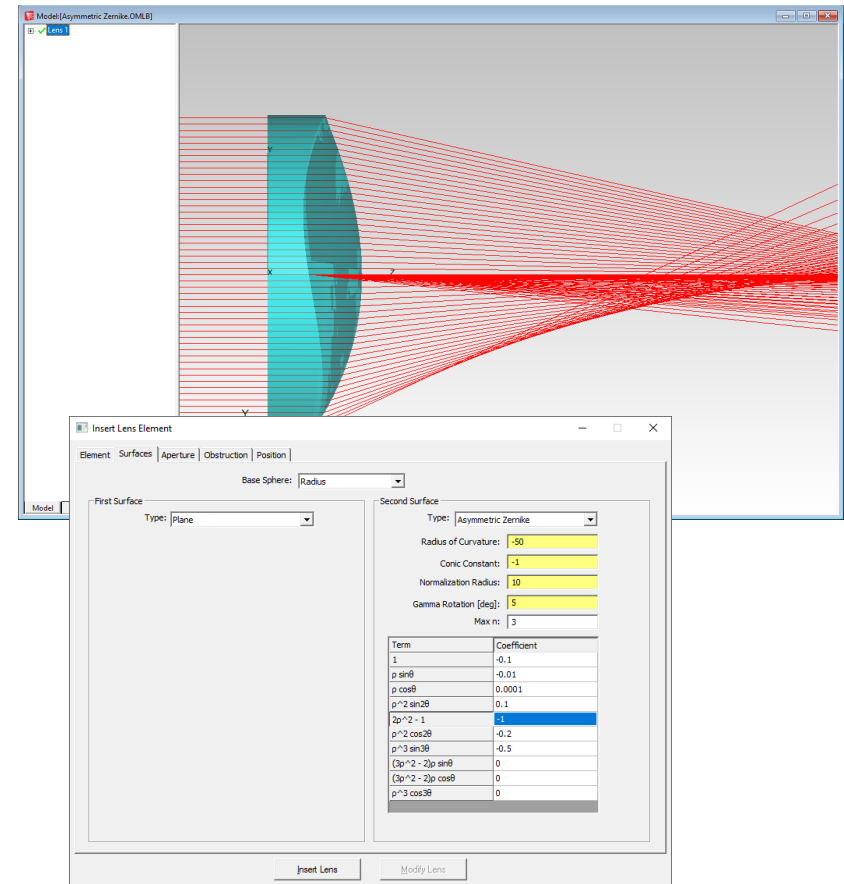
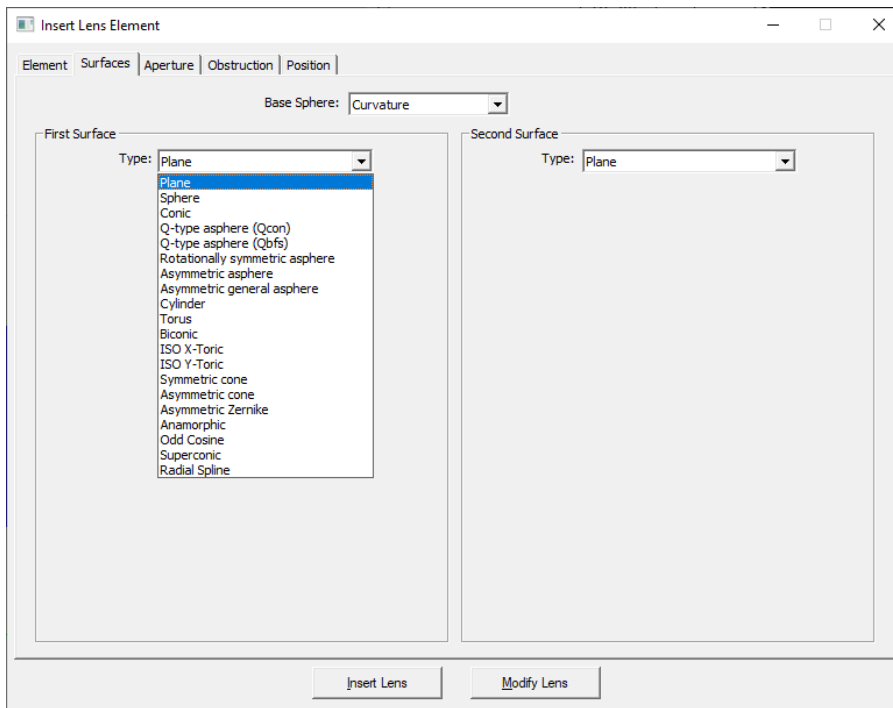
**TracePro – New All-mouse mode enables users complete many view manipulations using only the mouse**



- **Left-button drag – orbit the view**
- **Right-button drag up and down – zoom the view**
- **Both-buttons – pan the view**

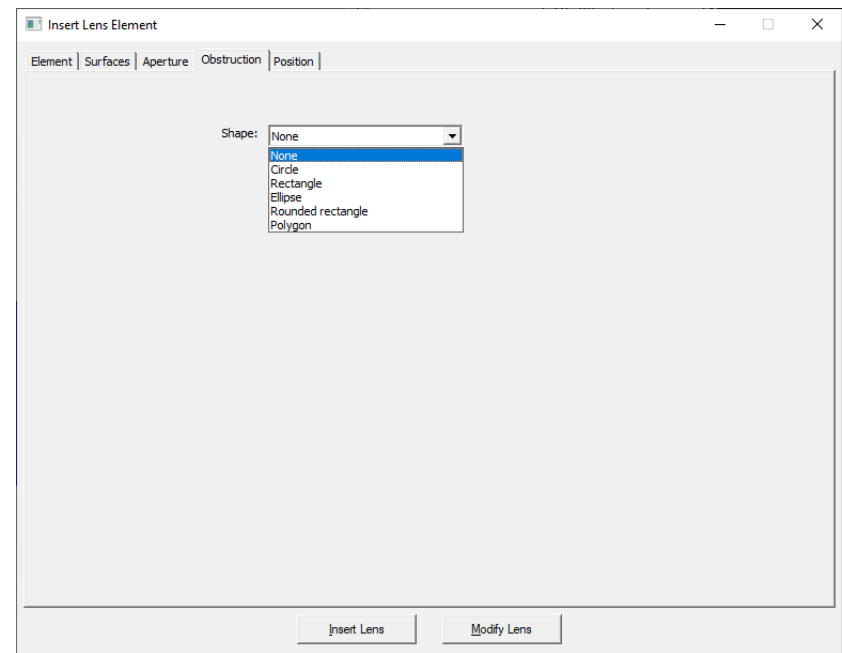
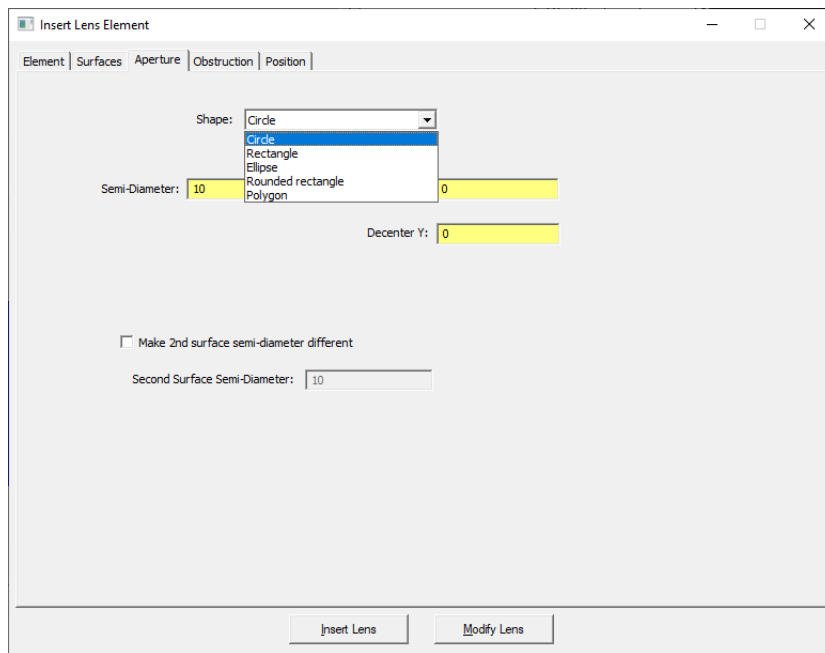
# TracePro 2022 22.1

**TracePro – Many new surface types have been added to the Lens Element including, Q-type aspheres, Biconics, Asymmetric Zernike, Super Conic, Radial Spline, and many more.**



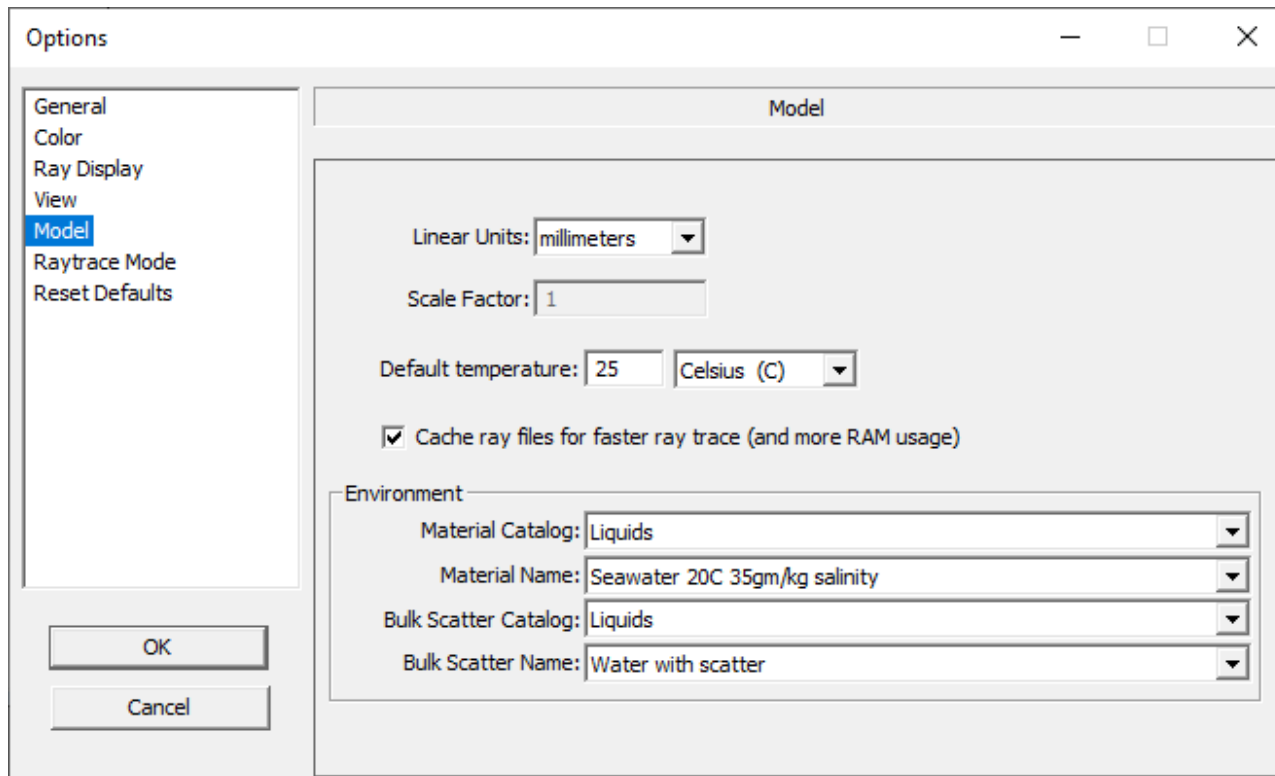
# TracePro 2022 22.1

**TracePro – Lens Element Aperture and Obstruction options now include Circle, Rectangle, Ellipse, Rounded rectangle, and Polygon**



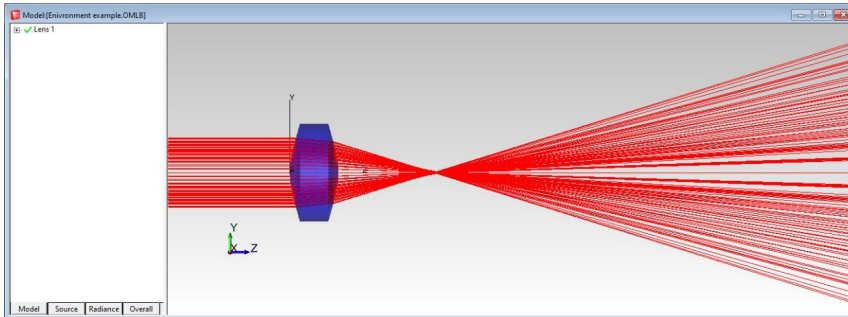
# TracePro 2022 22.1

**TracePro – Material and Bulk Scatter Properties can now be applied to the environment in TracePro**

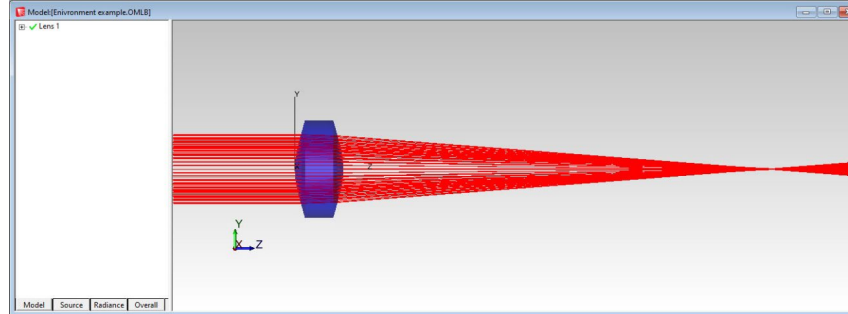


# TracePro 2022 22.1

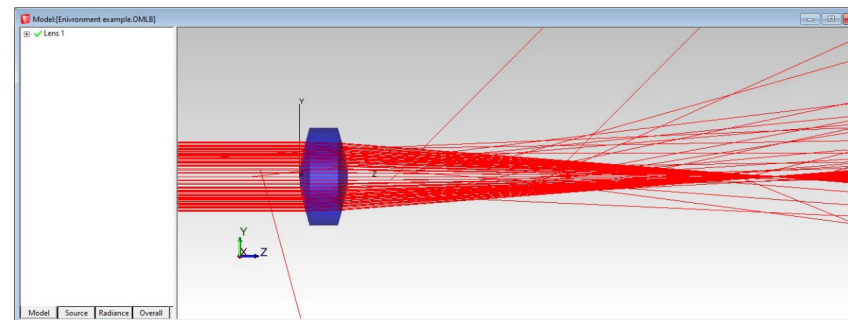
## TracePro – Material and Bulk Scatter Properties can now be applied to the environment in TracePro



**BK7 lens in air**



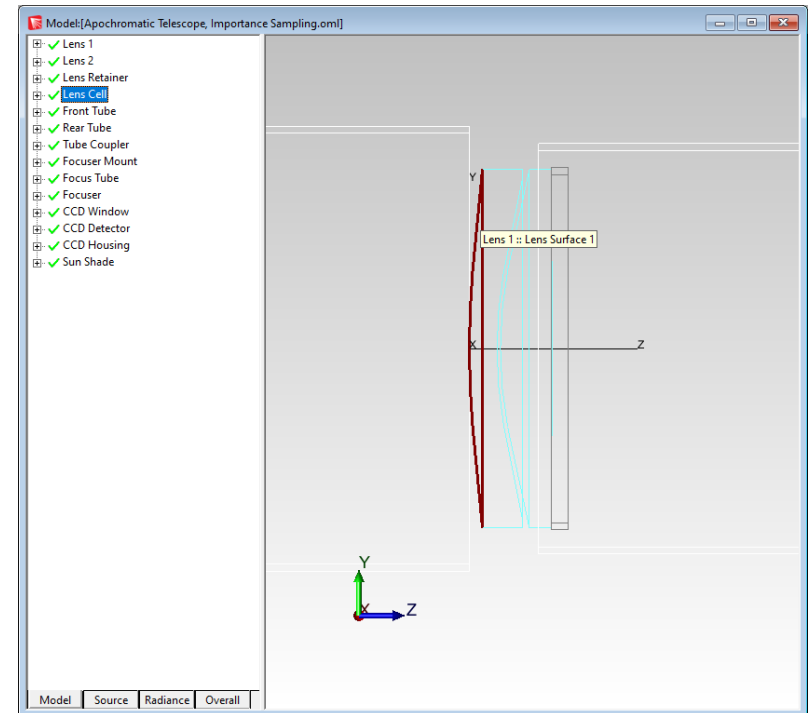
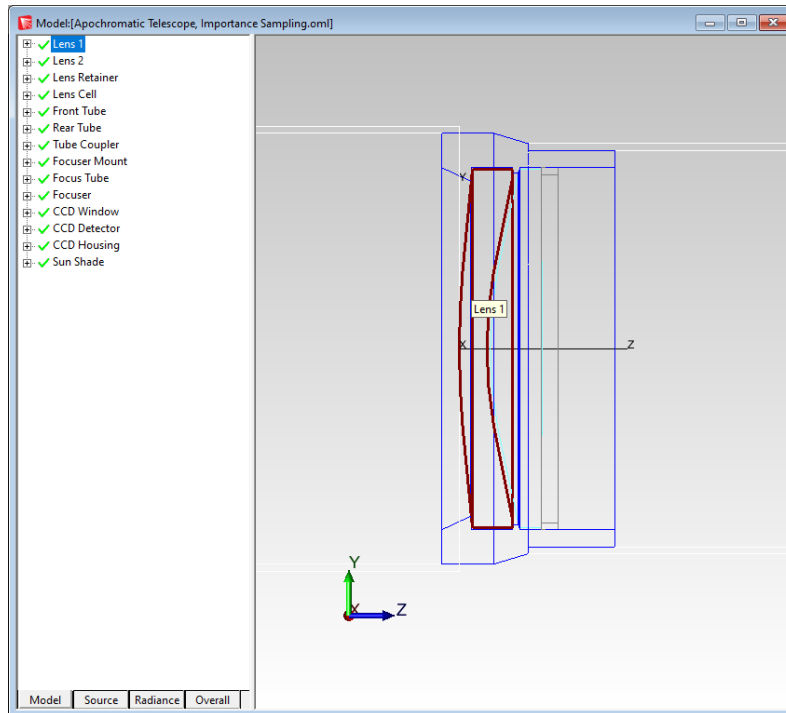
**BK7 lens in seawater**



**BK7 lens in seawater with scatter**

# TracePro 2022 22.1

**TracePro – New Dynamic Highlighting. Move the cursor over an object or surface to dynamically highlight the object or surface and display its name**



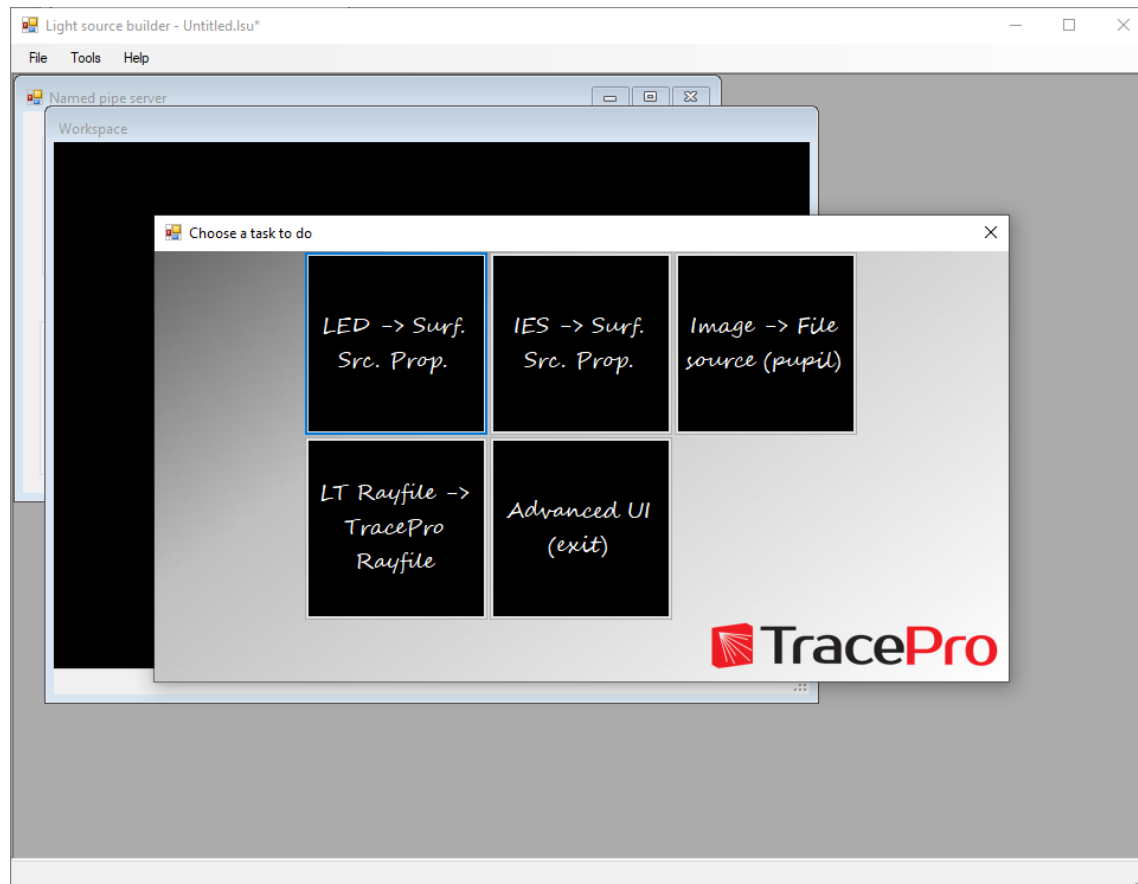


# TracePro 2022 22.1

**TracePro – New TracePro file extension .OMLB. TracePro 2022 can also open .OML files. Older versions of TracePro will not be able to open .OMLB files.**

# TracePro 2022 22.1

**Light Source Builder – The new Light Source Builder gives users a wizard tool and gives users the ability to make multiple types of light sources.**



# TracePro 2022 22.1

## Light Source Builder – Surface Source Property

Step 1: Sketch the beam profile from the pasted spec.

Custom beam

Coordinate type

Polar coordinate  Rectangular coordinate

Reference points

Ref. point 0:	0	0
Ref. point 1:	0	1
Ref. point 2:	90	0.5951

Spline curve?  Symmetric

3D Preview Data

# TracePro 2022 22.1

## Light Source Builder – Surface Source Property

Step2: Generate the wavelengths from the spectrum of source.

**Spectrum**

WV. (um)	Weight
0.3894	0.004
0.3933	0.007
0.3973	0.0101
0.4013	0.013
0.4053	0.0159
0.409	0.0192
0.4128	0.0276
0.4165	0.0459
0.4203	0.0794
0.425	0.1471
0.4296	0.2374
0.4343	0.3413
0.4381	0.421
0.4418	0.4563
0.4456	0.416
0.4493	0.3334
0.4531	0.2579
0.4559	0.2293
0.4587	0.2143
0.4634	0.1876
0.4681	0.1706
0.4727	0.1804
0.4774	0.2098
0.4821	0.246
0.4865	0.2767
0.4909	0.3029
0.4954	0.3250

Wavelength:   
Weight:   
Add Delete

Wavelength (um)

$\Phi_{rel}$  %

$\lambda$  nm

OHL1432

Scale:  Linear  Logarithm Unit:  um  nm

Coordinate setup

	WV. (um):	Int. (au):
Ref. Pt1	0.38	0.0
Ref. Pt2	0.78	1.0

Resample points: 100

Generate

Previous Next

	X	Y
0	0.3894	0.004
1	0.4053	0.0159
2	0.4203	0.0794
3	0.4343	0.3413
4	0.4418	0.4563
5	0.4531	0.2579
6	0.4587	0.2143
7	0.4681	0.1706
8	0.4821	0.246
9	0.513	0.4087
10	0.5524	0.6786
11	0.5842	0.9167
12	0.602	1
13	0.6264	0.873
14	0.6563	0.5556
15	0.6873	0.2698
16	0.7266	0.0992
17	0.7641	0.0357
18	0.7772	0.0198

# TracePro 2022 22.1

## Light Source Builder – Surface Source Property from IES file

Step1: Select an IES file to load

IES file: C:\Users\djacobsen\Documents\Dave\Documents\Customer Demos\Demo Examples\LED spot with Difuser, IES.ies B

Load

Theta-Phi Array Beam

Polar (Theta) Num: 19 Azimuth (Phi) Num: 39

$\theta \backslash \phi$	0	9.47	18.9425	28.4175	37.89	47.3625	56.8375	66.3125
0	1541.069276	1541.069276	1541.069276	1541.069276	1541.069276	1541.069276	1541.069276	1541.069276
5	1514.429338	1518.024386	1522.328479	1522.778504	1518.339476	1517.680036	1515.215293	1518.024386
10	1406.299458	1406.741753	1412.690497	1415.802228	1421.883836	1426.325316	1417.067077	1414.067077
15	1176.123135	1168.698824	1170.582641	1184.998681	1185.675487	1188.795497	1173.512912	1181.067077
20	852.16618	858.151749	859.563633	859.048585	853.854484	854.413106	850.31668	855.067077
25	544.11054	549.407012	547.126362	543.791106	537.327337	544.139156	544.423422	536.067077
30	306.805103	312.080491	315.536942	310.806806	307.447622	310.549668	313.074276	310.067077
35	172.271423	169.824213	173.485761	172.06404	171.315792	171.160648	176.921088	174.067077
40	95.817549	93.552031	98.374245	98.614975	99.319036	101.591583	104.039642	101.067077
45	58.806321	60.140225	61.767839	61.961413	59.818978	61.329469	61.494795	64.067077
50	43.628841	43.257531	42.65771	43.26134	40.802523	41.313079	42.537062	43.067077
55	32.121384	31.256715	30.515384	30.595593	31.432254	31.378397	31.860134	32.067077
60	23.488101	22.672001	23.251288	22.532762	23.140041	23.394909	23.254375	23.067077
65	17.156877	16.173229	16.262771	15.480261	16.593275	16.289148	15.421443	16.067077

Previous Next

# TracePro 2022 22.1

## Light Source Builder – Surface Source Property from IES file

Step2: Generate the wavelengths from the spectrum of source.

**Spectrum**

WV. (um)	Weight
0.3894	0.004
0.3933	0.007
0.3973	0.0101
0.4013	0.013
0.4053	0.0159
0.409	0.0192
0.4128	0.0276
0.4165	0.0459
0.4203	0.0794
0.425	0.1471
0.4296	0.2374
0.4343	0.3413
0.4381	0.421
0.4418	0.4563
0.4456	0.416
0.4493	0.3334
0.4531	0.2579
0.4559	0.2293
0.4587	0.2143
0.4634	0.1876
0.4681	0.1706
0.4727	0.1804
0.4774	0.2098
0.4821	0.246
0.4865	0.2767
0.4909	0.3029
0.4954	0.3269

Wavelength:   
Weight:   
Add Delete

Wavelength (um)

$\Phi_{rel}$  %

$V_{\lambda}$

OHL14330

nm

$\lambda$

Scale:  Linear  Logarithm Unit:  um  nm

Coordinate setup

WV. (um)	Int. (au)	
Ref. Pt1	0.38	0.0
Ref. Pt2	0.78	1.0

Resample points: 100

Generate

Previous Next

X	Y	
0	0.3894	0.004
1	0.4053	0.0159
2	0.4203	0.0794
3	0.4343	0.3413
4	0.4418	0.4563
5	0.4531	0.2579
6	0.4587	0.2143
7	0.4681	0.1706
8	0.4821	0.246
9	0.513	0.4087
10	0.5524	0.6786
11	0.5842	0.9167
12	0.602	1
13	0.6264	0.873
14	0.6563	0.5556
15	0.6873	0.2696
16	0.7266	0.0992
17	0.7641	0.0357
18	0.7772	0.0196

# New Light Source Builder

## Surface Source Property from IES file

Step2: Generate the wavelengths from the spectrum of source.

Spectrum

WV. (um)	Weight
0.3894	0.004
0.3933	0.007
0.3973	0.0101
0.4013	0.013
0.4053	0.0159
0.409	0.0192
0.4128	0.0276
0.4165	0.0459
0.4203	0.0794
0.425	0.1471
0.4296	0.2374
0.4343	0.3413
0.4381	0.421
0.4418	0.4563
0.4456	0.416
0.4493	0.3334
0.4531	0.2579
0.4559	0.2293
0.4587	0.2143
0.4634	0.1876
0.4681	0.1706
0.4727	0.1804
0.4774	0.2098
0.4821	0.246
0.4865	0.2767
0.4909	0.3029
0.4954	0.3356

Wavelength:   
Weight:   
Add Delete

Wavelength (um)

$\Phi_{rel}$  %

$\lambda$  nm

OHL14320

Scale  
 Linear  Logarithm

Unit  
 um  nm

Coordinate setup

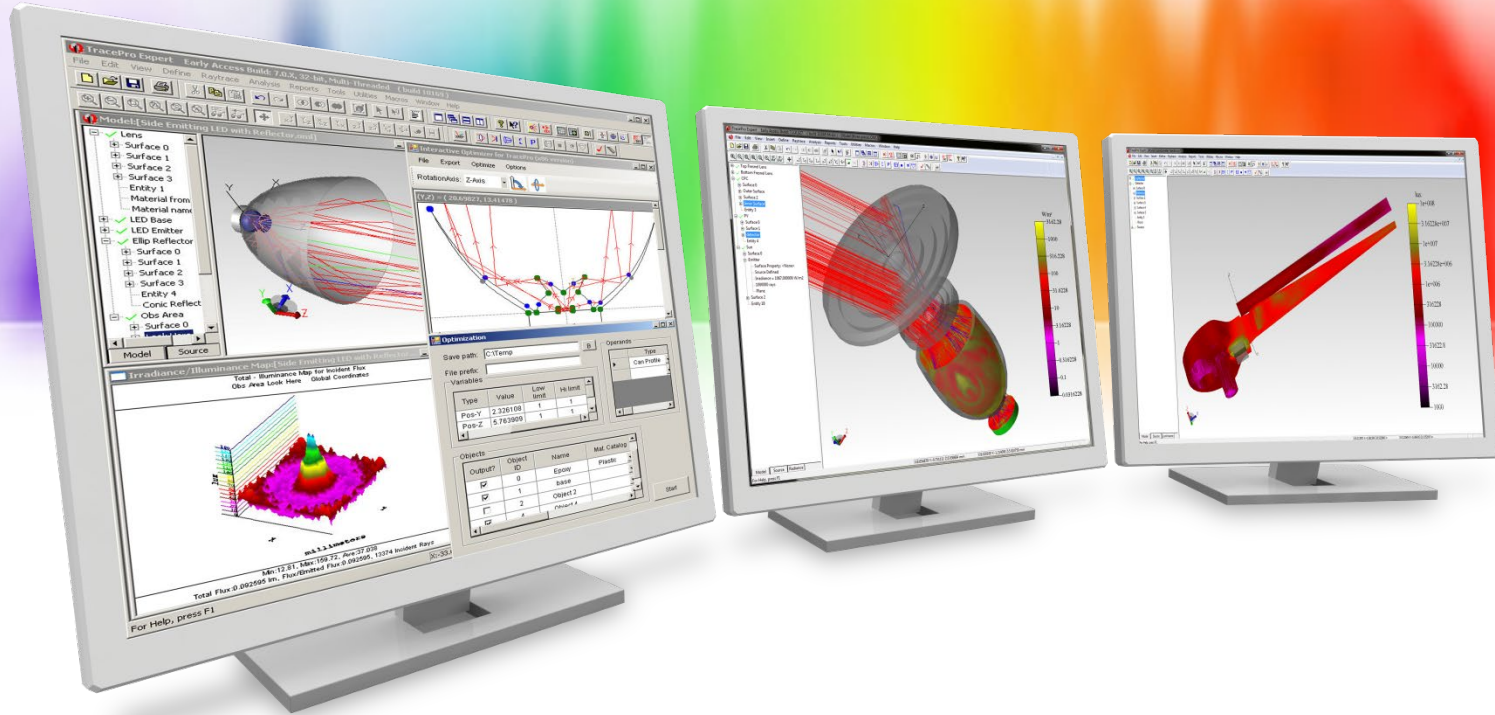
Ref. Pt1	WV. (um):	Int. (au):
	0.38	0.0
Ref. Pt2	0.78	1.0

X	Y
0	0.3894 0.004
1	0.4053 0.0159
2	0.4203 0.0794
3	0.4343 0.3413
4	0.4418 0.4563
5	0.4531 0.2579
6	0.4587 0.2143
7	0.4681 0.1706
8	0.4821 0.246
9	0.513 0.4087
10	0.5524 0.6786
11	0.5842 0.9167
12	0.602 1
13	0.6264 0.873
14	0.6563 0.5556
15	0.6873 0.2698
16	0.7266 0.0992
17	0.7641 0.0357
18	0.7772 0.0198

Resample points: 100

Generate

Previous Next



# New Features in TracePro 2021 21.5



# TracePro 2021 21.5

## ➤ TracePro

- New Stary Light Analyzer utility

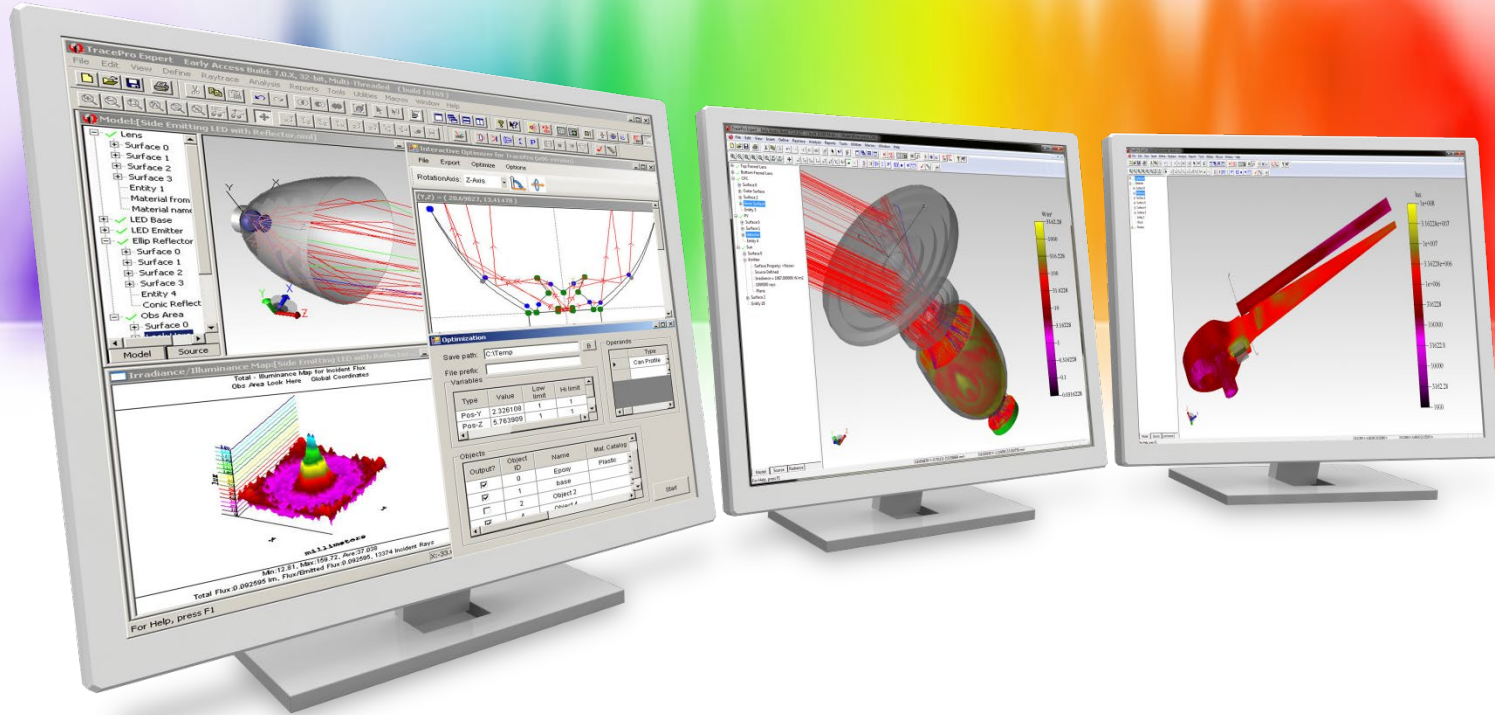
## ➤ Interactive Optimizer

- New rectangular hole option has been added to the Reflector object type

## ➤ Lighting Toolkit

- New regulations have been added
- Regulations have been updated

## ➤ New Scheme commands



## New Features in TracePro 2021 21.4

# TracePro 2021 21.4

## ➤ TracePro

- New Stary Light Analyzer utility

## ➤ Interactive Optimizer

- New rectangular hole option has been added to the Reflector object type

## ➤ Lighting Toolkit

- New regulations have been added
- Regulations have been updated

## ➤ New Scheme commands

# TracePro 2021 21.4

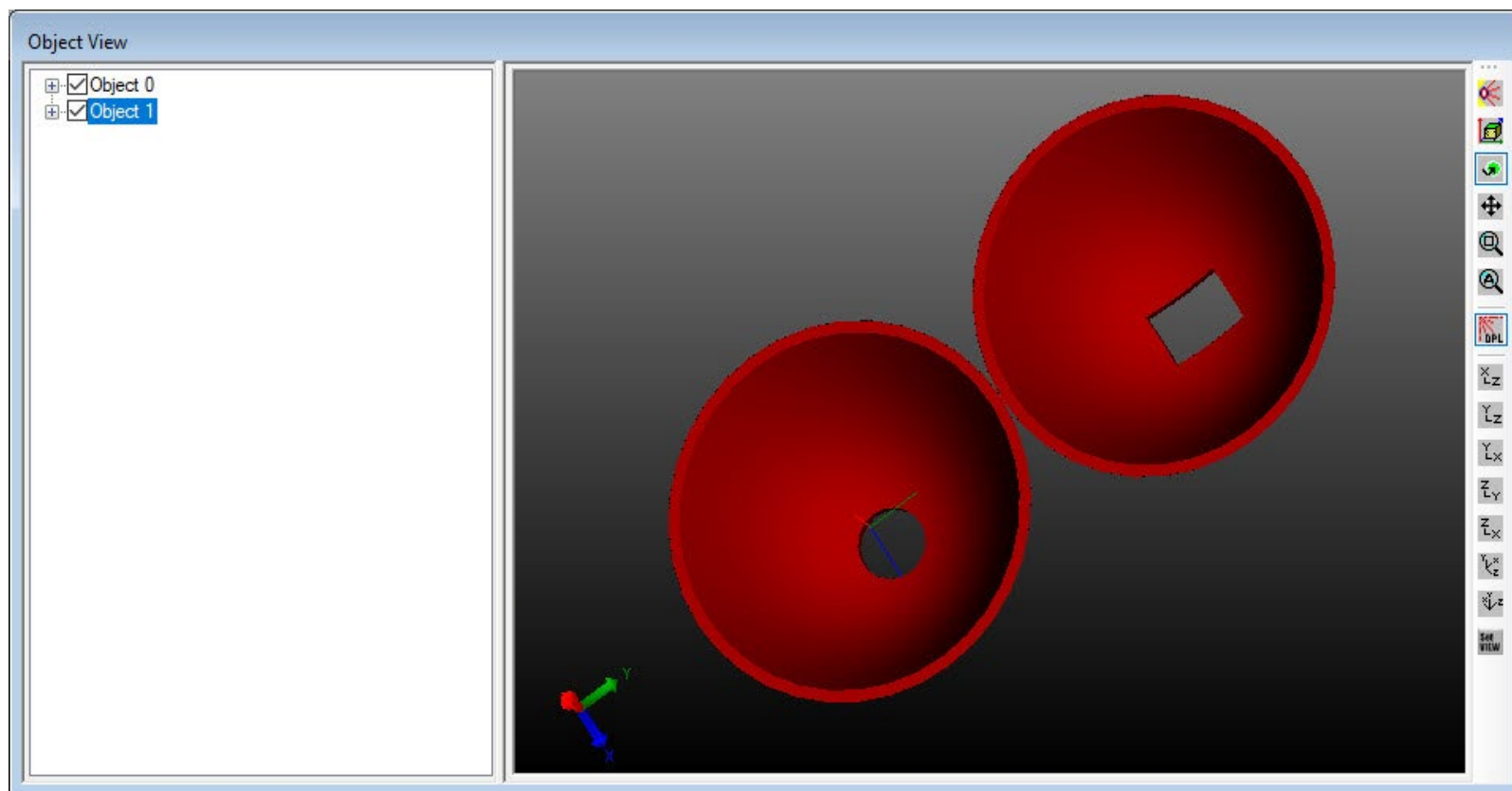
**TracePro – A new Stray Light Analyzer utility has been added to TracePro. This utility automates and simplifies many of the steps necessary to do a stray light analysis.**

ID	Object/Surface Name	Catalog Name	Property Name
1	G1	NHG	H-ZLAF55F
2	Surface 0		
-1	Surface 1		
-1	Surface 2		
-1	Surface 3		
-1	Surface 4		
-1	Surface 5		
1	Surface 6		
2	Surface 7		
2	Surface 8		
1	Surface 9		
-1	Surface 10		
-1	Surface 11		
-1	Surface 12		
-1	Surface 13		

Theta Deg	Max In	Max Out	Total Flux	Total Ray Number	Ray Number	Path Number	Path Number
15	42752	481021	2196.9	2484.715	79199	76898	39
16	42574	478660	3130.8	3529.132	89142	86784	34
17	42526	477560	3857.0	4338.123	95072	92287	36
18	41534	465926	4263.2	4791.409	100906	97512	28
19	40033	440746	4331.7	4883.745	127911	121961	33
20	36558	409519	3597.0	4056.297	116830	106451	31
21	69673	780158	450.059	521.004	75665	61175	22
22	23305	266147	411.508	480.294	156679	131284	31
23	24905	2841863	733.323	735.488	273007	202020	31
24	13631	827961	1046.8	936.743	420646	277940	50
25	95907	899470	1184.9	1270.987	486333	326338	50
26	60964	902553	1000.7	1093.493	486341	265351	50
27	56702	810741	1249.9	1275.979	643352	309813	50
28	57539	781180	1449.8	1336.213	760026	322348	50
29	69173	917222	1611.0	1340.017	833947	314353	50
30	63942	826795	1655.5	1158.352	826381	262869	50
31	40334	1602114	1017.7	270.417	579050	86951	50

# TracePro 2021 21.4

**Interactive Optimizer – The Reflector object type in the Interactive Optimizer has been updated so that a rectangular hole can be added to the reflector in addition to the previous circular option.**



# TracePro 2021 21.4

## Lighting Toolkit – Eight new regulation tables have been added

- ECE R7 2019
- ECE R119 (2014)
- ECE R6 2008
- SAE J588
- SAE J222
- SAE J592
- SAE J594
- SAE J845

# TracePro 2021 21.4

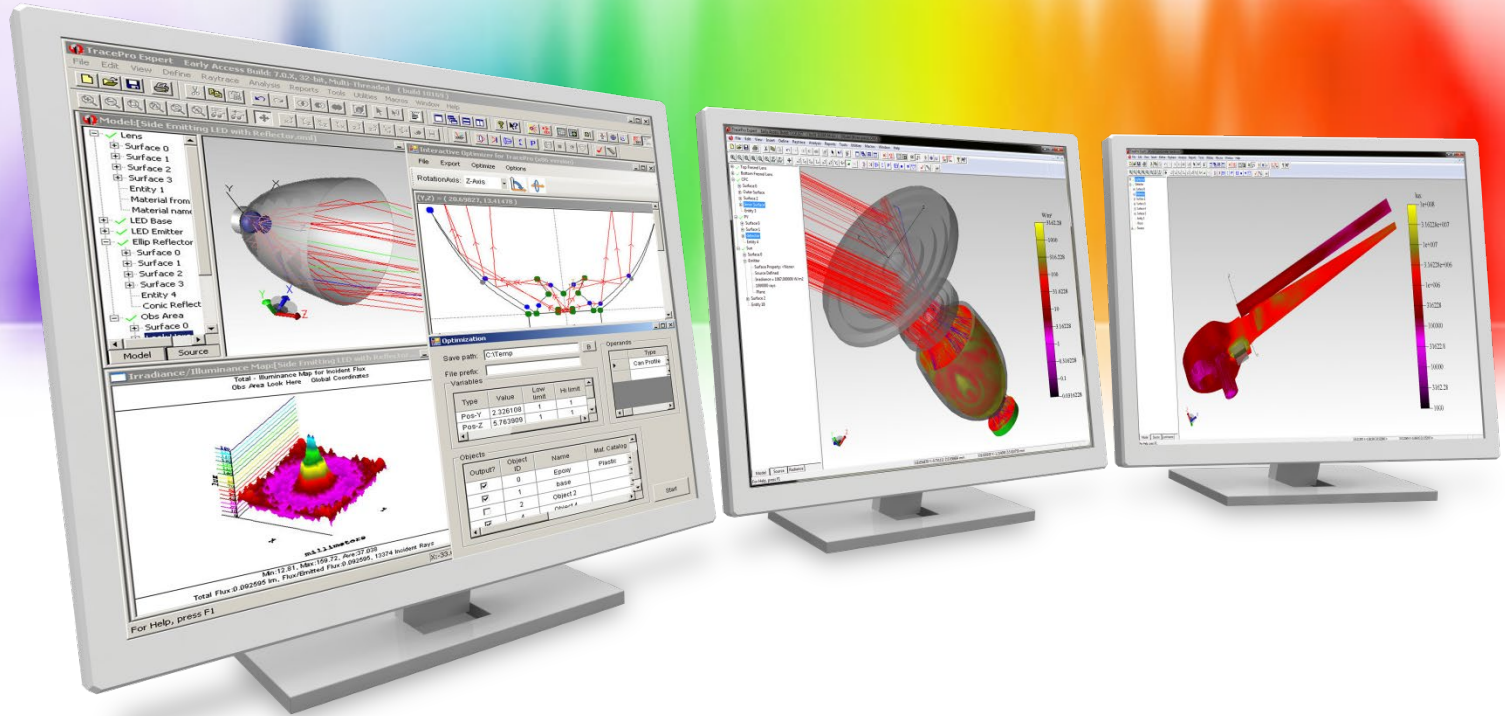
## Lighting Toolkit – Six regulation tables have been updated

- ECE R6
- ECE R3
- ECE R91
- ECE R98
- ECE R112 (2010, 2012)
- FMVSS 108 Figures 17, 27, 28

# TracePro 2021 20.3

- **New Scheme commands**
  - geometry:get-block-parameters
  - modify:primitive-block





## New Features in TracePro 2021 21.3

# TracePro 2021 21.3

## ➤ **TracePro**

- Exposure Compensation for Photorealistic Rendering and TrueColor plots

## ➤ **Lighting Toolkit**

- New ECE regulations have been added to the Lighting Toolkit

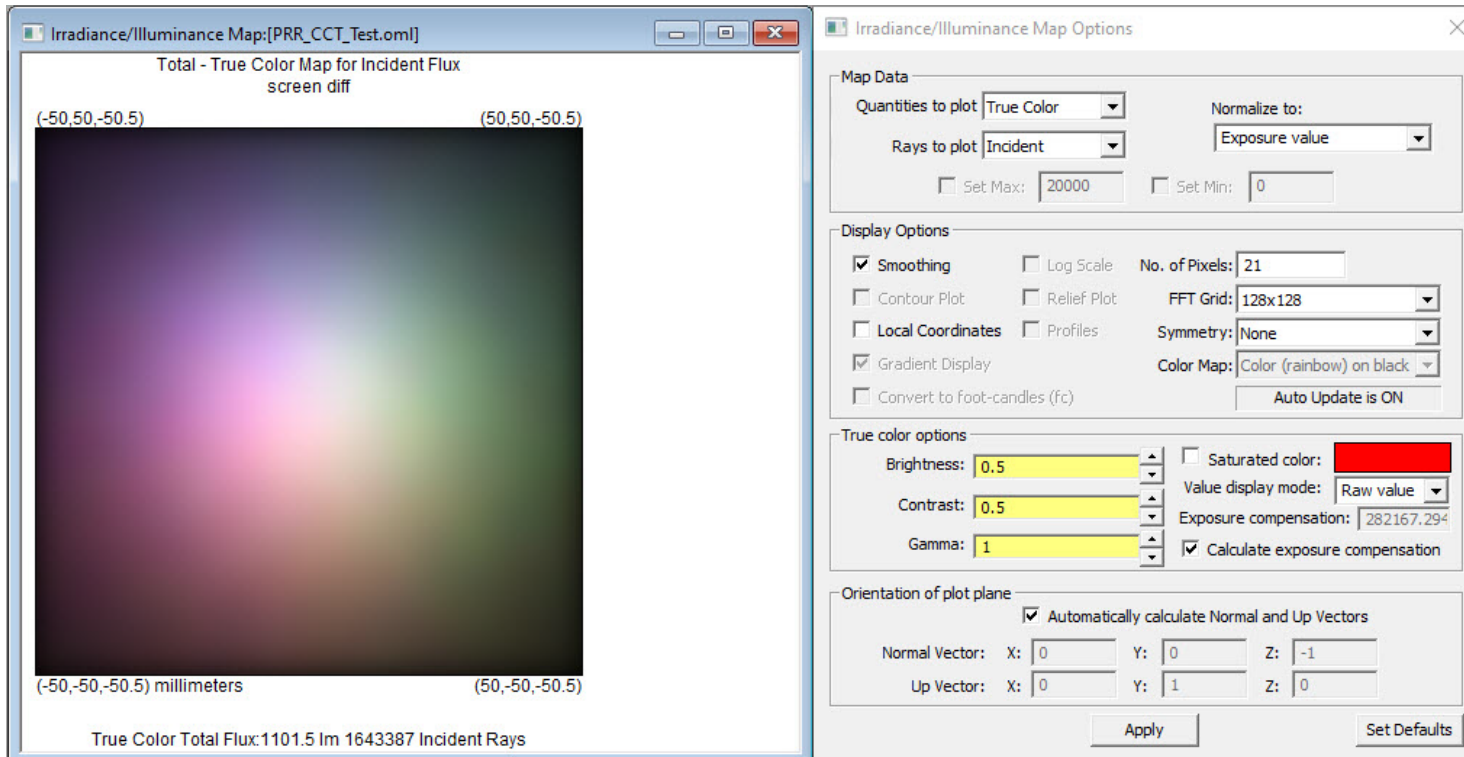
## ➤ **Analysis Toolkit**

- A polygon analysis shape for luminance analysis has been added

## ➤ **New Scheme commands**

# TracePro 2021 21.3

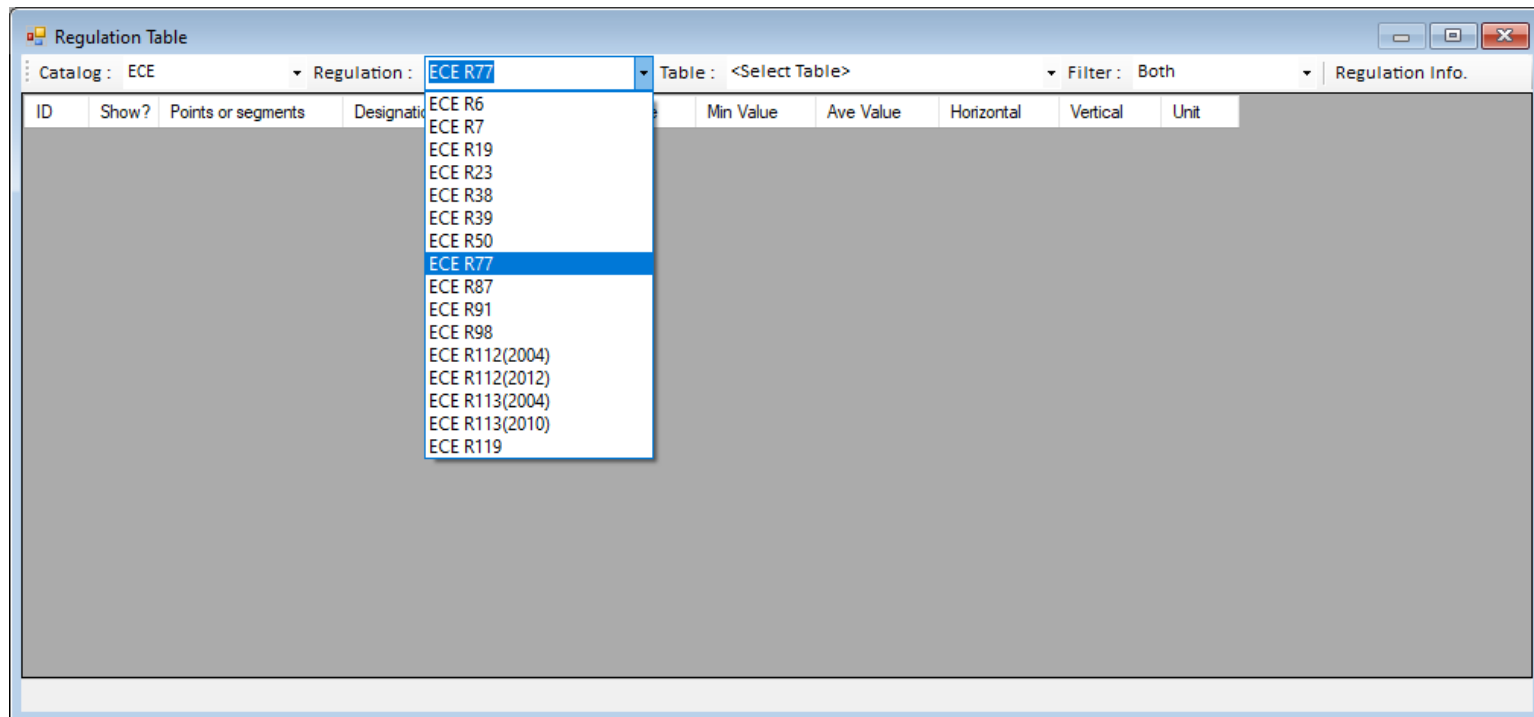
**TracePro – A new Exposure Compensation option has been added to the Photorealistic Rendering and TrueColor Plots. This allows normalizing the color to a saturated white or monochromatic color. There is also a new option to normalize to the highest color in the plot.**



# TracePro 2021 21.3

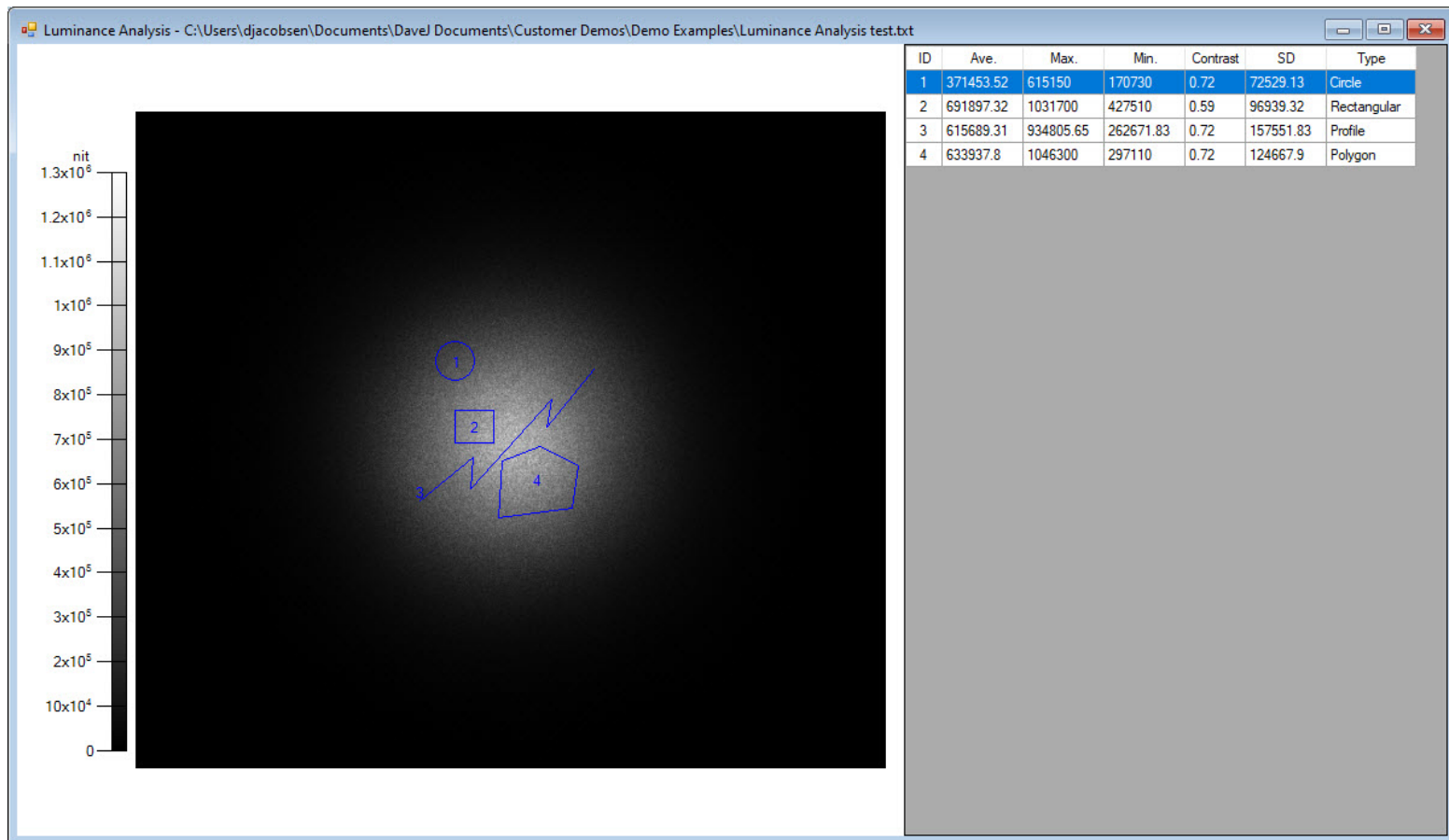
## Lighting Toolkit – Three new ECE regulation tables

- ECE R91 side marker lamps
- ECE R119 cornering lamps
- ECE R77 parking lamps



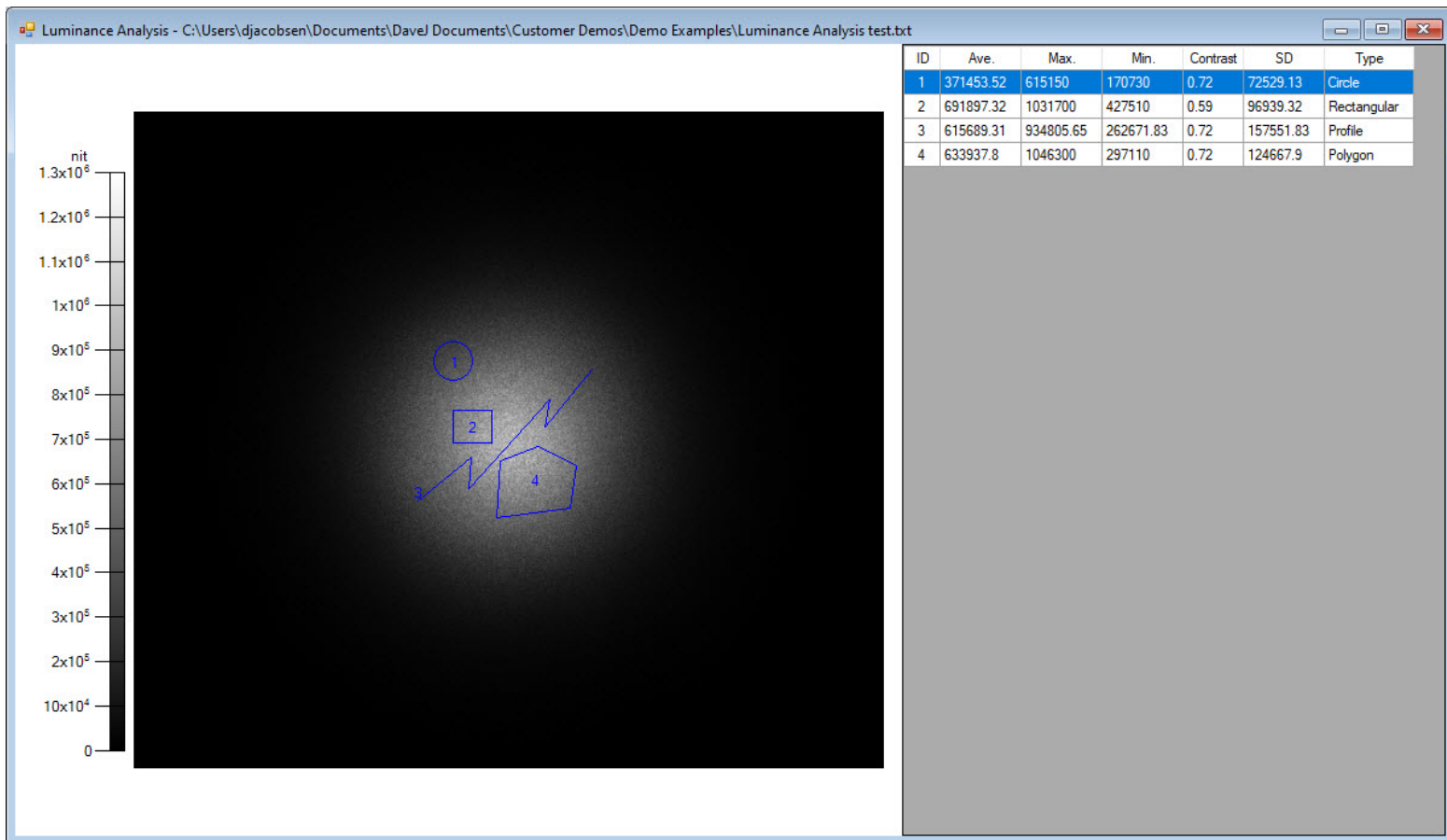
# TracePro 2021 21.3

**Analysis Toolkit – A new analysis shape, polygon, has been added to the Luminance Analysis tool in the Analysis Toolkit**



# TracePro 2021 21.3

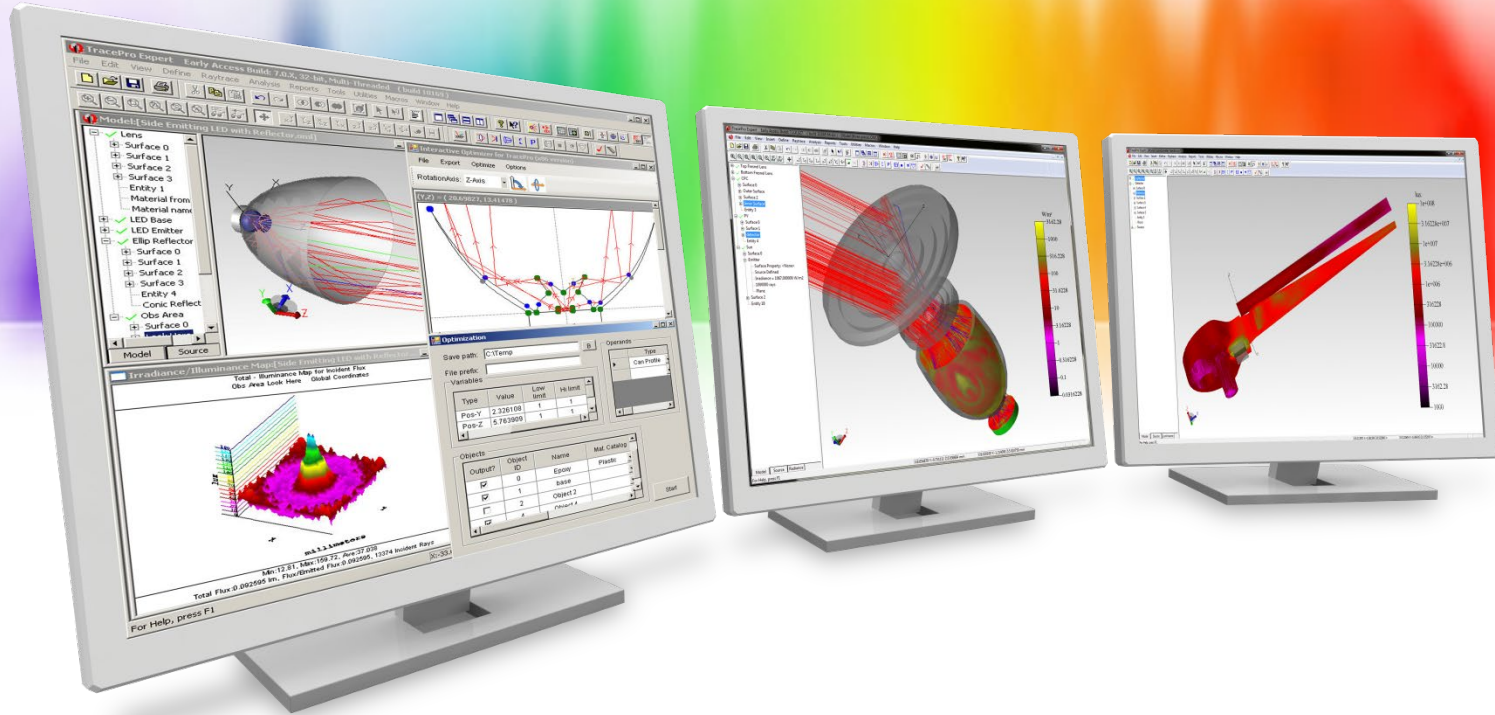
**Analysis Toolkit – A new analysis shape, polygon, has been added to the Luminance Analysis tool in the Analysis Toolkit**



# TracePro 2021 20.3

## ➤ **New Scheme commands**

- New Scheme commands have been added
  - geometry:make-circular-edge-3pt
  - geometry:make-circular-edge



## New Features in TracePro 2021 21.2



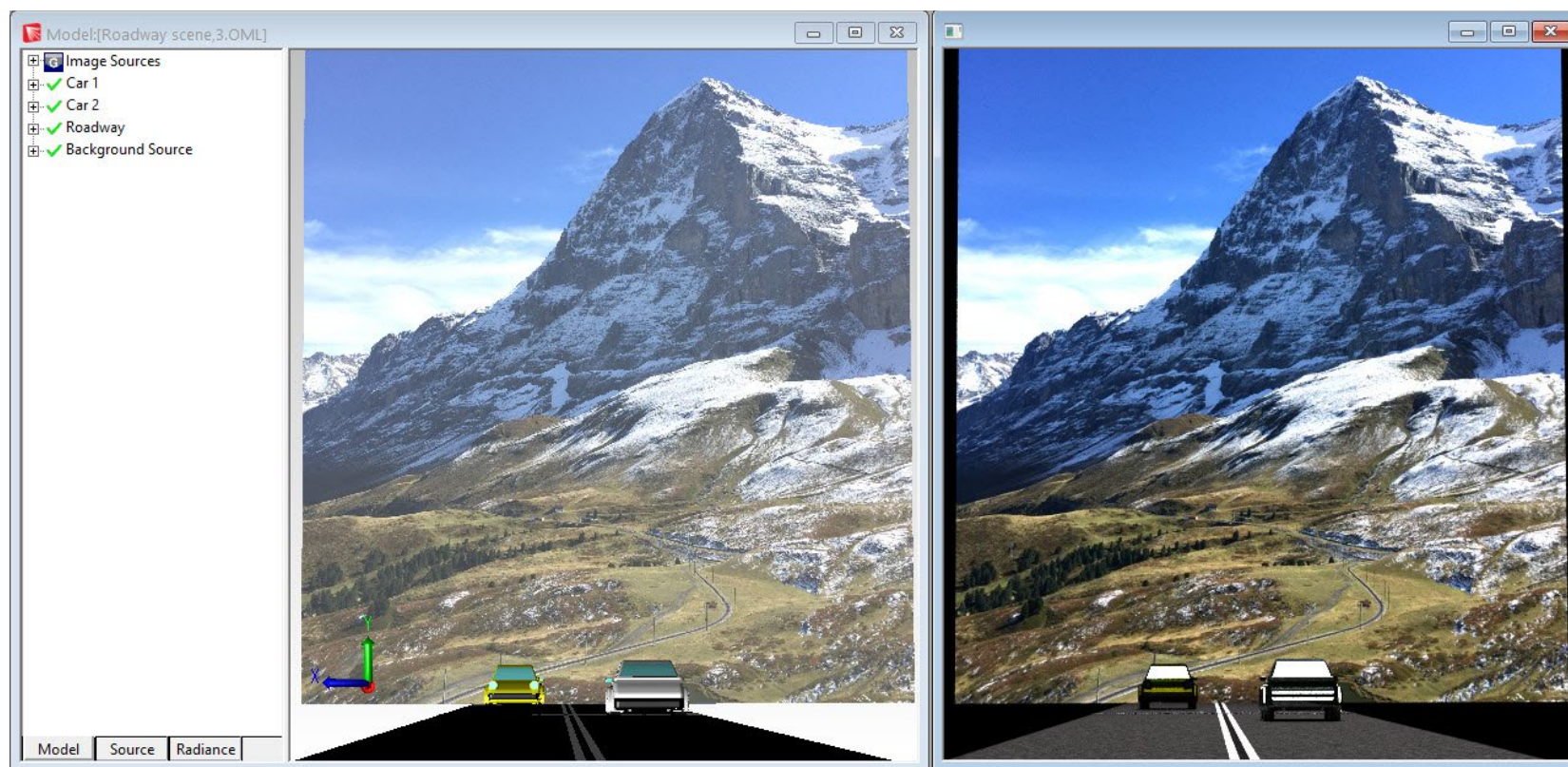
# TracePro 2021 21.2

## ➤ TracePro

- New source type - Image Source
- Updated CGDM glass catalogs

# TracePro 2021 21.2

**TracePro – A new source type, the Image Source has been added. An image file such as a JPEG or Bitmap file can now be used as a source in TracePro.**



# TracePro 2021 21.2

**TracePro – A new source type, the Image Source has been added. An image file such as a JPEG or Bitmap file can now be used as a source in TracePro.**

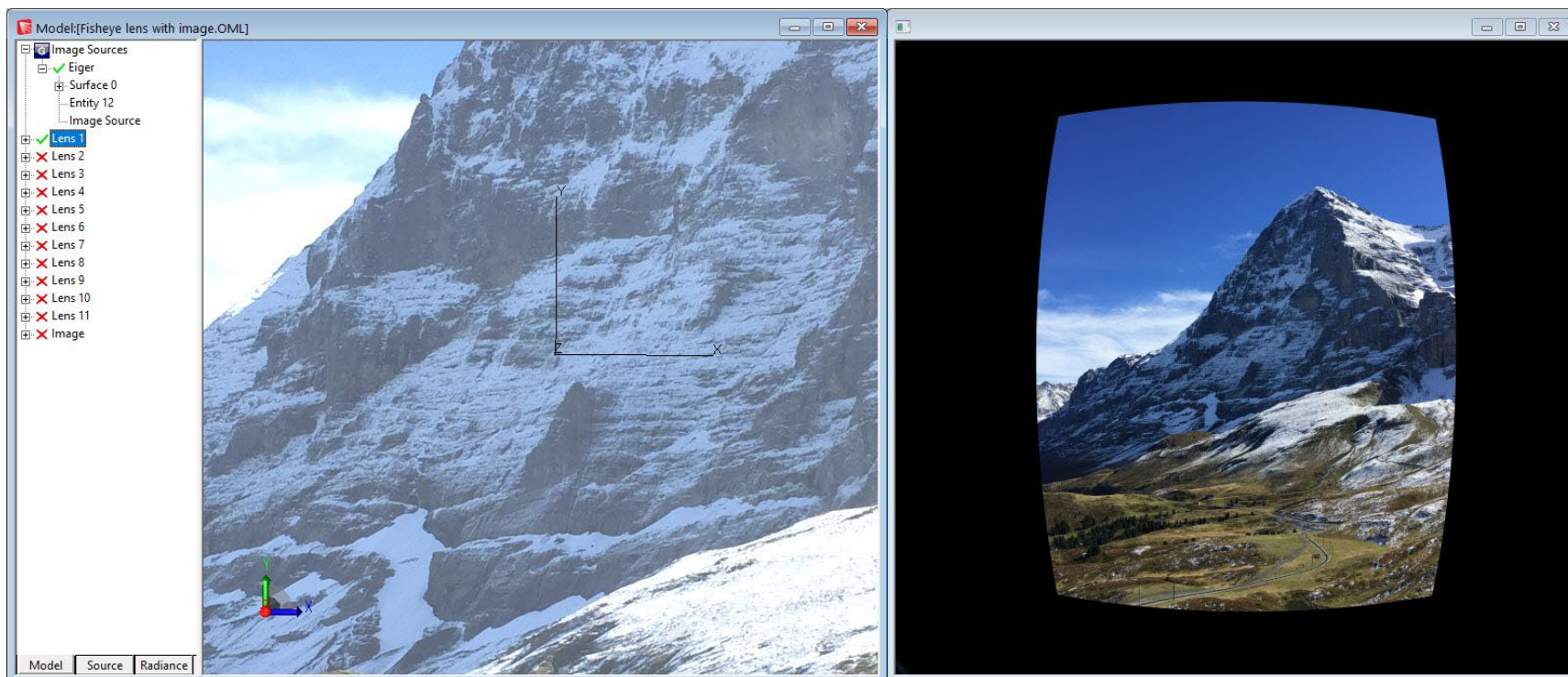
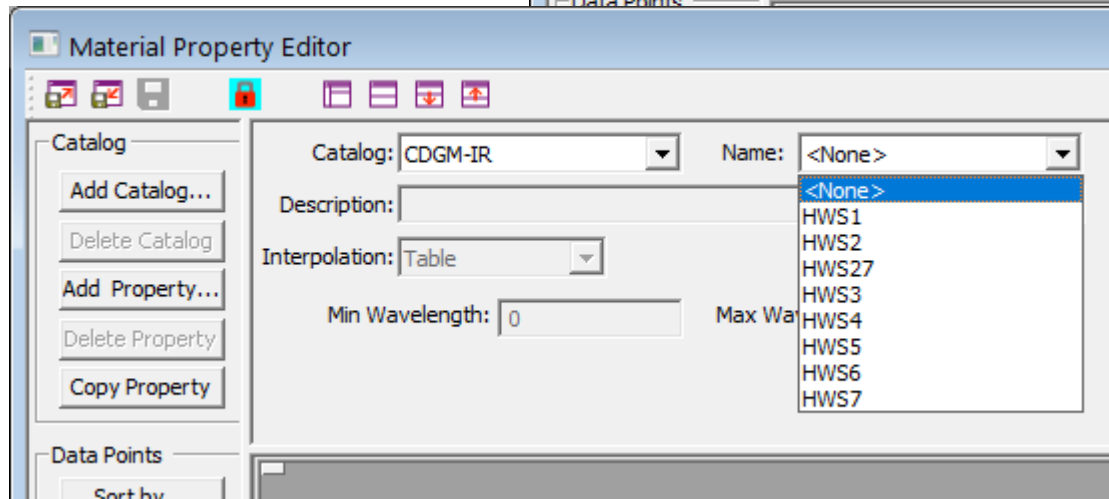
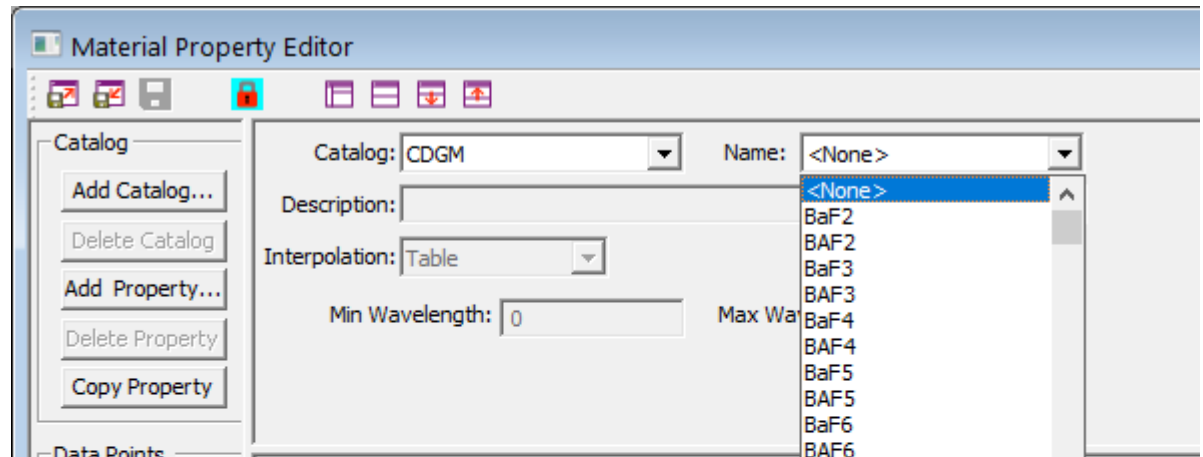
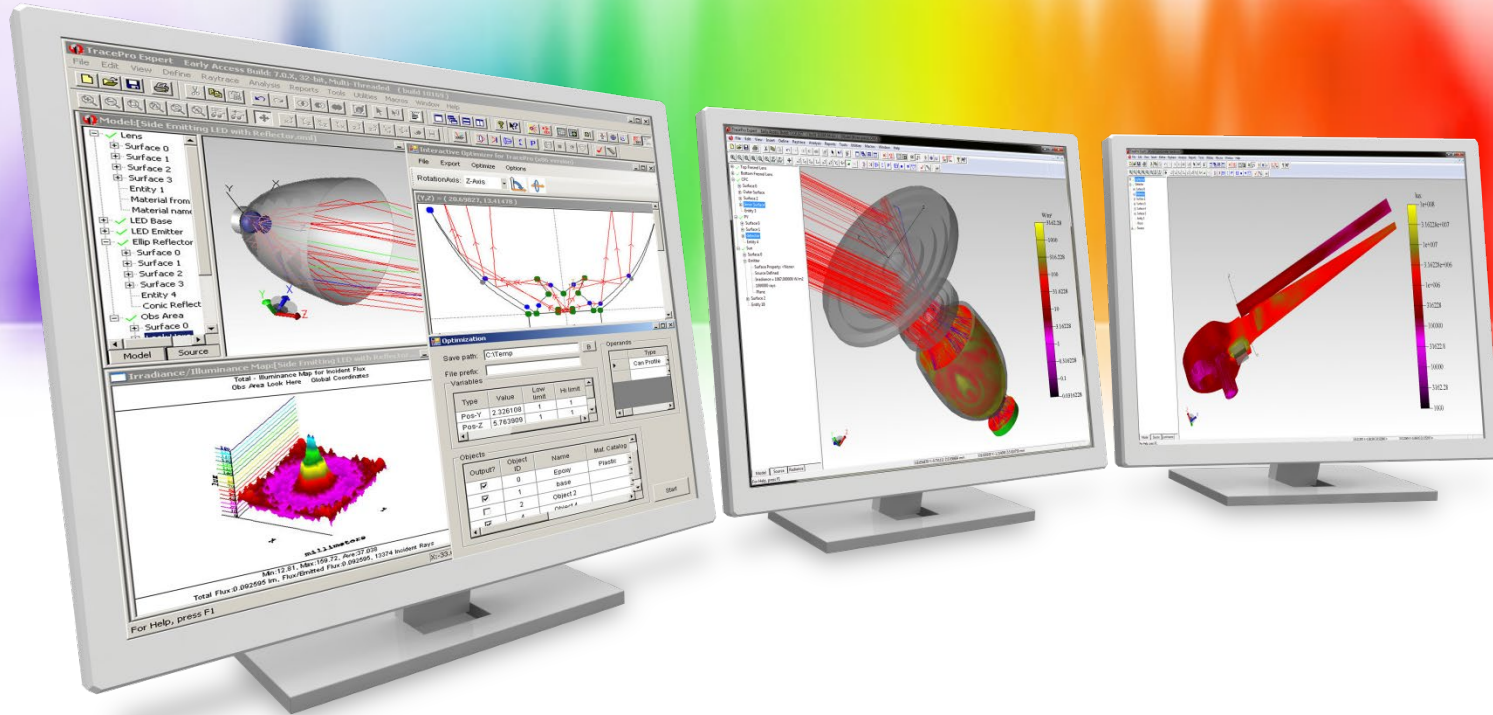


Image as viewed through a wide angle lens

# TracePro 2021 21.2

TracePro – The CDGM glass catalog as been updated to reflected the latest data. A new CDGM-IR catalog of IR glass has been added.





# New Features in TracePro 2021 21.1

# TracePro 2021 21.1

## ➤ **Interactive Optimizer**

- New capability for editing values of points in the Irradiance Profile operand

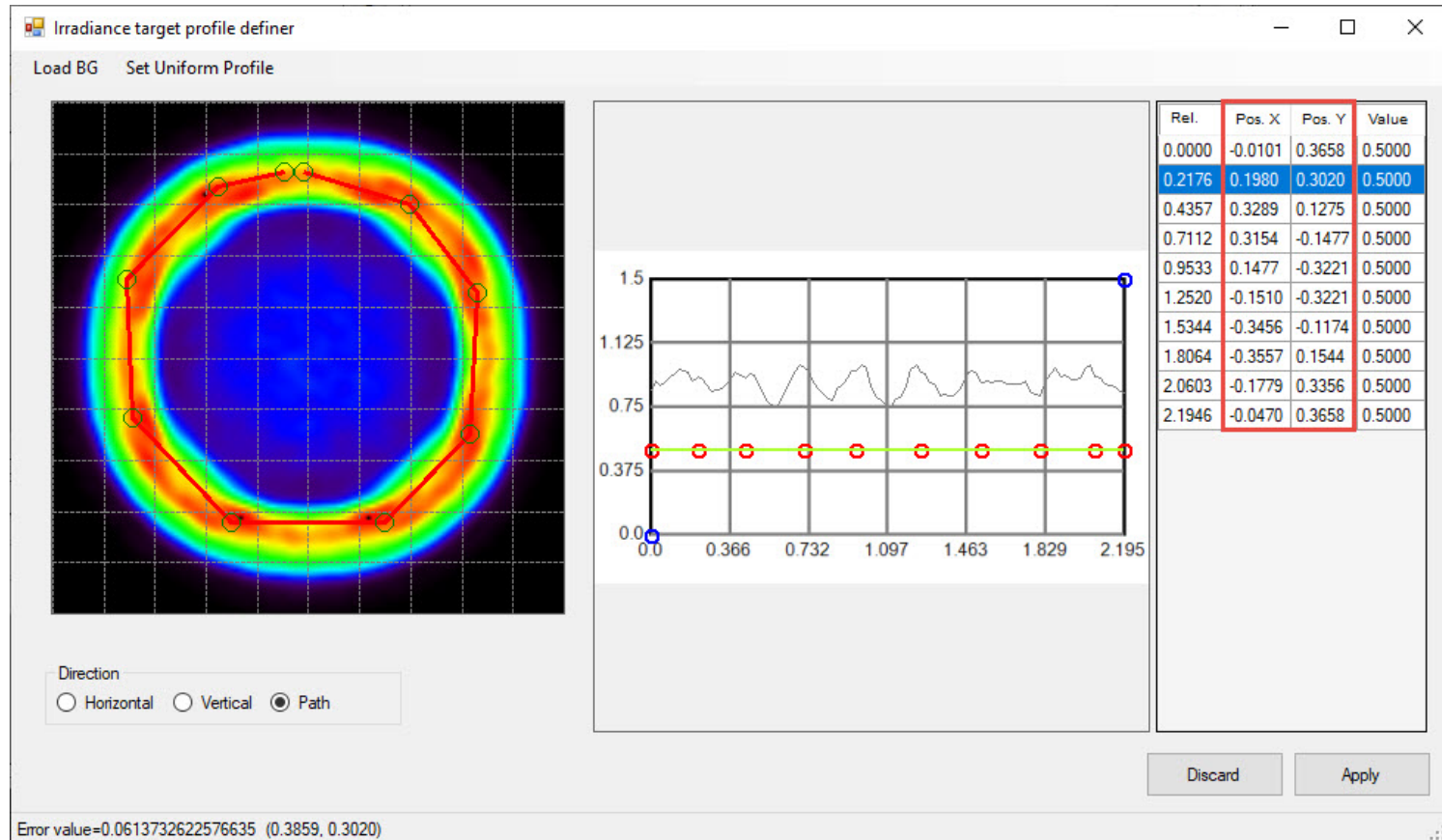
## ➤ **Lighting Toolkit**

- New FMVSS 108 regulations have been added

## ➤ **New Scheme command**

# TracePro 2021 20.1

**Interactive Optimizer – The capability to edit the values of points when defining the Irradiance Profile operand has been added**



# TracePro 2021 20.1

## ➤ Lighting Toolkit

➤ 62 FMVSS 108 regulations have been added

The screenshot shows the 'Regulation Table' window in TracePro. The 'Catalog' is set to 'FMVSS' and the 'Regulation' is 'No. 108 Table V'. The 'Table' dropdown is set to '<Select Table>'. The 'Filter' is set to 'Both'. The table displays the following data:

ID	Show?	Type	Points or segments	Min Value	Horizontal	Vertical	Unit
0	<input checked="" type="checkbox"/>	Point	15U-20IB	0.3	20 L	15 U	cd_HV
1	<input checked="" type="checkbox"/>	Point	15U-800B	0.3	80 R	15 U	cd_HV
2	<input checked="" type="checkbox"/>	Point	15D-20IB	0.3	20 L	15 D	cd_HV
3	<input checked="" type="checkbox"/>	Point	15D-800B	0.3	80 R	15 D	cd_HV

A dropdown menu is open, listing regulations from 'No. 108 Table V' to 'No. 108 Table XX'. The 'Table V: Motorcycle - Turn signal lamp' option is highlighted.

The screenshot shows the 'Regulation Table' window in TracePro, displaying a detailed view of a regulation. The 'Catalog' is set to 'FMVSS' and the 'Regulation' is 'No. 108 Table V'. The 'Table' dropdown is set to '<Select Table>'. The 'Filter' is set to 'Both'. The table displays the following data:

ID	Show?	Type	Points or segments	Designation	Max Value	Min	Horizontal	Vertical	Unit
0	<input checked="" type="checkbox"/>	Point	15U-20IB	15U-20IB	-				HV
1	<input checked="" type="checkbox"/>	Point	15U-800B	15U-800B	-				HV
2	<input checked="" type="checkbox"/>	Point	15D-20IB	15D-20IB	-				HV
3	<input checked="" type="checkbox"/>	Point	15D-800B	15D-800B	-	0.3	80 R	15 D	cd_HV

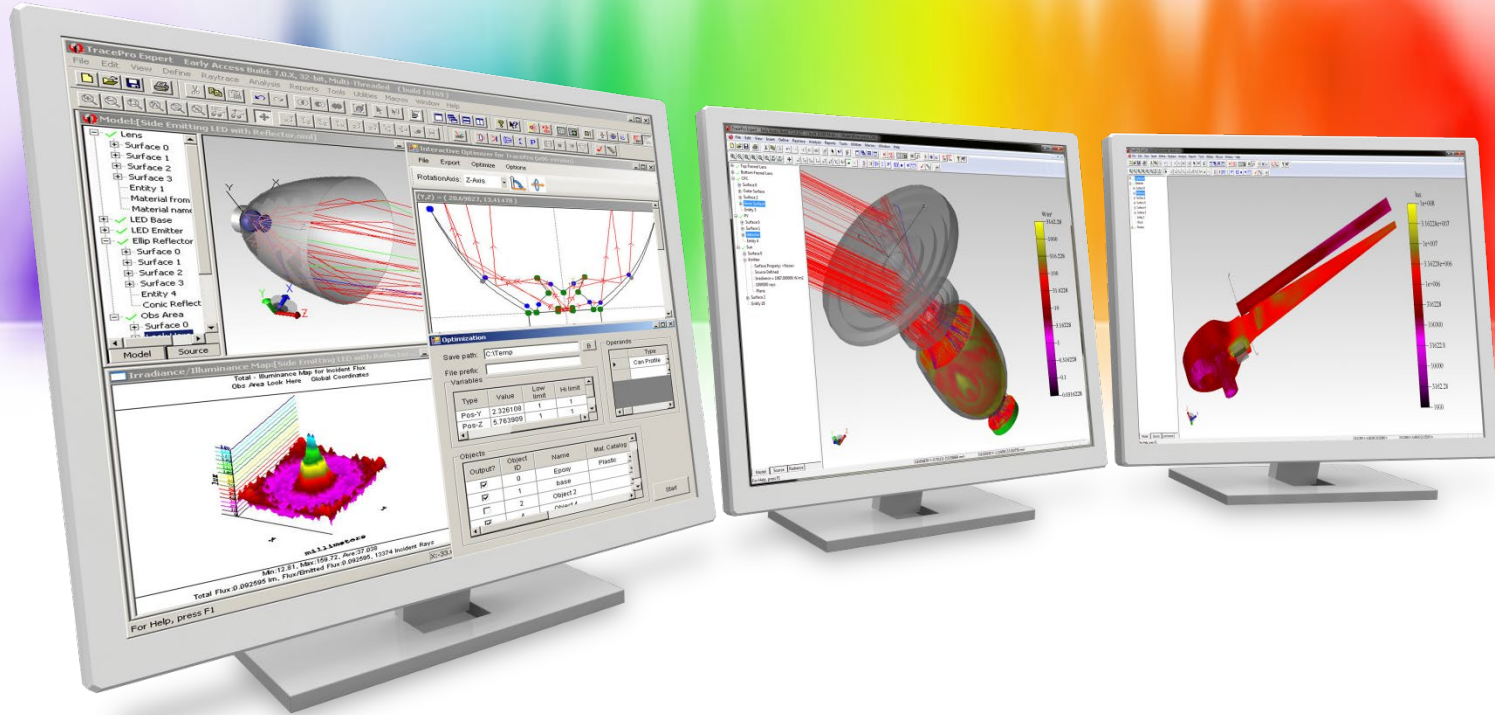
A dropdown menu is open, listing regulations from 'Table V: Motorcycle - Turn signal lamp' to 'Table V: All Other - Parking lamp'. The 'Table V: Motorcycle - Turn signal lamp' option is highlighted.



# TracePro 2021 20.1

## ➤ **New Scheme command**

- New Scheme command has been added
  - edit:rotate-objects



## New Features in TracePro 2020 20.6

# TracePro 2020 20.6

## ➤ **TracePro**

- New RepTile geometry shape – Circular Hip Roof

## ➤ **Lighting Toolkit**

- New SAE J595 regulations have been added

## ➤ **Surface Property Generator**

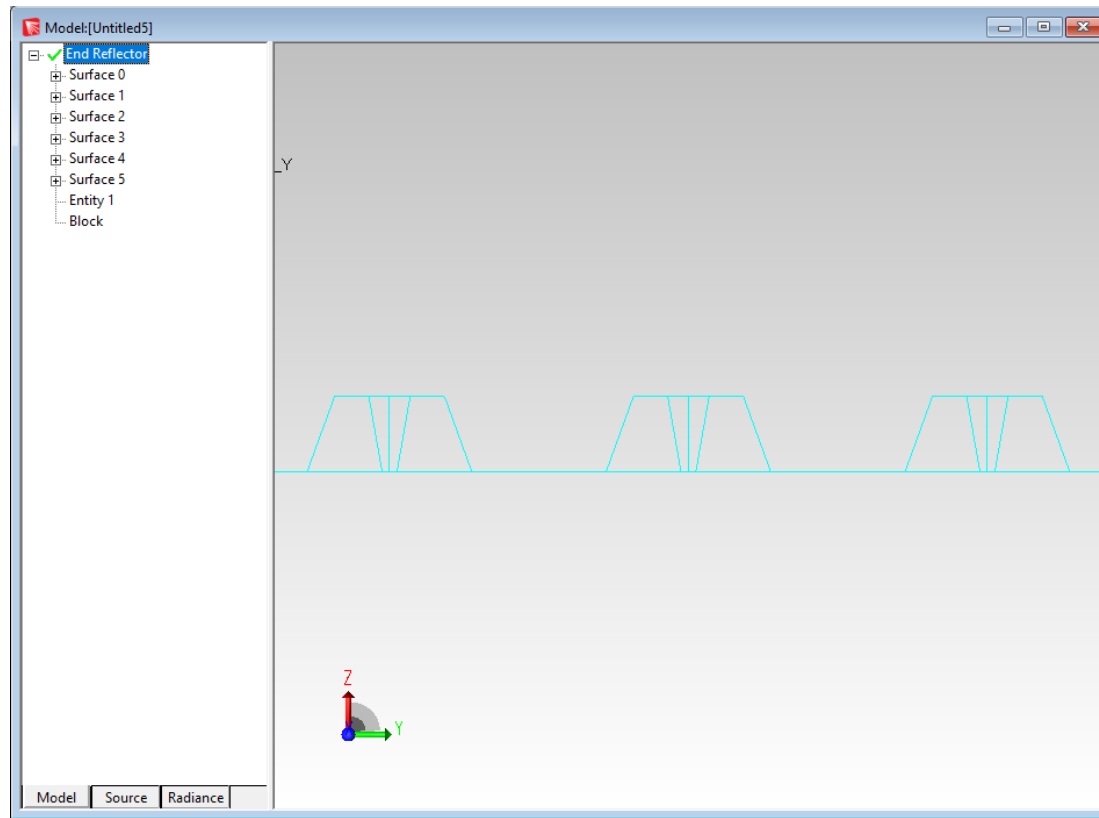
- New Import Data options have been added

## ➤ **New Scheme commands**

# TracePro 2020 20.6

## ➤ TracePro

### ➤ New RepTile shape – Circular Hip Roof



# TracePro 2020 20.6

## ➤ Lighting Toolkit

- 9 SAE J595 regulations have been added

The screenshot shows the 'Regulation Table' window in TracePro. The 'Catalog' is set to 'SAE' and 'Regulation' is set to 'SAE J595'. The 'Table' dropdown menu is open, displaying a list of 9 regulations. The 'Filter' is set to 'Both' and 'Regulation Info.' is visible on the right. The table below has columns for ID, Show?, Points or segments, Designation, Result, Max Value, and Mir.

ID	Show?	Points or segments	Designation	Result	Max Value	Mir
			SAE J595 2014 Figure 1-W			
			SAE J595 2014 Figure 2-W			
			SAE J595 2014 Figure 3-W			
			SAE J595 2014 Figure 1-YELLOW			
			SAE J595 2014 Figure 2-YELLOW			
			SAE J595 2014 Figure 3-YELLOW			
			SAE J595 2014 Figure 1-RED/BLUE			
			SAE J595 2014 Figure 2-RED/BLUE			
			SAE J595 2014 Figure 3-RED/BLUE			

# TracePro 2020 20.6

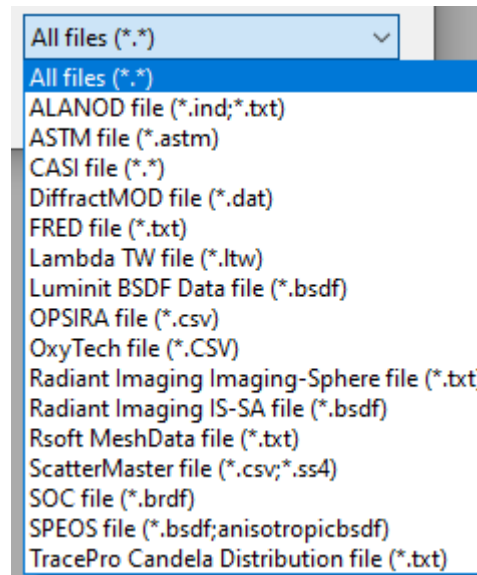
## ➤ Surface Property Generator

➤ Import of 3 new data types is now supported

➤ ASTM file format

➤ Rsoft NeshData format

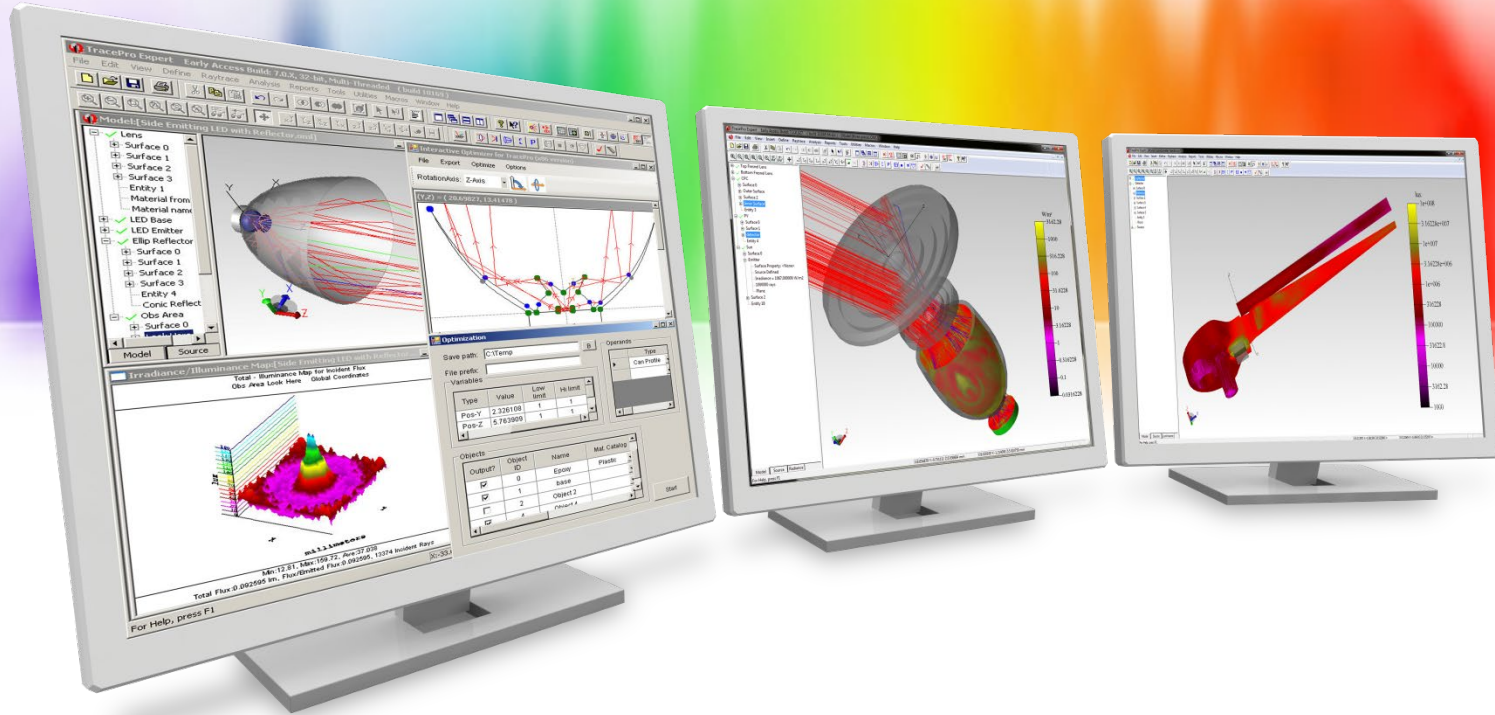
➤ OPTIS – brdf surface file v3.0



# TracePro 2020 20.6

## ➤ **Scheme commands**

- New Scheme commands have been added
  - edit:copy-sources
  - edit:paste-sources
  - geometry:primitive-block
  - geometry:primitive-sphere
  
- New arguments for edit:cut, edit:copy, and edit:move Scheme commands have been added



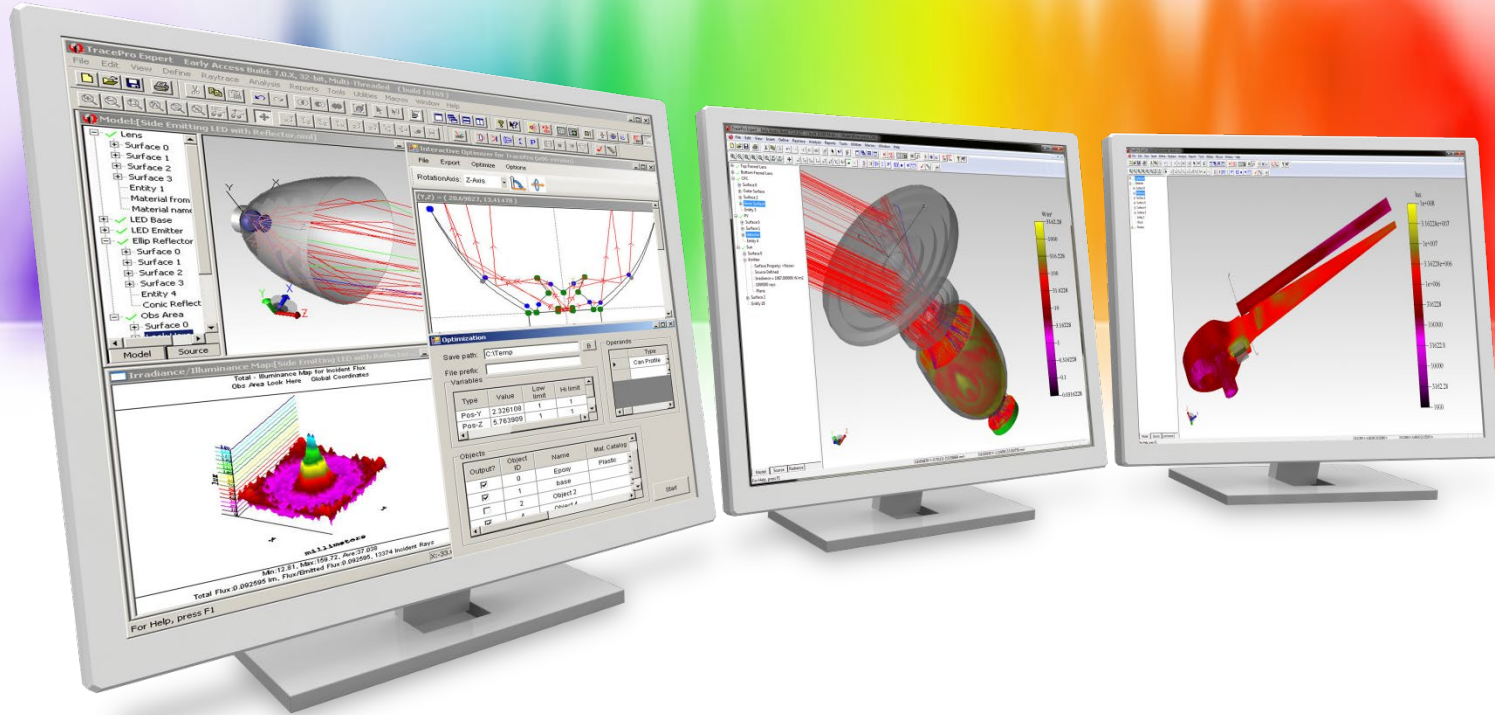
## New Features in TracePro 2020 20.5



# TracePro 2020 20.5

## ➤ TracePro

- New Scheme commands for setting and getting the current setting for Collect Path Sort Data
  - (raytrace:set-collect-path-sort-data-on)
  - (raytrace:set-collect-path-sort-data-off)
  - (raytrace:get-collect-path-sort-data?)



## New Features in TracePro 2020 20.4

# TracePro 2020 20.4

## ➤ **Interactive Optimizer**

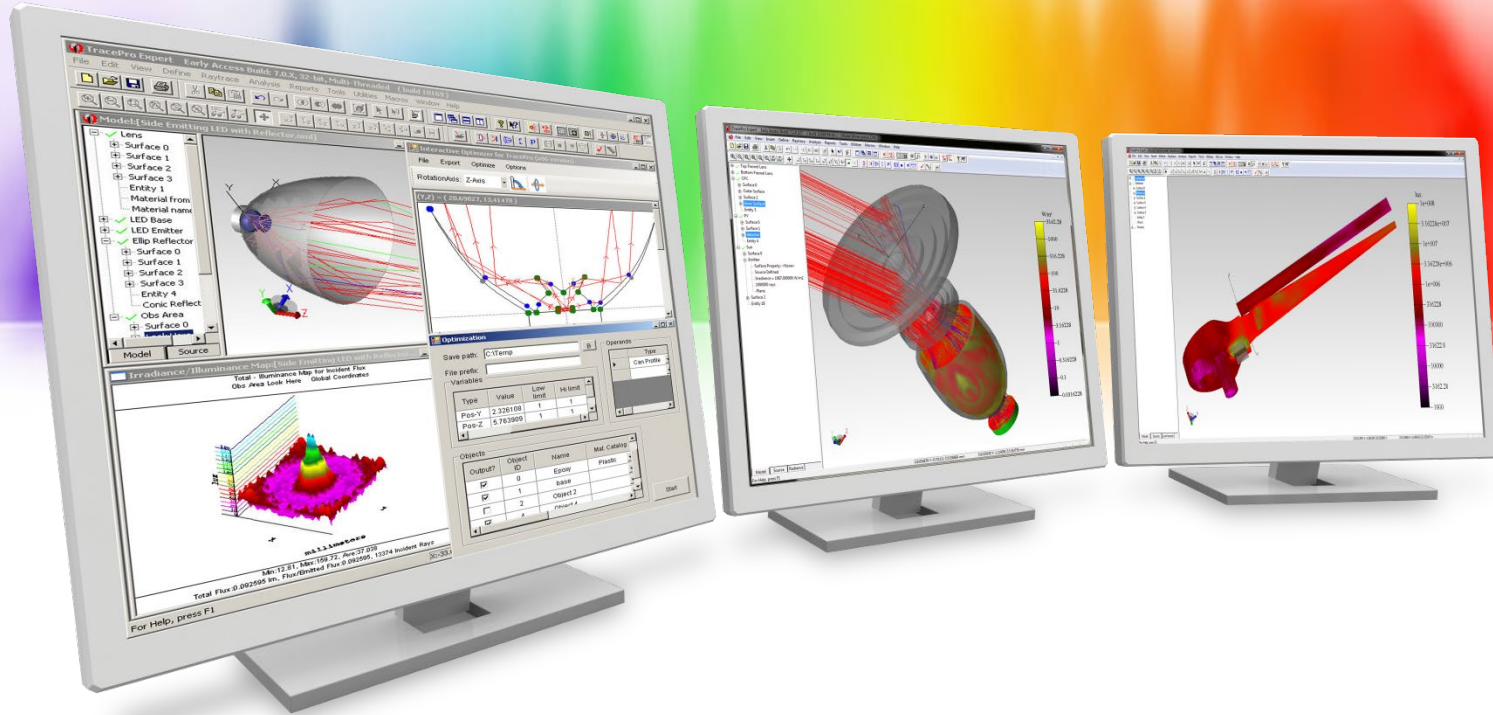
- Two new properties for the Spline segment: Start direction and End direction

# TracePro 2020 20.4

**Interactive Optimizer – New Start and End directions can be used to control the terminal slope of a generated spline curve**

The screenshot displays the TracePro 2020 20.4 Interactive Optimizer interface. The main window shows a 3D visualization of a spline curve on a dark background. The curve starts at a grey point, moves horizontally to the right, then curves upwards and left, then downwards and left, and finally curves upwards and right to end at an orange point. A red vertical line is drawn at the end of the horizontal segment. The interface includes a 'Surface list' on the left with 'Surface 0' selected, a toolbar with various tools, and an 'Opacity' slider at the bottom. The 'Property editor' window on the right shows the following table:

Description	Value	Type	Lower limit / Pickup	Upper limit
ID	1			
Segment type	Spline	▼		
Surface catalog		▼		
Surface property		▼		
Reflective?	<input type="checkbox"/>			
Absorptive?	<input type="checkbox"/>			
Fresnelized?	<input type="checkbox"/>			
Facetized?	<input type="checkbox"/>			
Start direction	(0.0.1)			
End direction	(0.1.0)			



## New Features in TracePro 2020 20.3

# TracePro 2020 20.3

## ➤ TracePro

- New arguments for geometry:baffle-vane Scheme command
- New Scheme command modify:baffle-vane

# TracePro 2020 20.3

## ➤ TracePro

- New arguments for the geometry:baffle-vane Scheme command have been added. The user can now enter values for the angles in degrees and apply a name to the baffle.

### geometry:baffle-vane

Action: Creates a TracePro **baffle** vane.

Syntax: (geometry:baffle-vane app-radius tube-radius [conical-angle=45] [grnd-angle=30] [thickness=0.1] [knife-radius=0.01] [center=(0,0,0)] [rot-x=0] [rot-y=0] [rot-z=0] [degrees=#f] [name=""])

Arg Types: app\_radius real  
tube\_radius real  
conical\_angle real  
grnd\_angle real  
thickness real  
knife\_radius real  
center position  
rot\_x real  
rot\_y real  
rot\_z real  
degrees boolean  
name string

Returns: entity

Errors: None

Description: The **baffle** vane is created based on the definitions in TracePro. The app\_radius (Aperture Radius) and tube\_radius (Tube Radius) are required. The conical-angle default to 45 degrees and the relative Ground Angle (grnd-angle) defaults to 30 degrees. The thickness default in .1 mm and the knife-radius has a default of .01 mm. The **baffle** vane will be placed at the global origin without any rotation.

Note that all the angles must be entered in Radians unless degrees is set to true.

Limitations: Not applicable

Example:

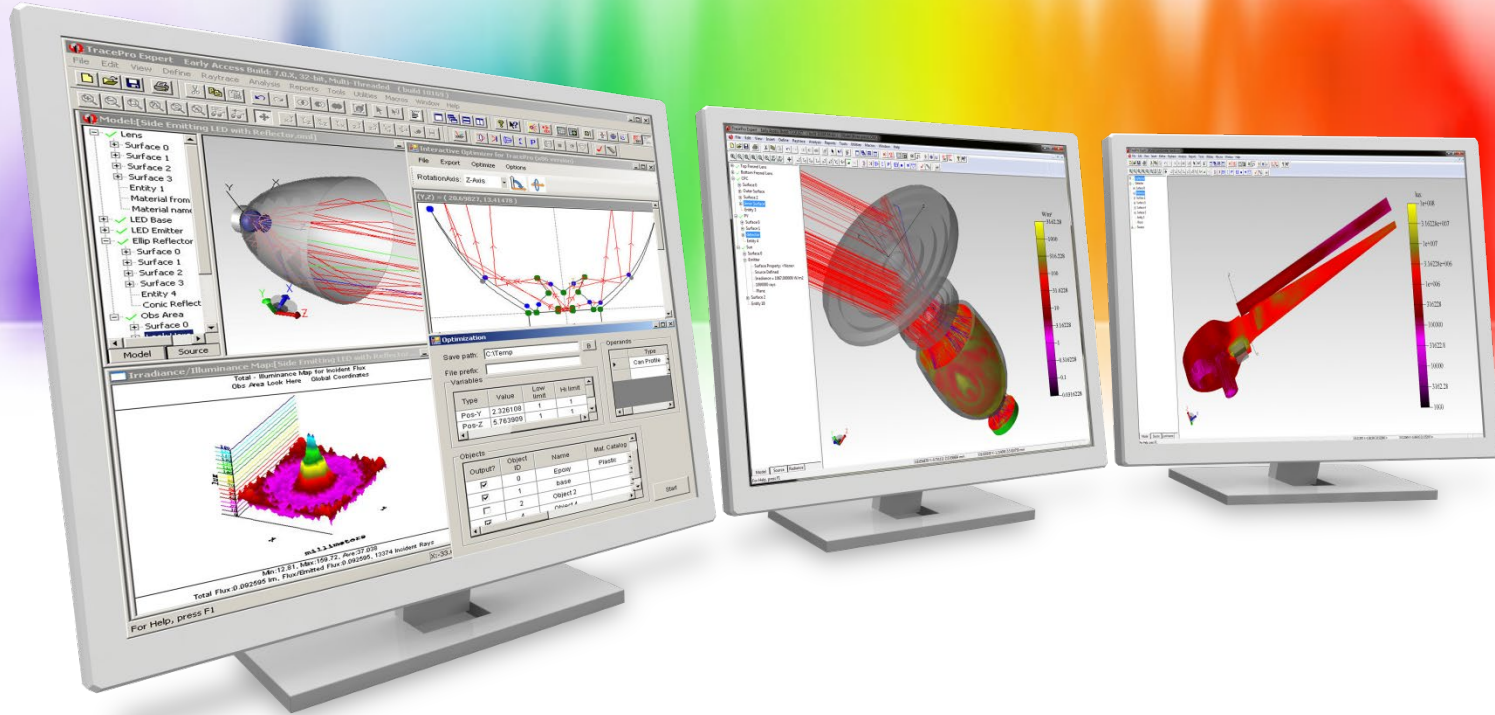
# TracePro 2020 20.3

## ➤ TracePro

- A new Scheme command `modify:baffle-vane` has been added

<b>modify:baffle-vane</b>	
Action:	Modifies a TracePro <code>baffle</code> vane.
Syntax:	<code>(modify:baffle-vane body app-radius [tube-radius] [conical-angle] [grnd-angle] [thickness] [knife-radius] [center] [rot-x] [rot-y] [rot-z] [degrees=#f] [name])</code>
Arg Types:	body entity app_radius real tube_radius real conical_angle real grnd_angle real thickness real knife_radius real center position rot_x real rot_y real rot_z real degrees boolean name string
Returns:	entity
Errors:	None
Description:	The arguments are based on the <code>baffle</code> vane parameters in TracePro. The parameters default to the current values for the body. Only the <code>app_radius</code> (Aperture Radius) is required. All properties will be preserved provided that the modified body has the same number of faces as the original.  Note that all the angles must be entered in Radians unless <code>degrees</code> is set to true.
Limitations:	Not applicable
Example:	





## New Features in TracePro 2020 20.2

# TracePro 2020 20.2

## ➤ TracePro

- New Material Property catalog for Dow Silastic moldable silicone materials

## ➤ Texture Optimizer II

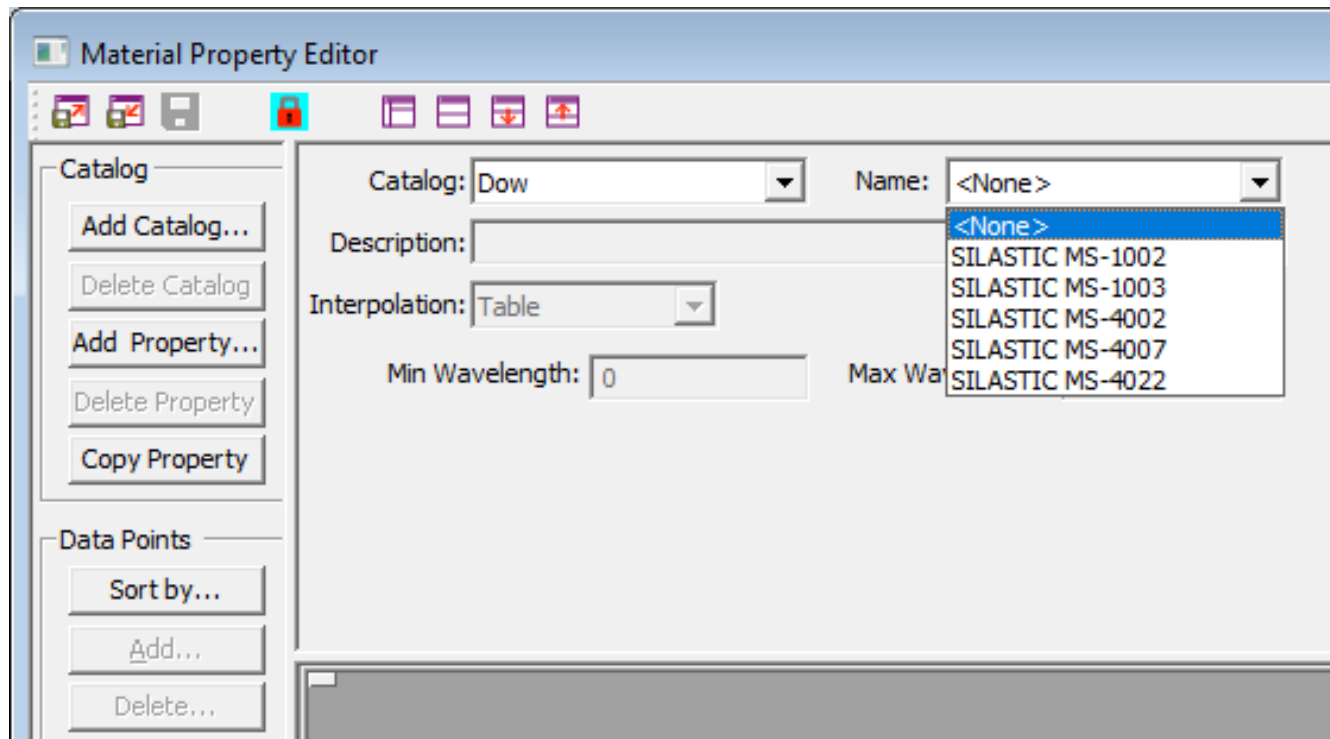
- New capability for a random dot distribution
- New capability for smoothing the dot distribution
- New tool to measure Dot spacing

## ➤ Interactive Optimizer

- Added ability for viewing the TracePro model in the Interactive Optimizer
- New capability to locate the position, normal, and uv coordinates of an existing model
- New simplified capability the marked trajectory information above in an After-scheme macro

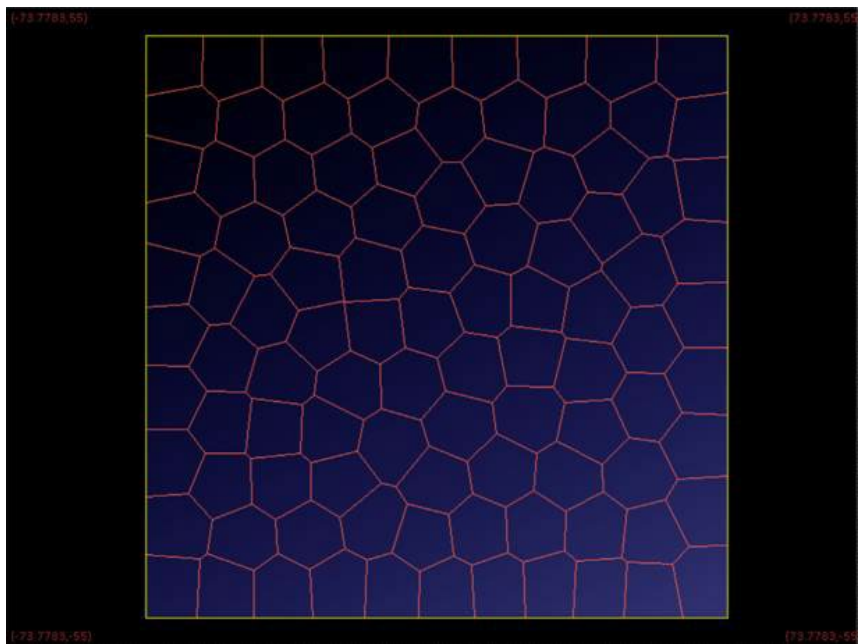
# TracePro 2020 20.2

**TracePro – A new catalog of Dow Silastic moldable silicone has been added. User's can updated their catalogs in TracePro by going to: Help->Update Property Data**

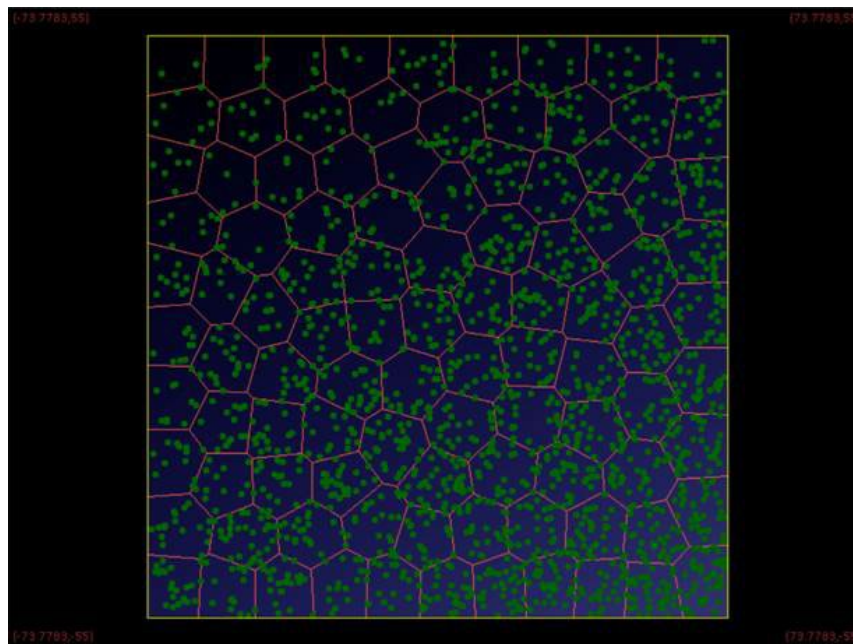


# TracePro 2020 20.2

**Texture Optimizer II – Two methods of adding a random dot pattern have been added: using cell densities and using a density map**



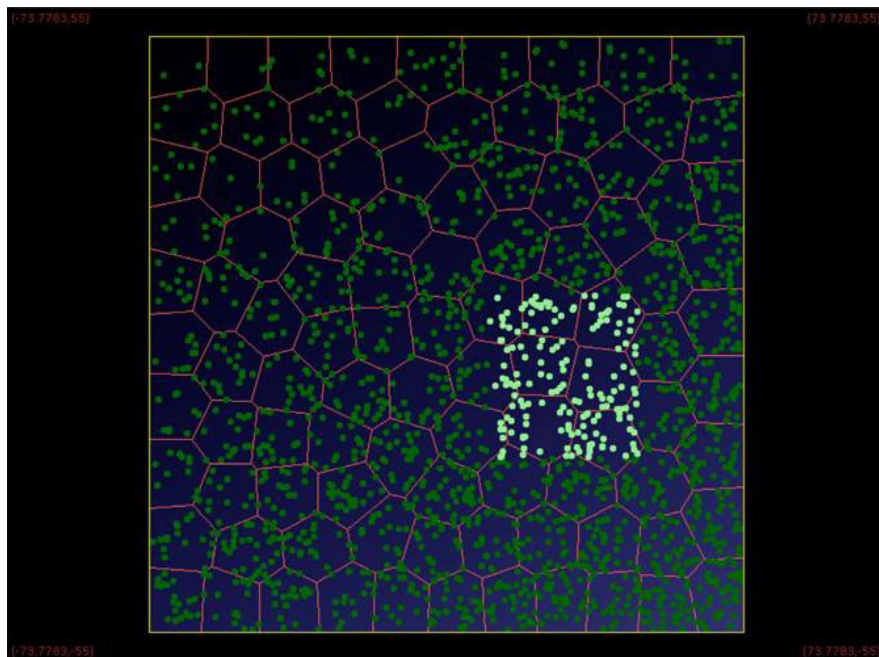
Varying density map



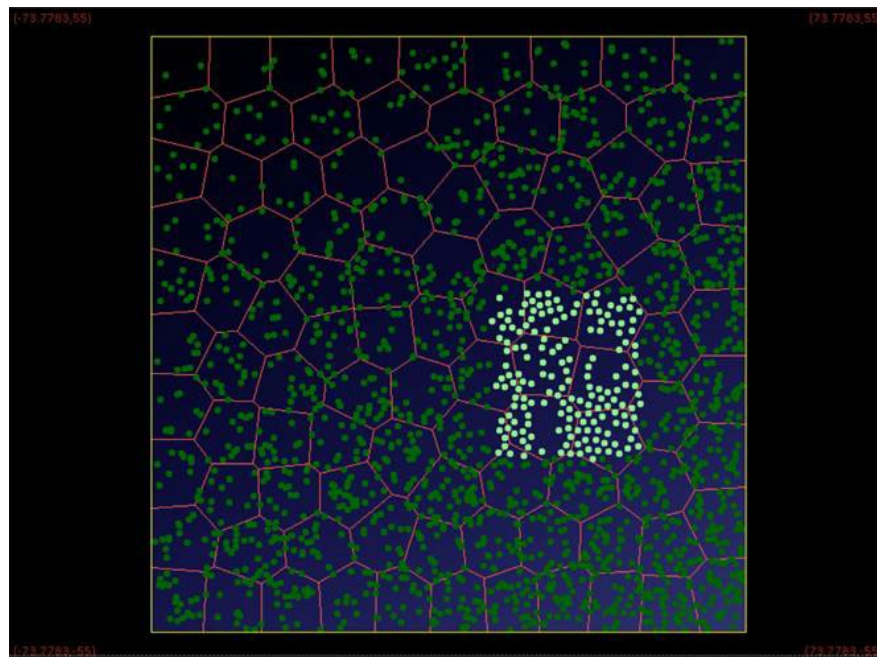
Random dots using density map

# TracePro 2020 20.2

**Texture Optimizer II – The distribution of the dots can be smoothed using the Molecular Dynamics Simulation approach**



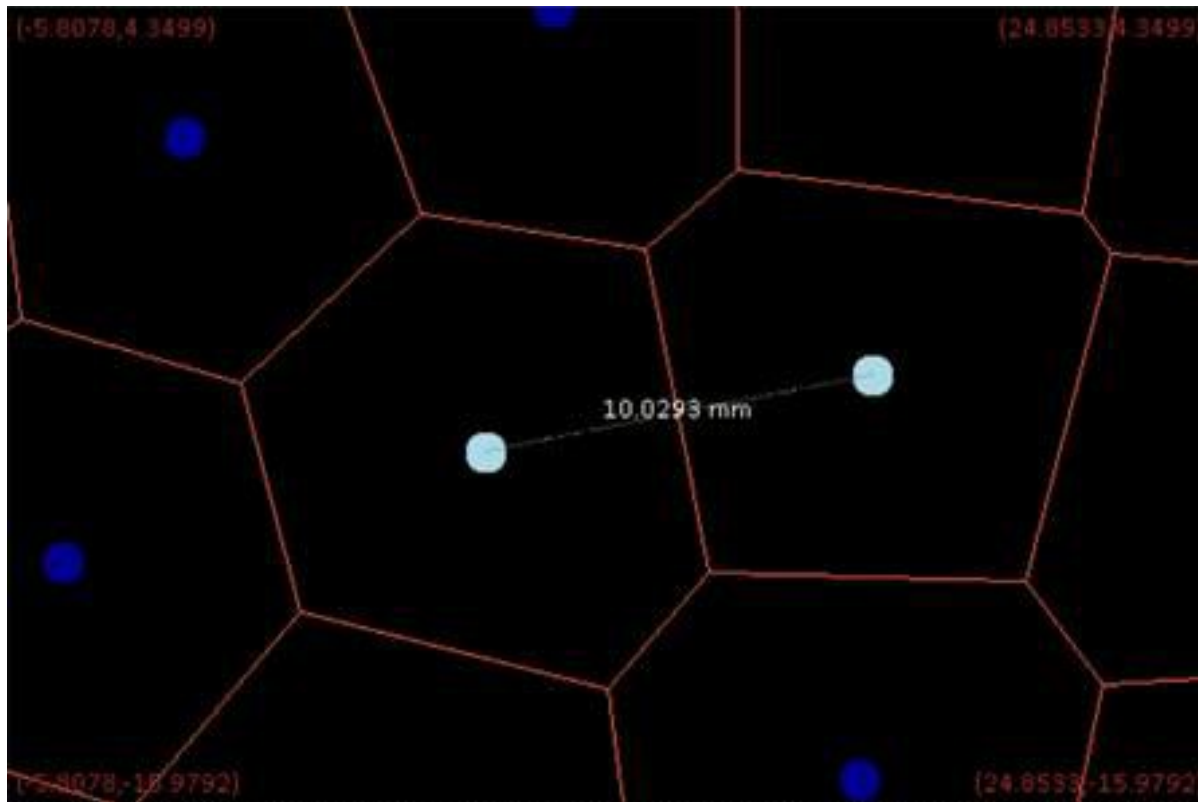
A group of dots selected for smoothing,  
some dots are overlapping



The smoothing function adjusts the dot  
positions so they are no longer overlapping

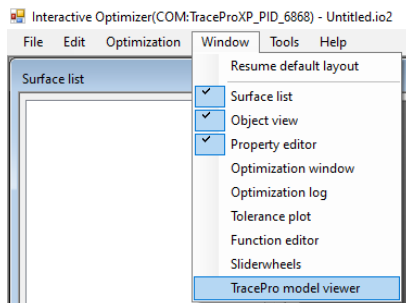
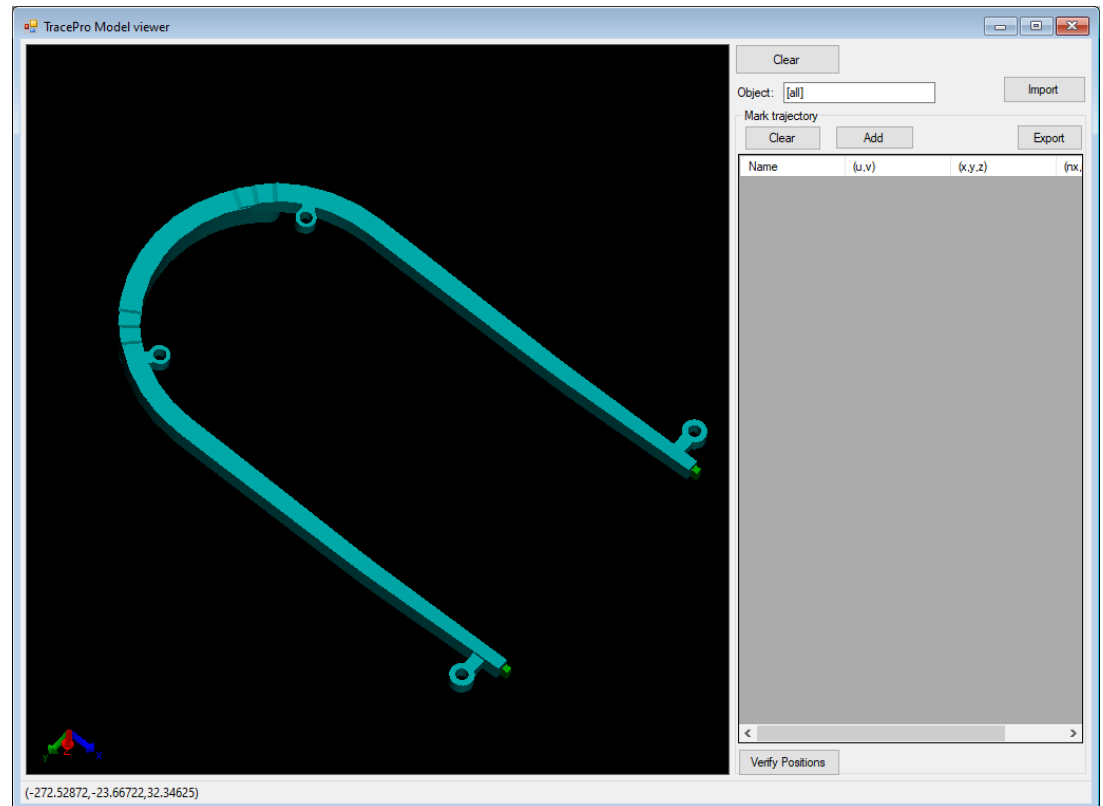
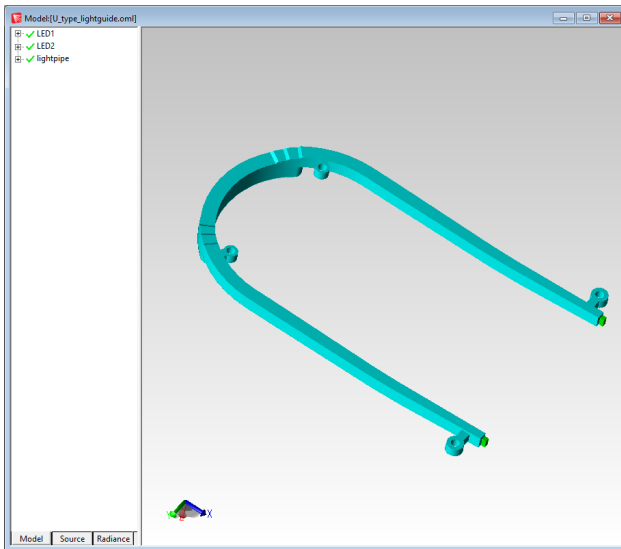
# TracePro 2020 20.2

**Texture Optimizer II – The distance between two dots selected for smoothing can be displayed**



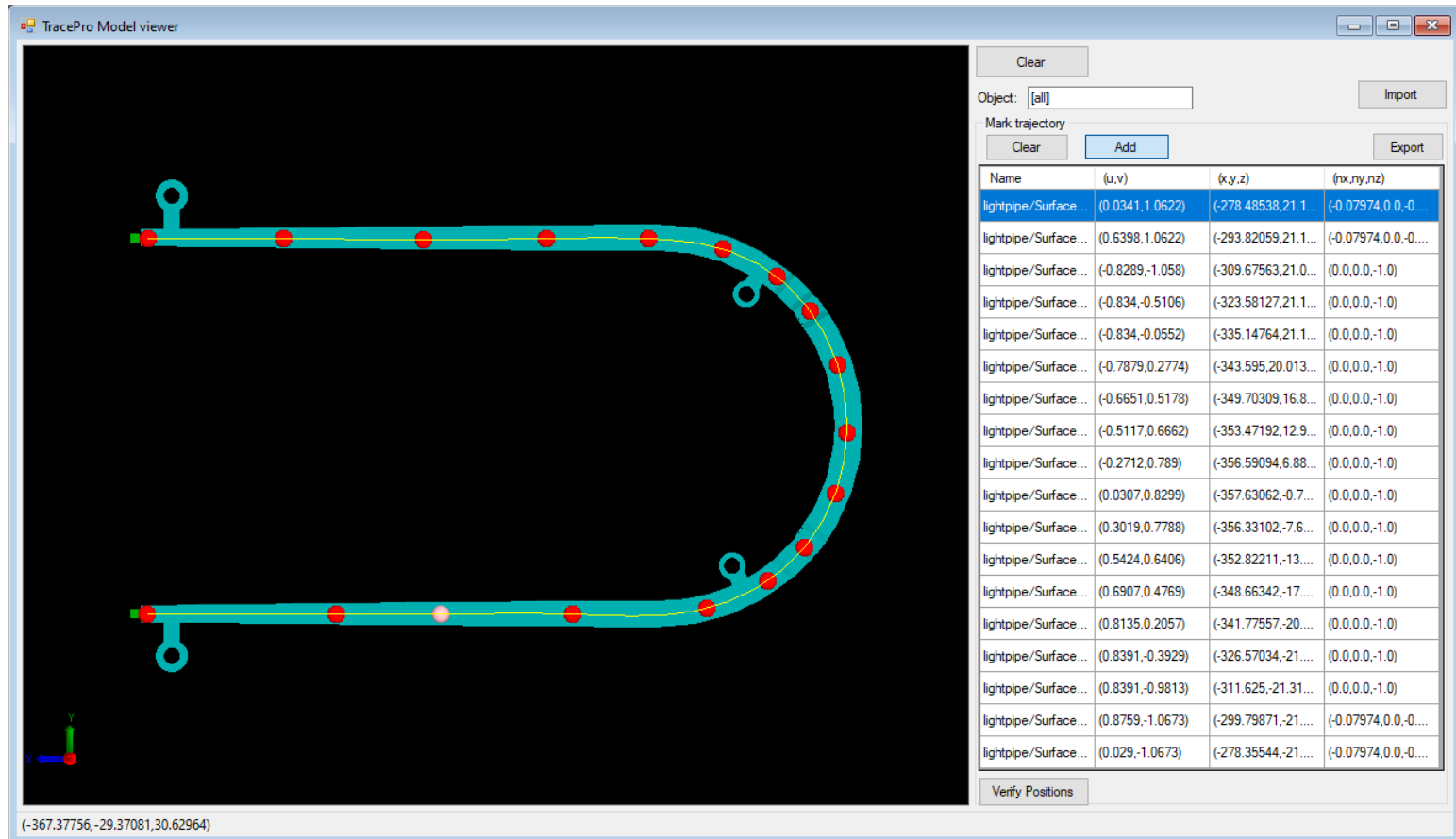
# TracePro 2020 20.2

**Interactive Optimizer – The current TracePro model can now be viewed in the optimizer. Either all objects or selected objects can be viewed.**



# TracePro 2020 20.2

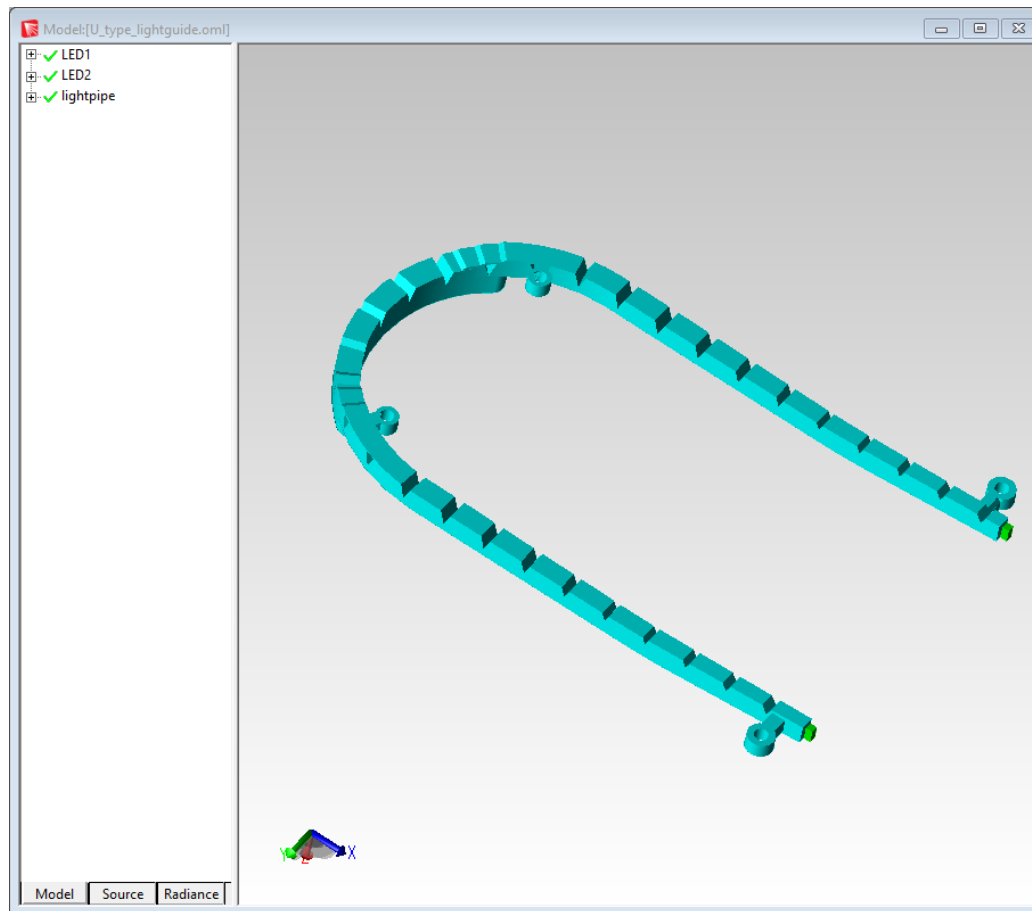
**Interactive Optimizer – The trajectory of a path along a surface of the model from TracePro can be easily plotted**

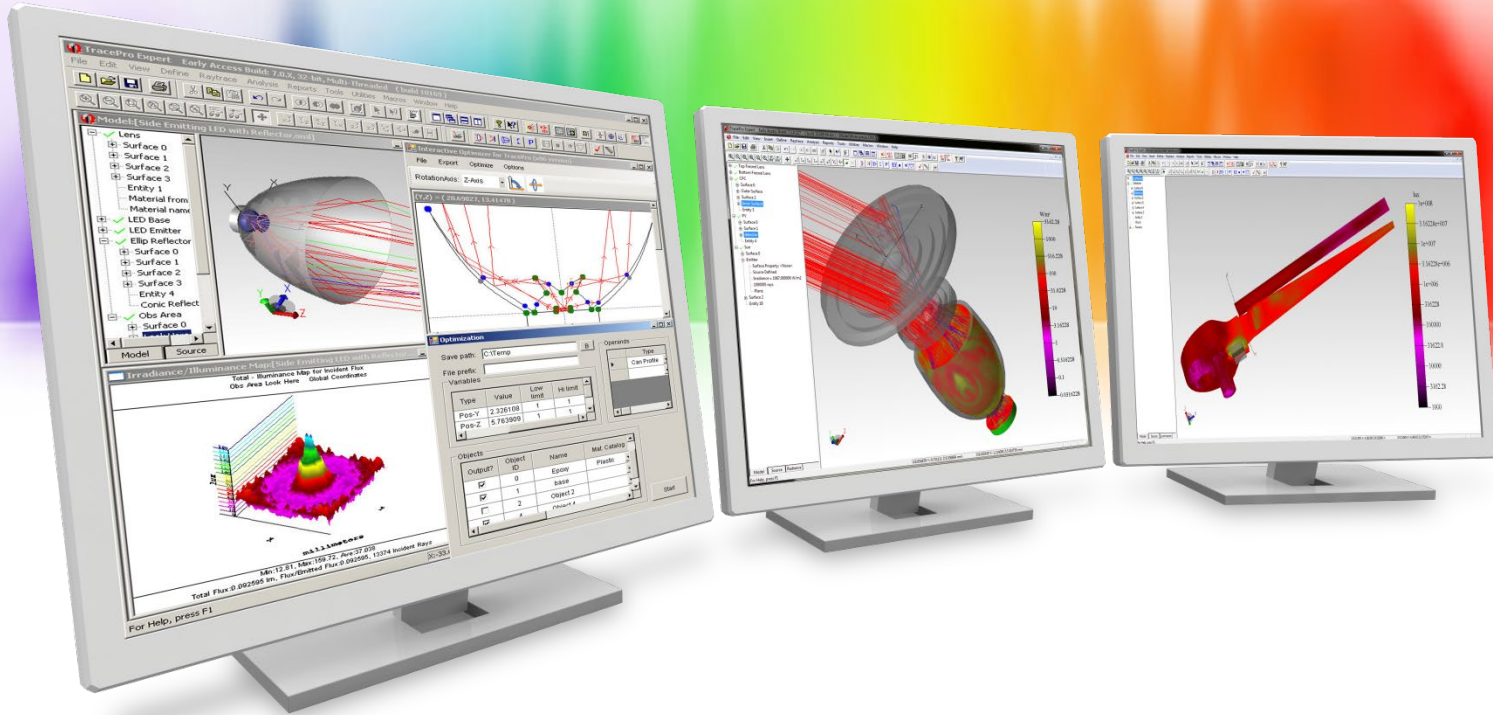




# TracePro 2020 20.2

**Interactive Optimizer – The trajectory of a path can be exported and used in an After-scheme macro to add periodic structures to a light guide surface**





## New Features in TracePro 2020 20.1

# TracePro 2020 20.1

## ➤ **TracePro**

- Enhanced Thin Sheet capabilities including new shape options and the ability to modify existing Thin Sheet primitives

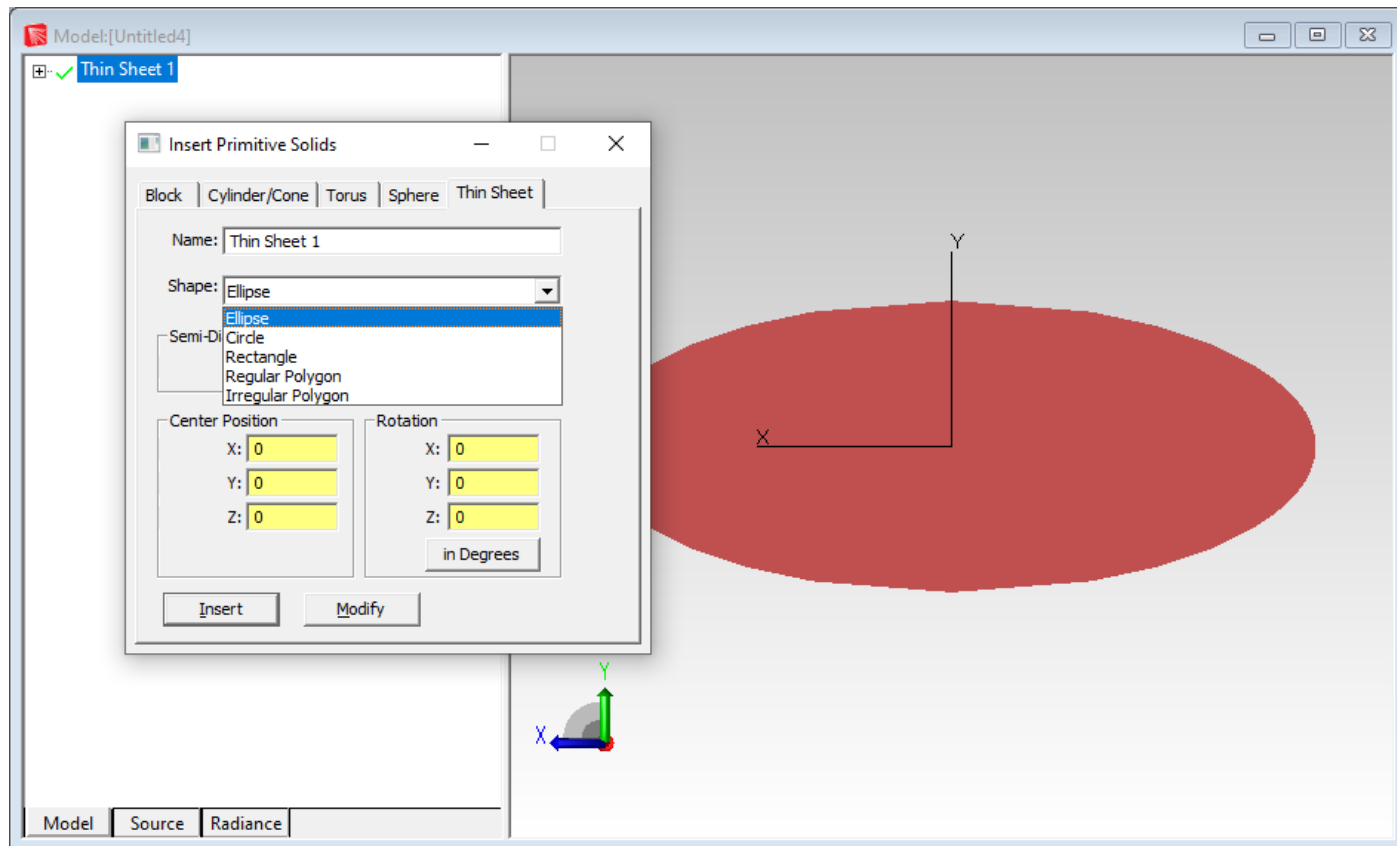
## ➤ **Surface Property Generator**

- Added capability to import scatter data files from Surface Optics Corp.

## ➤ **New Scheme Commands**

# TracePro 2020 20.1

**TracePro – The Thin Sheet Primitive Solid now has new options for shapes including: ellipse, circle, rectangle, regular polygon, and irregular polygon. Existing Thin Sheet primitives can now be modified after they are created.**



# TracePro 2020 20.1

Surface Property Generator – BRDF files from Surface Optics Corporation can now be loaded in the Surface Property Generator to make new Surface Properties for use in TracePro

The screenshot displays the 'Property edit panel' in TracePro, which is used for configuring surface properties. The panel is divided into several sections:

- Temperature: (K)**: Set to 300.
- Wavelength: (um)**: Set to 0.55.
- Incident Theta: (degree)**: Set to 0.
- Incident Phi: (degree)**: Set to 0.
- Optical property**: Includes checkboxes for A, R, T, RS, and TS, each with a slider. The 'Zero Axis' section has 'Floating axis' selected. The 'BSDF Selector' has 'Edit BRDF' selected.
- Display**: Includes radio buttons for 'Individual' and 'Composite', a 'Show imported data' checkbox, a 'No filter' dropdown, an 'Excl. ang.' field set to 0, a 'Show sim. spec. curve' checkbox, a 'Beam ang.' field set to 0.05, and a 'Beta sorting' dropdown.
- 3D preview**: Shows a 3D coordinate system with x, y, and z axes.
- Polar Plot**: A polar plot showing the distribution of light. The 'Display mode' is set to 'Polar' and the 'Acting Axis' is set to 'Phi'. The plot shows concentric circles and radial lines, with a data point at (0.22695, 1.03448).
- Linear Plot**: A linear plot showing the distribution of light. The y-axis is 'BSDF (1/sr)' and the x-axis is 'Theta (degree)'. The plot shows a single data point at (0.53769, 1.08264).
- Model**: A section for 'Imported data'.

# TracePro 2020 20.1

## Scheme – New Scheme commands have been added

Ten new Scheme commands are now available:

- (geometry:thin-sheet)
- (geometry:thin-sheet-circle)
- (geometry:thin-sheet-ellipse)
- (geometry:thin-sheet-rectangle)
- (geometry:thin-sheet-regular-polygon)
- (modify:thin-sheet)
- (modify:thin-sheet-circle)
- (modify:thin-sheet-ellipse)
- (modify:thin-sheet-rectangle)
- (modify:thin-sheet-regular-polygon)