Update Guide
Release 2022.1

Revised: 30-Mar-2022

Lambda Research Corporation
25 Porter Road
Littleton, MA 01460
USA

www.lambdares.com
support@lambdares.com

COPYRIGHT AND TRADEMARK ACKNOWLEDGMENTS

COPYRIGHT

The TracePro software and all documentation are Copyright © 1995-2022 by Lambda Research Corporation. All rights reserved.

This software may only be used by one user per license obtained from Lambda Research Corporation.

This document contains proprietary information. This information may not be copied in whole or in part, or reproduced by any means, or transmitted in any form without the prior written consent of Lambda Research Corporation.

TRADEMARKS

TracePro® and OSLO® are registered trademarks of Lambda Research Corporation.

RayViz™ is a trademark of Lambda Research Corporation.

Adobe® and Acrobat® are registered trademarks of Adobe Systems Incorporated.

SOLIDWORKS® is a registered trademark of SOLIDWORKS Corporation.

Windows® and Microsoft® are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

CodeMeter® is a registered trademark of WIBU-SYSTEMS AG.

The following are trademarks or registered trademarks of Kubotek Corporation in the USA and/or other countries: KUBOTEK® KUBOTEK3D™ KEYCREATOR® KUBOTEK KOSMOS™ KCM®

All other names and products are trademarks of their respective owners.

Contents

Introduction 1

What's New in TracePro 2022.1? 1

New Geometric Modeler 1

New Scheme commands 1

New Surface and Aperture Types for Lens Element 2

New Environment Properties 3

Source Builder 4

All-mouse Mode 5

Dynamic Highlighting and Tooltips in the Model View 6

New File Format 6

New STEP and IGES Translators 6

New CAD File Importers 7

Ray Sorting with Candela Plots 7

INTRODUCTION

This document serves as a guide for new features and changes in TracePro 2022.1. This release has a major change: replacement of the geometric modeler with Kosmos/KCM, made by Kubotek3D. It also includes new surface types for the Lens Element solid, a new All-mouse mode for manipulating the view, and changes to the file format. This release also fixes several problems reported by TracePro users.

WHAT'S NEW IN TRACEPRO 2022.1?

Changes in TracePro 2022.1 are summarized as follows:

- New geometric modeler, Kosmos/KCM.
- New surface types and aperture shapes for Lens Element.
- New Environment Properties.
- New Source Builder with wizard.
- New All-mouse mode for manipulating the view.
- New dynamic highlighting and tooltips for identifying surfaces in the Model View.
- New file format, *.OMLB
- New STEP and IGES translators.
- New CAD file importers for popular mechanical CAD programs.
- Ray Sorting now works with Candela Plots.

NEW GEOMETRIC MODELER

While the result of changing to a new geometric modeler is not visible to you, the user, it is a major milestone in the development of TracePro. It is a culmination of many years, and many, many person-years of work. The new modeler gives TracePro the capability to model asymmetric and free-form optical surfaces with the accuracy required for optical ray tracing. Kosmos/KCM will enable us to add advanced features to TracePro more easily.

New Scheme commands

One of the consequences of changing to a new modeler is that it is controlled by an entirely new set of Scheme commands. In addition, we have implemented many new TracePro Scheme extensions for common geometry creation and manipulation tasks.

Many KCM Scheme commands that create or modify geometry return a (list) comprised of two members: a Result to indicate the success of the operation, and a (list) or ObjectID containing the created or modified geometry. You can get the Result using (car) and the list or ObjectID using (cdr). New example Scheme programs for TracePro 2022 are available in the Support section of our website, on the TracePro Examples page.

NEW SURFACE AND APERTURE TYPES FOR LENS ELEMENT

The Lens Element dialog box (**Geometry|Lens Element**) has been significantly enhanced, made possible by the Kosmos/KCM modeler. The full selection of surface types available is shown in Figure 1.

New aperture shapes are available, including

- Circle
- Rectangle
- Ellipse
- Rounded Rectangle
- Polygon

The new Aperture tab of the Lens Element dialog box is shown in Figure 2.

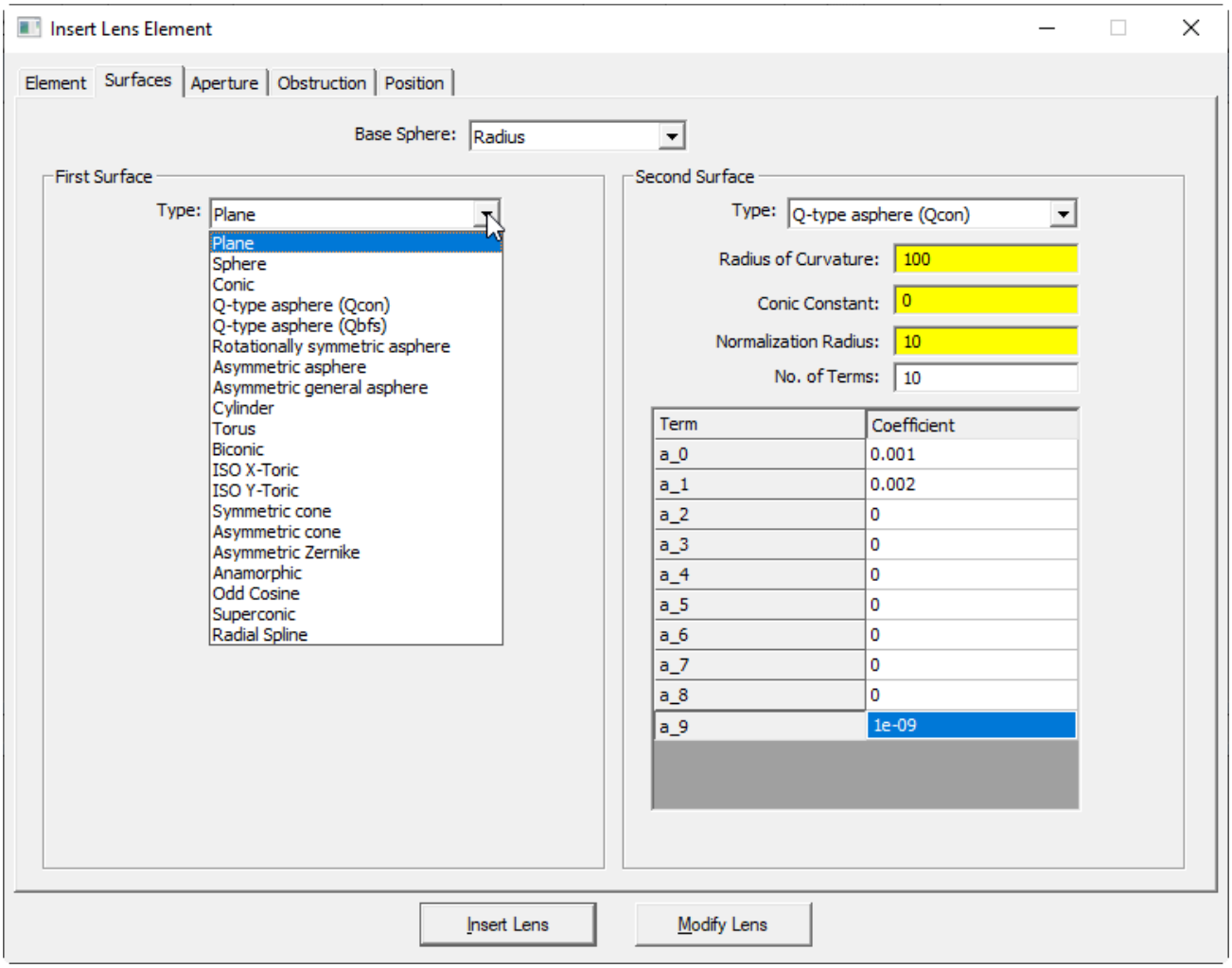

Figure 1. Enhanced Lens Element dialog box with new surface types.

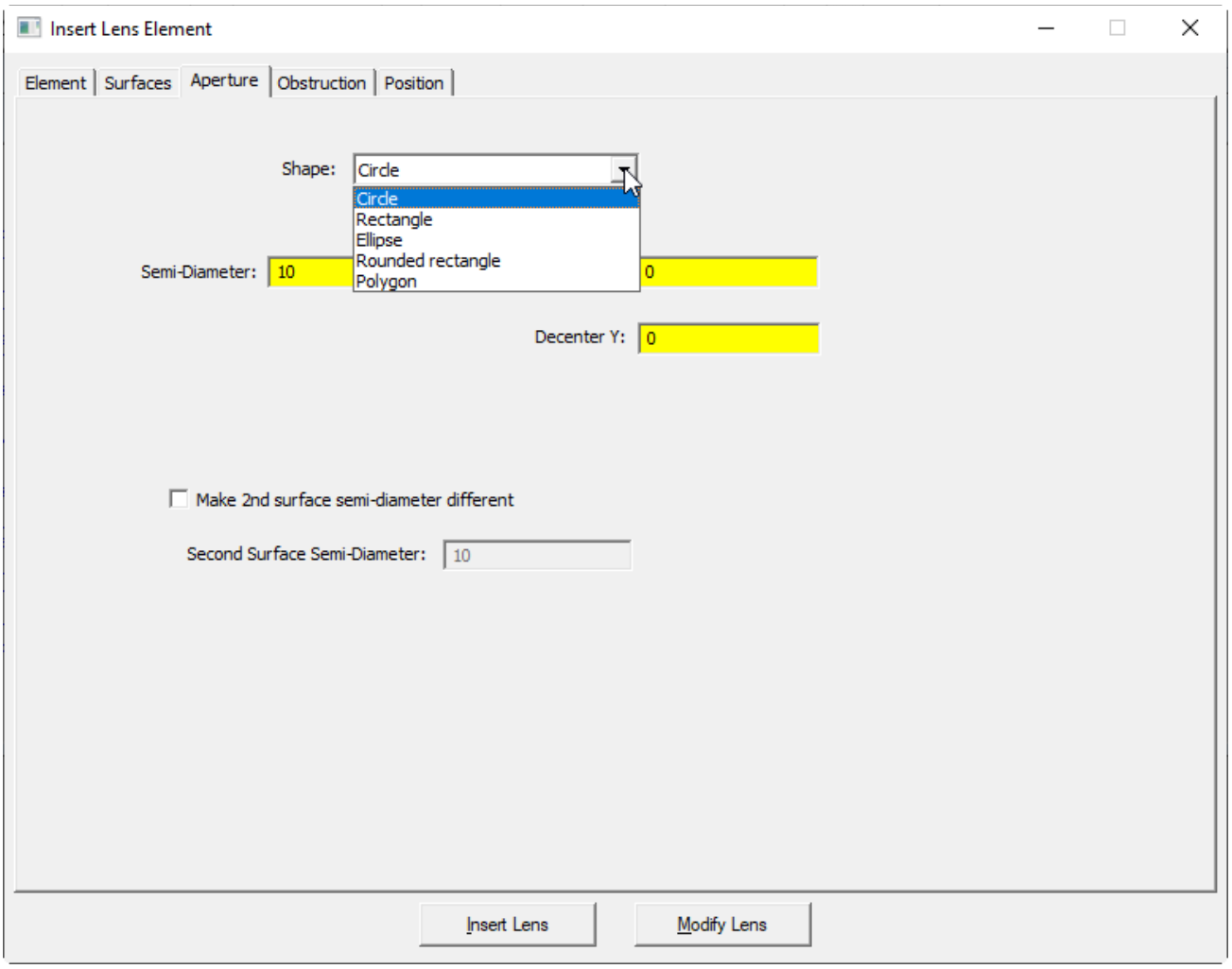

Figure 2. Aperture tab of Lens Element dialog box showing new aperture shapes available.

NEW ENVIRONMENT PROPERTIES

Now you apply a Material Property and/or a Bulk Scatter property to the "Environment." The Environment is defined as parts of the model that are outside all objects. For example, to define a smoky or foggy environment, apply a Bulk Scatter property. To define a turbid underwater environment, apply both a Material Property and a Bulk Scatter Property. To apply these properties, select **View|Options>Model** and select the catalog and property from the lists, as shown in Figure 3.

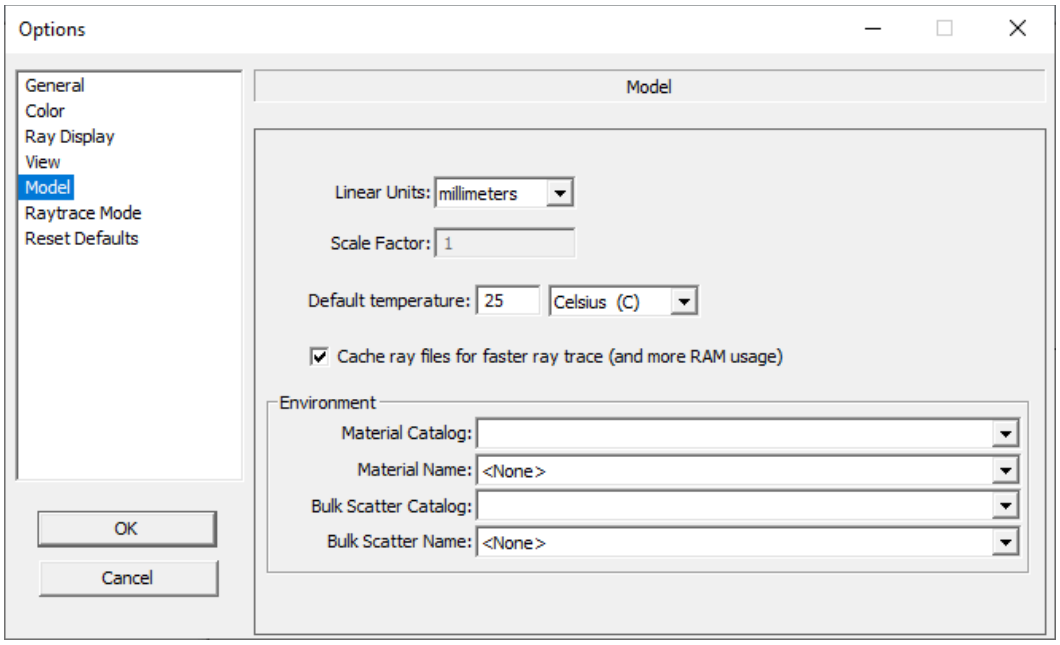

Figure 3. Environment Properties are applied in the Model page of the View|Options dialog box.

SOURCE BUILDER

The Source Builder helps you create different types of sources using different source "wizards." You can also use the Source Builder to manually create sources using the Advanced UI selection.

To open the Source Builder, select **Define|Source Builder**.

The Source Builder has its own help system.

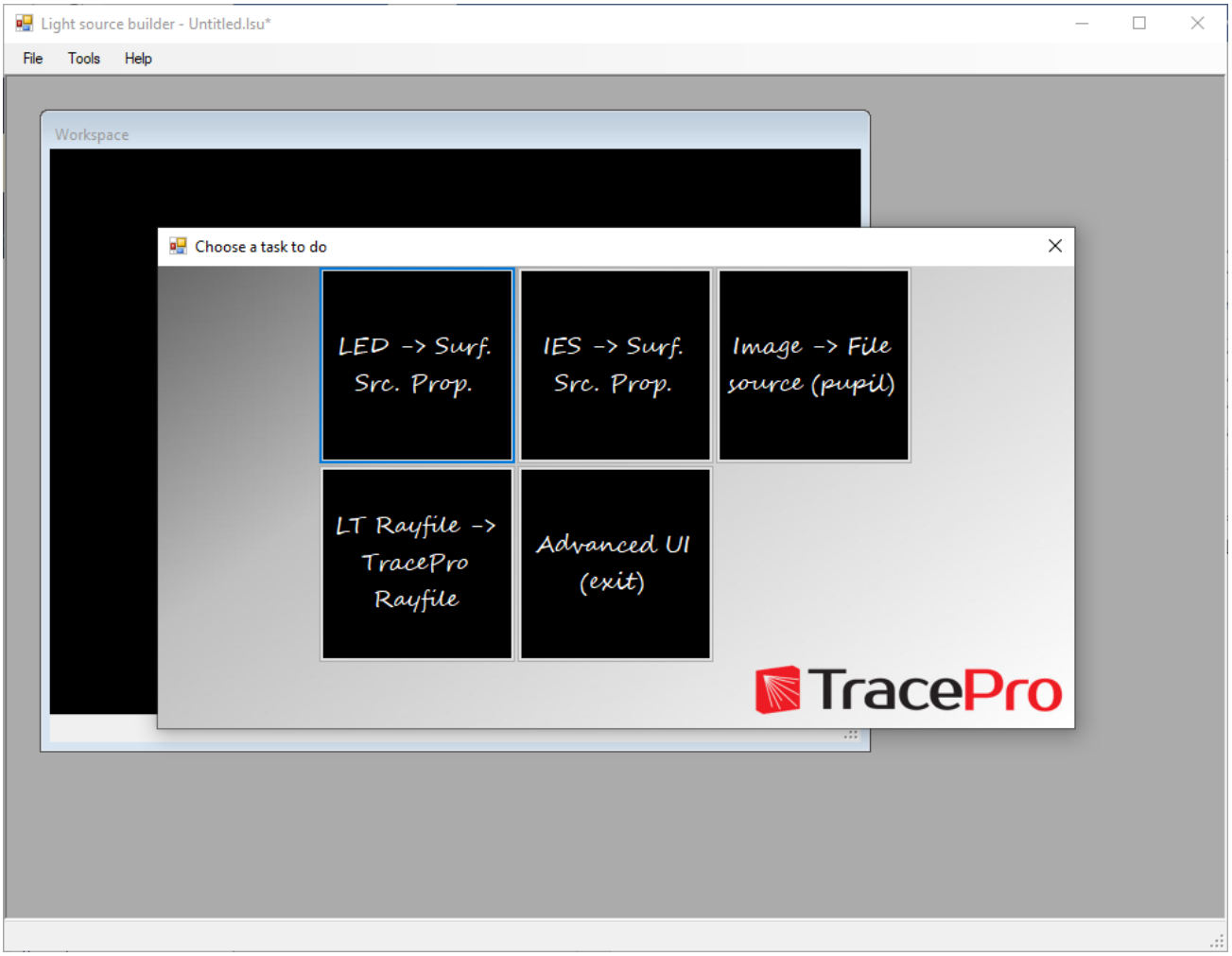

Figure 4. Source Builder interface showing wizards and Advanced UI option for manually creating Surface Source properties.

ALL-MOUSE MODE

A new View mode is now available, All-mouse mode. It enables you to complete many view manipulations using only the mouse. All-mouse mode is turned on by default. It is controlled by the menu selection **View|All-mouse mode** or by a button on the View toolbar (Figure 5). When All-mouse mode is enabled, you can manipulate the view as follows:

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

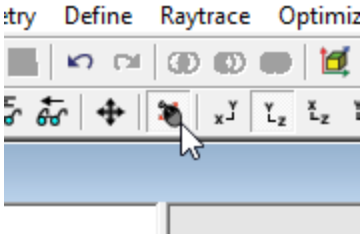

Figure 5. All-mouse mode toolbar button.

DYNAMIC HIGHLIGHTING AND TOOLTIPS IN THE MODEL VIEW

This new feature enables you to see which surface or object would be selected if you were to click. By simply moving the mouse cursor over geometry in the Model View, the surface under the cursor is highlighted and a tooltip pops up with the object and surface name. See Figure 6.

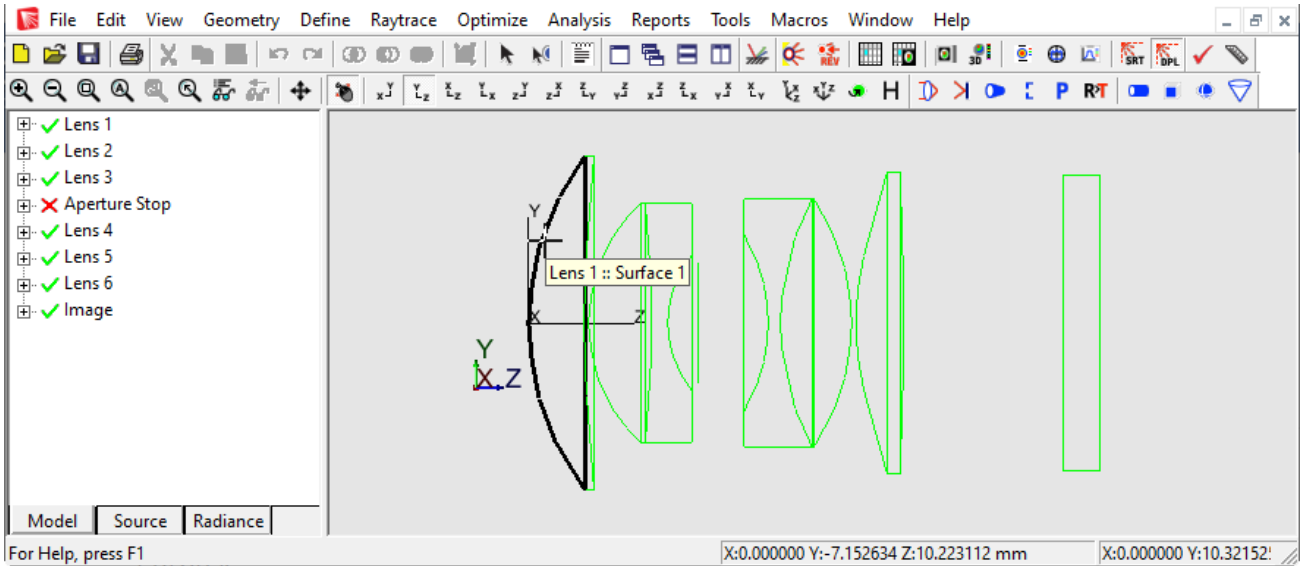

Figure 6. New dynamic highlighting feature.

NEW FILE FORMAT

The new modeler has its own file format, and any files that you save from TracePro 2022.1 will be in this format, with extension OMLB. You can open your legacy TracePro OML files using TracePro 2022.1, but TracePro 2021 and prior releases will not be able to open OMLB files. However, you can export an ACIS SAT file from TracePro 2022.1 and import it into previous releases of TracePro.

NEW STEP AND IGES TRANSLATORS

Along with the new modeler come new IGES and STEP translators. The new translators provide superior performance.

NEW CAD FILE IMPORTERS

TracePro 2022.1 includes file importers for the following file formats:

- Creo - Pro/E (*.prt, *.prt.*, *.asm, *.asm.*)
- Inventor (*.ipt)
- SOLIDWORKS (*.sldprt, *.sldasm, *.sldprt, *.sldasm)
- SolidEdge (*.par, *.psm, *.asm)
- CATIA 4 (*.exp, *.mod, *.model)
- CATIA 5 (*.catpart, *.catproduct)
- NX (*.prt)
- AutoCAD files (*.dwg, *.dxf)

RAY SORTING WITH CANDELA PLOTS

With the 2022.1 release of TracePro you can now apply Ray Sorting to Candela Plots. The *Sort Type* selection is not available for Ray Sorting on Candela Plots. The *Source* and *Wavelength* selections are available.