Update Guide
Release 2021.2

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INTRODUCTION

This document serves as a guide for new features and changes in TracePro 2020.2. This release has a major new feature, a new source type: Image Source. It also has updated properties and a new Material Property catalog: CDGM-IR, containing infrared-transmitting materials manufactured by CDGM. This release also fixes several problems reported by TracePro users. See the TracePro Revision History at www.lambdares.com for more details on problem resolutions.

WHAT'S NEW IN TRACEPRO 2020.2?

Changes in TracePro 2020.2 are summarized as follows:

- Image Source.
- Updated CDGM glass catalogs.

IMAGE SOURCE

A new source type is available in TracePro 2021.2: Image Source. This feature enables you to insert a standard RGB image file into a TracePro model and use it as a source of light. The Image Source dialog box shown in Figure 1 allows you to choose an image file, then select the emission from it in either radiometric or photometric units.

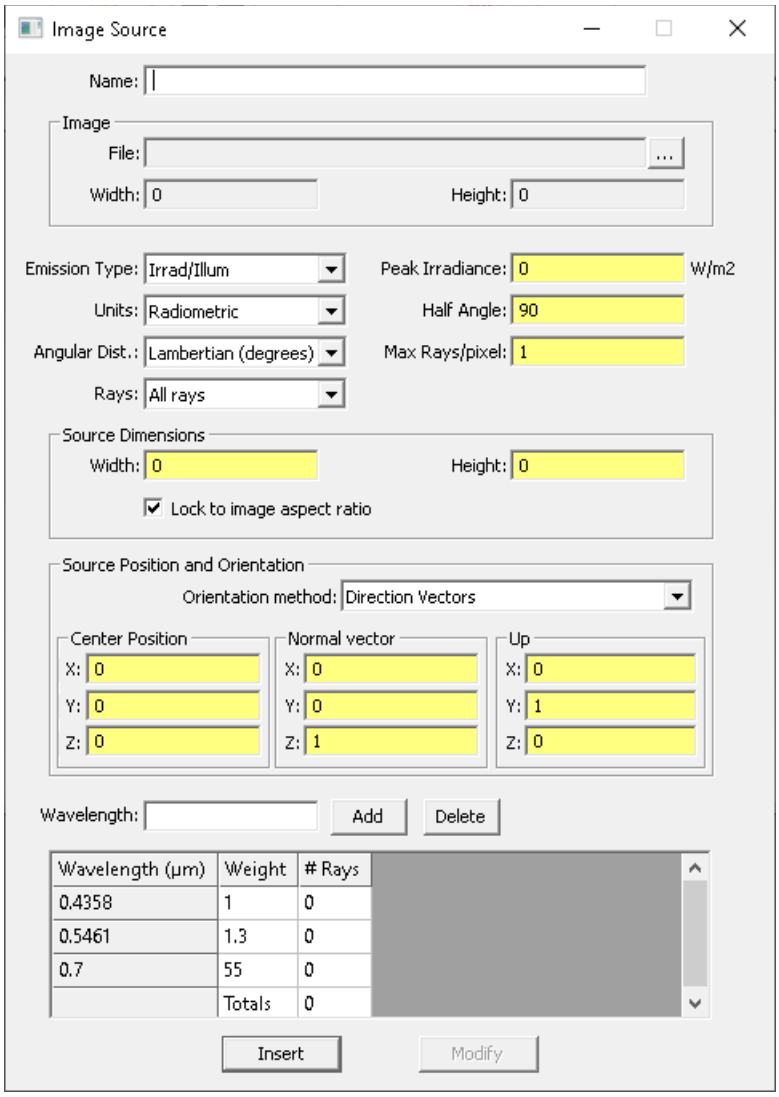

Figure 1. Image Source dialog box.

Each of the red, green and blue pixel values emit light at three wavelengths you assign, one for each color. You also enter the size, position, and orientation of the source. To create an Image Source, you need to specify:

- Name of the source
- Path to the image file (bmp, jpg, png, gif, or tif)
- Image width and height in pixels (for information only, this is read from the file)
- Emission type (Irradiance/Illuminance or Radiance/Luminance)
- Units: radiometric or photometric
- Angular distribution: Lambertian, Uniform, or Gaussian
- Rays to emit: all, random only, or importance sampled only
- Peak value of the emission type – emission value of a pure white pixel, i.e. RGB = (255,255,255)
- Half angle of the emitted distribution
- Max rays per pixel – a pure white pixel will emit this many rays for each color.
- Source dimensions: the width and of the source in model units.
- Source Position and Orientation
- Wavelengths and weights – an image source must have three wavelengths
    - The first wavelength is used for emitting blue pixel values
    - The first wavelength is used for emitting green pixel values

- The first wavelength is used for emitting red pixel values
- To change a wavelength, Add a new wavelength and Delete an existing wavelength

After you have entered all the data, click Insert, and TracePro will do the following:

- Create a rectangular Thin Sheet according to the values specified by Source Dimensions and Source Position and Orientation.
- Display the image file superimposed on the thin sheet.
- Attach the Image Source data to the thin sheet.

When creating an image source, beware that the number of rays emitted is proportional to the number of pixels, as specified by the Max Rays/pixel entry. Therefore large, high-resolution images will generate many rays and take a long time to complete the raytrace.

Figure 2shows a color test image created in a TracePro model, and Figure 3 shows a Photorealistic Render of the color test image.

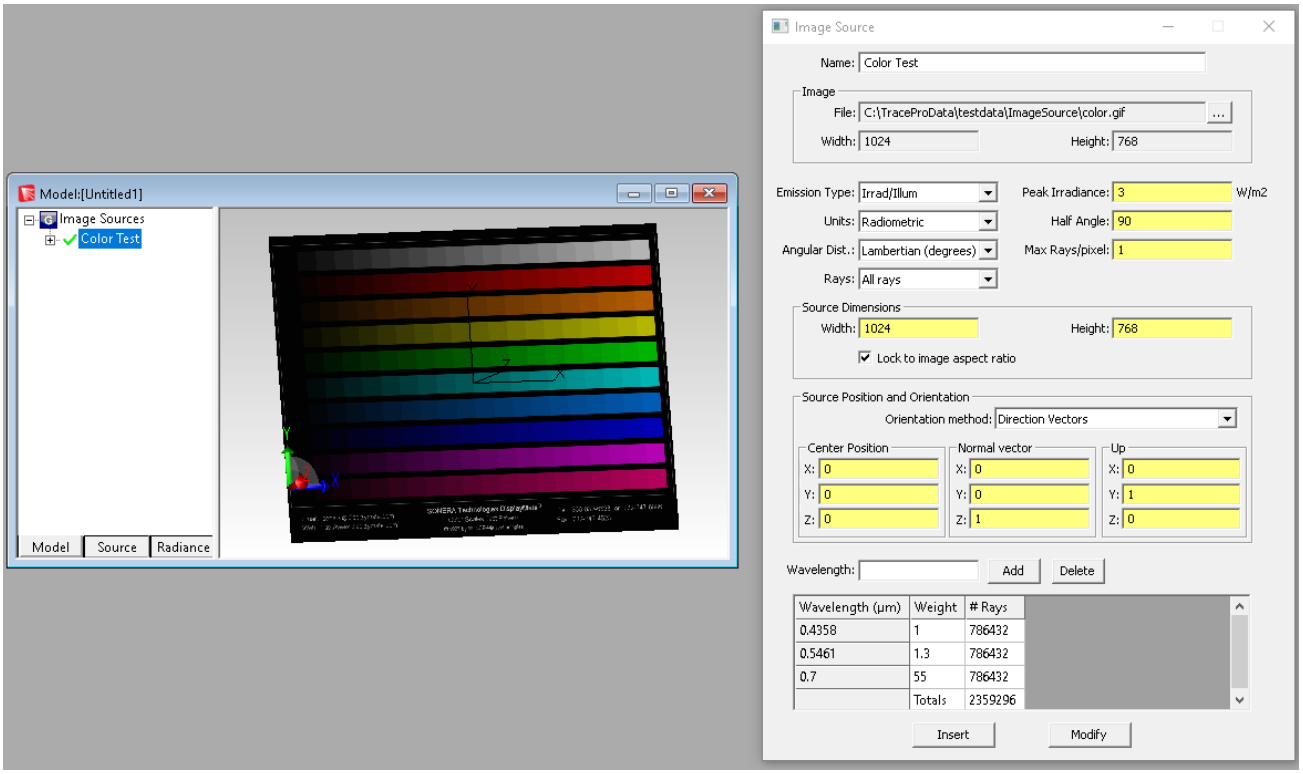

Figure 2. Color test image inserted into TracePro model and displayed on resulting thin sheet.

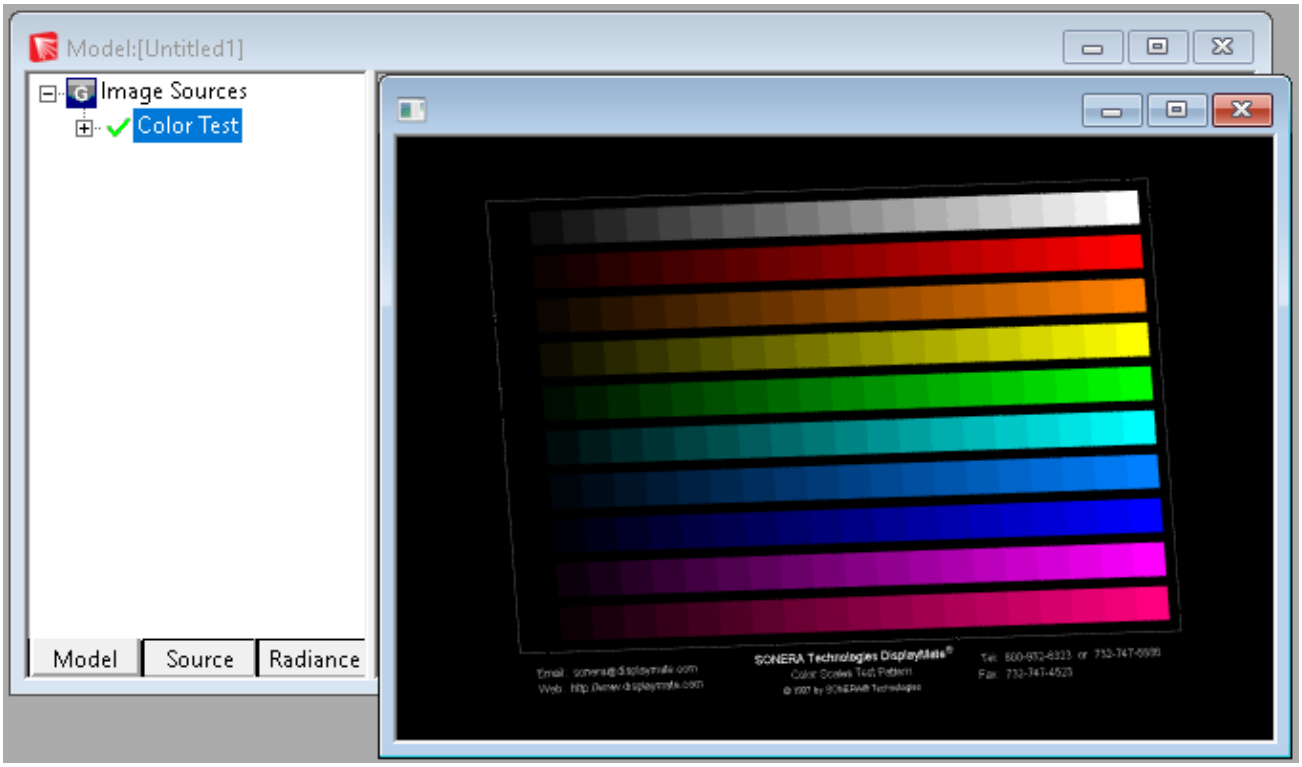

Figure 3. Photorealistic Rendering of color test image.

CDGM GLASS CATALOGS

The CDGM glass catalog has been updated to reflect the most current glass data. In addition, a new CDGM-IR catalog of IR glass has been added.

Users with a current maintenance and support agreement can download the latest TracePro property by going to Help->Update Property Database. When TracePro asks if it is OK to overwrite existing properties, please select Yes to All.