

NAME

`bsdf2rad` - create a RADIANCE visualization of a BSDF representation

SYNOPSIS

```
bsdf2rad [ -r min max ] bsdf.xml
or
bsdf2rad [ -r min max ] hemi1.sir [ hemi2.sir .. ]
```

DESCRIPTION

Bsdf2rad takes a bidirectional scattering distribution function (BSDF) and plots it as a RADIANCE scene file. In the first form, *bsdf2rad* takes a single XML file representing a Klems or tensor tree, plotting as many scattering hemispheres as are present in the file. In the second form, *bsdf2rad* takes up to four scattering interpolation representation (SIR) files, each depicting the BSDF from one side of one incident hemisphere, and plots them together. An XML BSDF description may be imported from outside RADIANCE, or produced by *genBSDF(1)*, *bsdf2klems(1)*, or *bsdf2tree(1)*. (A program that produces SIR files is *pabopto2bsdf(1)*.)

The output of *bsdf2rad* is a RADIANCE scene that contains a selection of 3-D plots showing the given material's reflection and transmission scattering. This description is normally sent to *oconv(1)* to create an otree for rendering using *rad(1)*, *rvu(1)*, or *rpict(1)*.

To the right (+X) of the scene, the front incident hemisphere will be plotted. To the left (-X) of the scene, the back incident hemisphere will be plotted. Depending on the input, only one or the other hemisphere may be present. In the case of an XML input, the hemispheres will be made of the specified BSDF material, and the scene will include a single (distant) light source shining straight down from overhead (+Z direction).

Pink arrows will indicate the "through" (view) and "mirror" (specular reflection) directions for each scatter plot. The logarithmic scale of the BSDF plots themselves will be determined automatically by the data and shown in a legend that lies between the two hemisphere, or to the side if there is only one. The incident direction may be read from the position of each plot, where hemisphere grid lines are separated by 15 degree increments in the polar (theta, latitude) angle, and by 30 degree increments in the azimuthal (phi, longitude) angle. The center (+Z) of each hemisphere corresponds to normal incidence, and the right (+X) direction corresponds to a zero phi angle. Positive phi is read counter-clockwise from above, and a phi of 90 degrees (+Y) typically corresponds to a material's "up" orientation.

If an optional plotting range is given with the *-r* option, this will override automatic settings from the BSDF input. This may be useful for comparing different BSDF sources.

EXAMPLE

To view a BSDF XML representation:

```
bsdf2rad cloth.xml | oconv -> cloth.oct
rvu -vp 0 -50 50 -vd 0 50 -50 -vh 45 -vv 30 cloth.oct
```

To render an SIR description of a BRDF:

```
bsdf2rad front_refl.sir back_refl.sir > refl.rad
oconv -f refl.rad | rpict -vf good.vf > refl_good.hdr
```

AUTHOR

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SEE ALSO

bsdf2klems(1), *bsdf2tree(1)*, *genBSDF(1)*, *bsdfview(1)*, *oconv(1)*, *pabopto2bsdf(1)*, *rad(1)*, *rpict(1)*, *rvu(1)*