



Indigo Renderer

Blender Exporter Manual

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Overview

This manual covers the installation and usage of Blendigo, the blender exporter for Indigo Renderer. By following the tutorials in this manual you should be able to export your scene in a high-quality way ready for Indigo to render.

Note that the Blendigo exporter is a very complex piece of software and not all the features are covered in depth by this manual. If a feature of Blendigo is not described to your satisfaction, visit our forum and post a question and we will be happy to help you out. Our forum is available at:

<http://www.indigorenderer.com/forum/>

About exporters

Indigo is independent of modelling package and uses its own file format – called an Indigo Scene File (.igs). Before Indigo can render your scene, it must be converted into an .igs file. The job of an exporter is to create an .igs file from your currently open scene.

About the Blender exporter

The Blender exporter is called 'Blendigo' and is the result of many peoples work on the exporter. Glare Technologies would like to thank the following people for their contribution to Blendigo:

Nick Chapman, U3dreal, Zuegs, Ewout Fernhout, Leope, psor, Wedge, SmartDen, BigFan and DaveC.

Installing Blendigo

Step 1. Ensure Blender is installed correctly

Most of the problems people have with using Blendigo are due to Blender being incorrectly installed. We recommend you re-install the following packages to ensure that Blender is installed correctly.

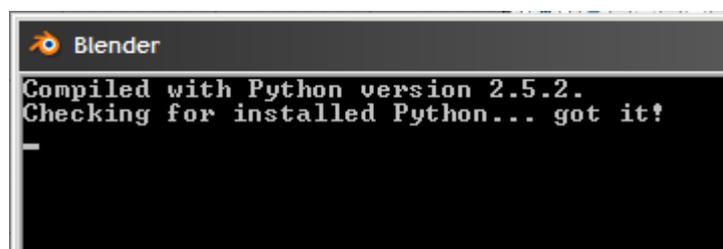
Blender Get the latest release of Blender from:
<http://www.blender.org/download/get-blender/>

Python Get Python 2.5 from:
<http://python.org/download/releases/2.5.4/>

Follow the following instructions on how to set the PYTHONPATH environment variable. This is necessary so that Blender knows where your Python installation is located:

http://wiki.blender.org/index.php/Doc:Manual/Extensions/Python#Accessing_Python

When you start Blender, the console window should give you a message saying it found the installed Python.



You are now ready to install Blendigo.

Step 2. Download and install Indigo

Download Indigo for your system and install it to the default location. Instructions for doing this are in the Indigo Manual.

<http://www.indigorenderer.com/download/>

Step 3. Download and install Blendigo

Download the version of Blendigo for your system from:

<http://www.indigorenderer.com/download/>

Blendigo comes with an installer for Windows and Mac. Both installers will look for a "scripts" directory in all known locations for Blender.

Blendigo expects to find the Blender scripts directory at one of these locations:

Windows %APPDATA%\Blender Foundation\Blender\.blender,
%PROGRAMFILES32%\Blender Foundation\Blender\.blender,
%PROGRAMFILES64%\Blender Foundation\Blender\.blender

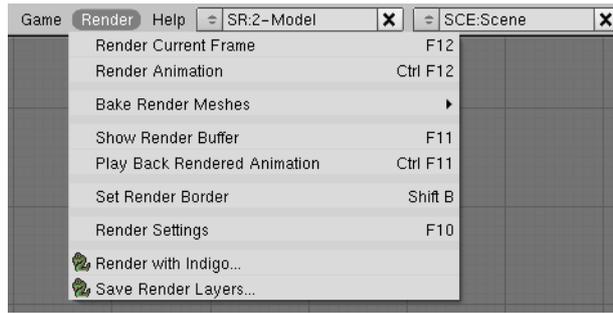
Mac /Applications/Blender

If the installer reports that it cannot find Blender on your system at one of the above locations, you must locate the Blender scripts directory yourself.

If you are installing on **Linux** then you need to download Blendigo for Linux and run the following commands:

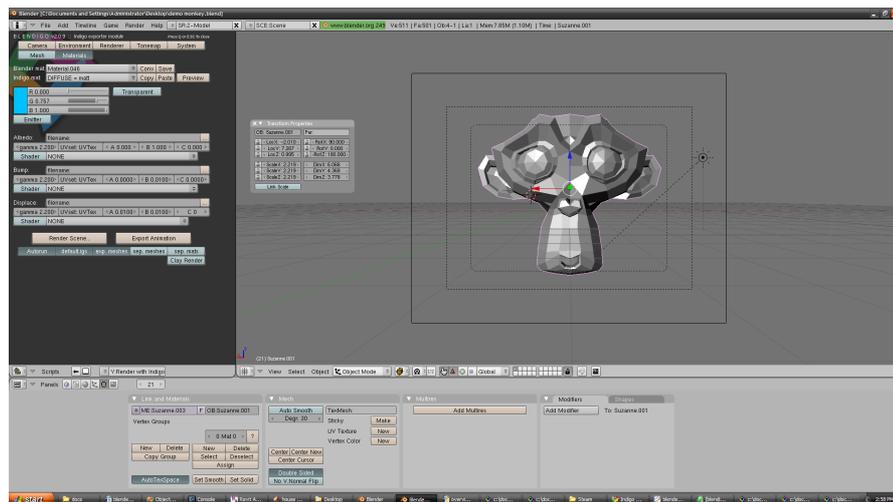
```
tar xvfz blendigo-...-linux.gz
cd blendigo
cp -R * ~/.blender/scripts/
```

Restart Blender after installing Blendigo and you should see "Render with Indigo..." become available under the Render menu.



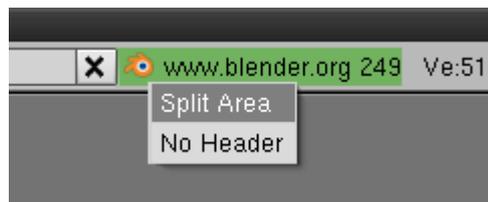
Step 4. Split your viewport and open Blendigo

To use Blendigo in the recommended way, you should split your viewport and have Blendigo open on the left hand side of your screen like so:



Blender with Blendigo open on the left and the 3d view open on the right.

To split your view, right click on the bottom of the Blendigo menu bar and press **split area**.



Right click on the black line under the titlebar

Click anywhere in the 3D window to confirm the split, then go to the render menu and press "Render with Indigo...". Blendigo will now open and stay

open while you configure your scene.

You are now ready to use Blendigo.

Things to know

There are several concepts you need to know to know to fully understand how Indigo works and how Blendigo treats these concepts.

Indigo is physically based

Indigo is a physically based renderer, which means that if it is possible to construct a photo in the real world, it is possible to render it in Indigo. Blendigo has the job of converting the virtual world of Blender into the real world representation used by Indigo.

Users with experience of studio photography may find setting up a scene in Indigo a familiar experience.

Units of measurement

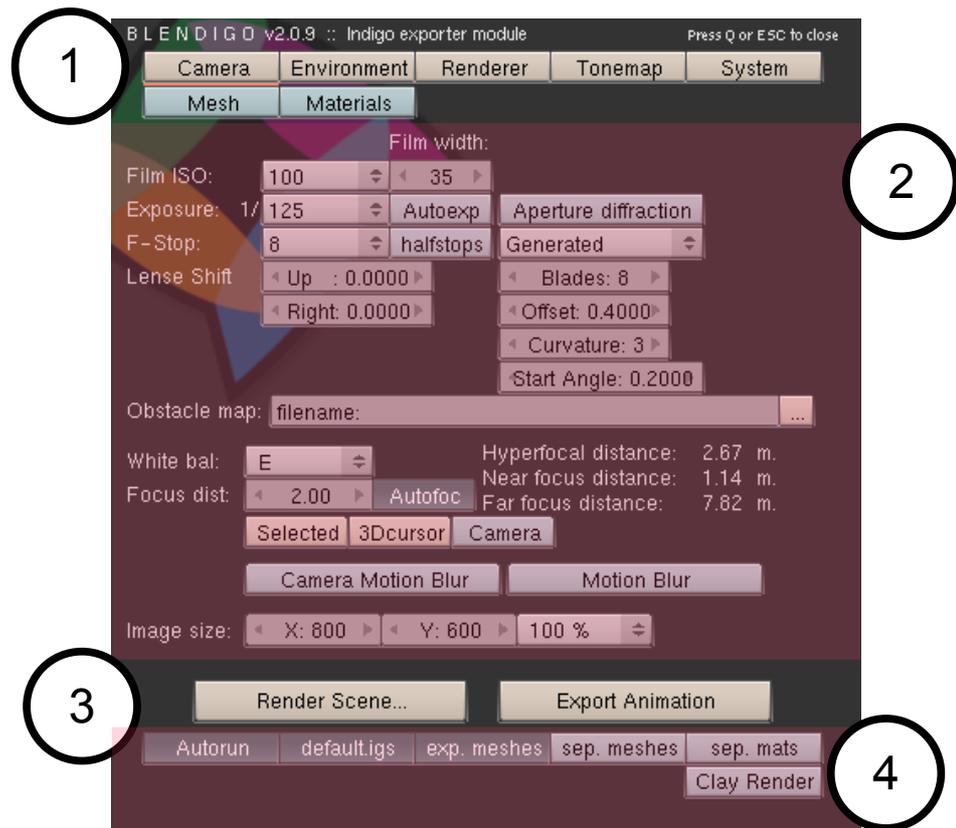
Indigo works in units of metres. Blendigo by default converts a Blender unit of distance to one metre in real world space. Select an object and press n to see the position of the object in blender units to get an idea of the scale of your scene.

Light sources

Blender has some light sources that do not exist in the real world – for example point lights (lights that are infinitesimally small and exceptionally bright) and 'invisible spotlights'. To use Indigo correctly you will need to master 'emitting materials' to create realistic lights in your scenes.

Getting to know Blendigo

This section will familiarise you with the Blendigo plugin.



1. The toolbar

The toolbar lets you switch between different screens in Blendigo. In the screenshot above, the camera screen is currently selected (notice the orange line under the camera button).

2. Main section

Blendigo has 7 separate screens to control different parts of the export. The camera screen is shown, controlling aspects of the Indigo camera. Clicking on buttons in the toolbar will change the main section. Blendigo will remember your settings as you go from one screen to the next.

3. Start render buttons

The "Render Scene..." button is available on every screen. Press it to export the scene and start Indigo.

4. Render control buttons

These buttons are available on every screen. Each button can be toggled on or off. See the next section for their functions.

Render control buttons

Autorun

If selected, Indigo is launched after the Indigo scene has been exported. If this is deselected, then you must save your Indigo scene somewhere and start rendering it yourself.

Default.igs

If selected, Blendigo will use a default filename for your render. If this is deselected then Blendigo will ask you for a filename to save your Indigo scene file as.

Exp. Meshes

If selected, Blendigo will generate meshes for all the models in your scene when exporting. It can be disabled to speed up Blendigo when working with extremely large scenes - in this case the meshes will only be exported once and won't be re-exported every time you change the material or camera settings.

Sep. Meshes

Writes the meshes to a separate .igs from the main scene file. We recommend you leave this feature unselected.

Sep. Mats

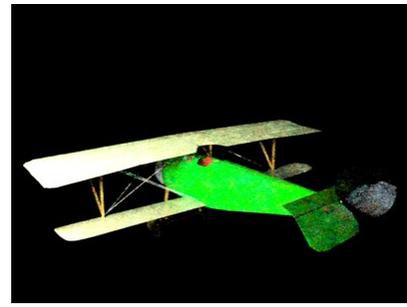
Writes the materials in the scene to a separate .igs from the main scene file.
We recommend you leave this feature unselected.

Clay render

If selected, exports the scene with all the materials replaced with a grey clay material. This can be used to get a quick 'draft-view' of the scene.



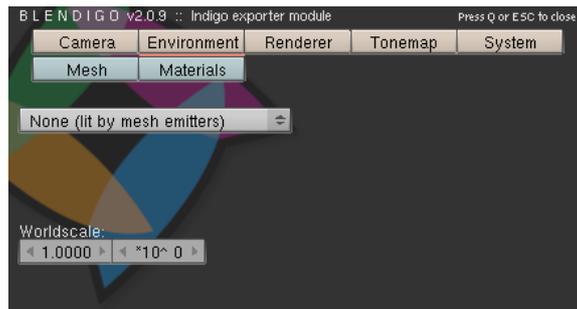
Clay render on



Clay render off

Environment settings

The Environment screen controls the world lighting and background colour of the scene. The different environment settings are accessible from the dropdown.



The worldscale values control how many metres 1 Blender Unit is equal to. The default is 1 blender unit = 1 metre.

No Environment (lit by mesh emitters)

If this is selected then there will be no 'ambient light' in the scene and you must place your own light sources in the scene. The background will be black when no environment is used.



Suzanne rendered with a mesh emitter and no environment.

Environment map

This setting requires you have an .exr file to use as an environment map. Indigo uses the exr file as the background image and also as a light source.



Suzanne rendered with the uffizi-large.exr environment map.

Physical sky+sun

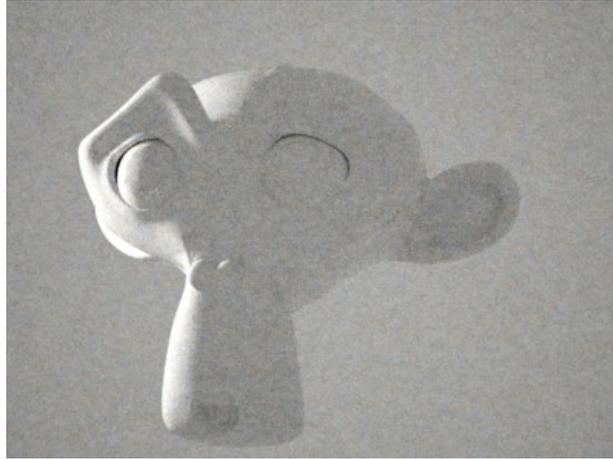
With this setting, Indigo will render a blue sky as the background of the scene and use a realistic sun to light the scene. The sky is modelled on a northern hemisphere sky. You must have a sun lamp present in your scene. Use menu->add->lamp->sun to add a sun lamp. The angle of the sun in the sky will be copied from the angle of the sun lamp.



Suzanne with a physical sky+sun environment

Background Colour

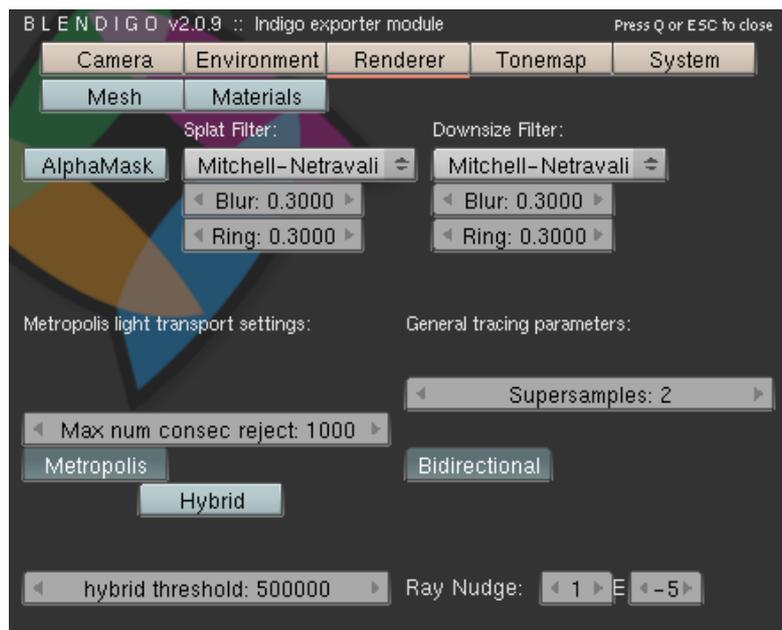
This environment setting is seldom useful. It is better to model a real studio set-up – but as a quick alternative it is possible to change the background image of the scene using this setting.



Suzanne with a grey background environment and a mesh emitter.

Renderer settings

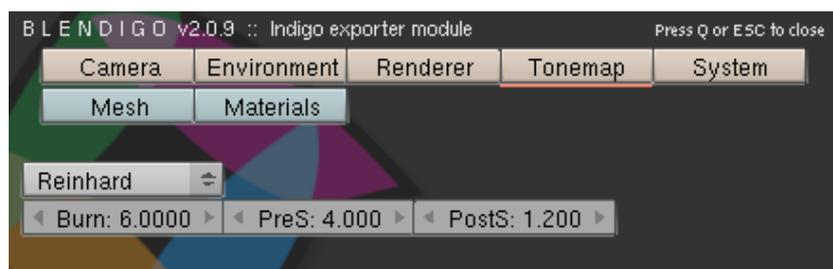
Renderer settings are for controlling the inner workings of Indigo. Most Indigo users will never have to modify the default Blendigo settings.



The only two options that may be useful to casual users are the bidirectional and metropolis options. Some scenes will render faster with one or both of these techniques disabled.

Tone mapping settings

For most users, we recommend you leave these settings to the default and modify your tone mapping settings interactively in the Indigo GUI.



See the Indigo manual for a full description of the various tone mapping settings and how they effect your output image.

System settings

System settings are for controlling the Indigo application. Most Indigo users will never have to modify the default Blendigo settings.



The settings that may be useful to casual users are:

Halt time

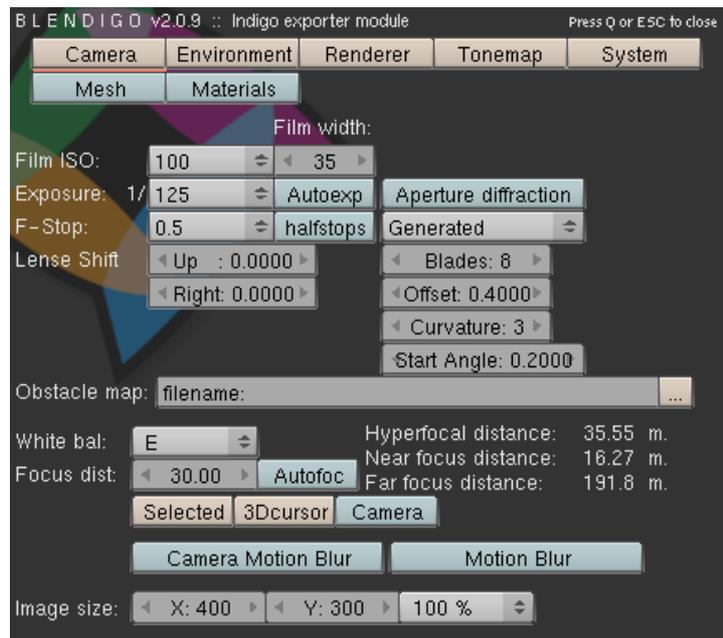
Number of seconds to keep rendering for. Indigo will stop rendering and wait for the user to save the image after this amount of time.

Halt samples per pixel

Indigo will keep rendering until the specified number of samples per pixel is reached. The correct samples-per-pixel value differs for each image but a value of 2000 samples-per-pixel is suitable for many scenes.

Camera settings

The camera settings page controls the configuration of the virtual camera in the scene. The camera in Indigo is modelled on a real camera so the settings on this page will be familiar to users with a background in photography.



Film ISO

This setting controls the camera ISO settings. It is only used when the "camera" method of tone mapping is selected. See tone mapping for more information.

Exposure

This setting is used primarily to control motion blur. The other effect of exposure time (image brightness) is controlled instead by the tone mapping process.

F-Stop

This controls the focal length of the camera. Small f-stop numbers will make things that are out of focus more blurry (similar to shooting a photo in macro mode). Higher f-stop numbers will make everything in the scene equally in focus (this is similar to the effect of shooting a photo with a telephoto lens).



Scene rendered with a f-stop of 0.5. The camera is focussed on the red Suzanne which is 30 metres from the camera. Notice the green Suzanne is out of focus and blurred.

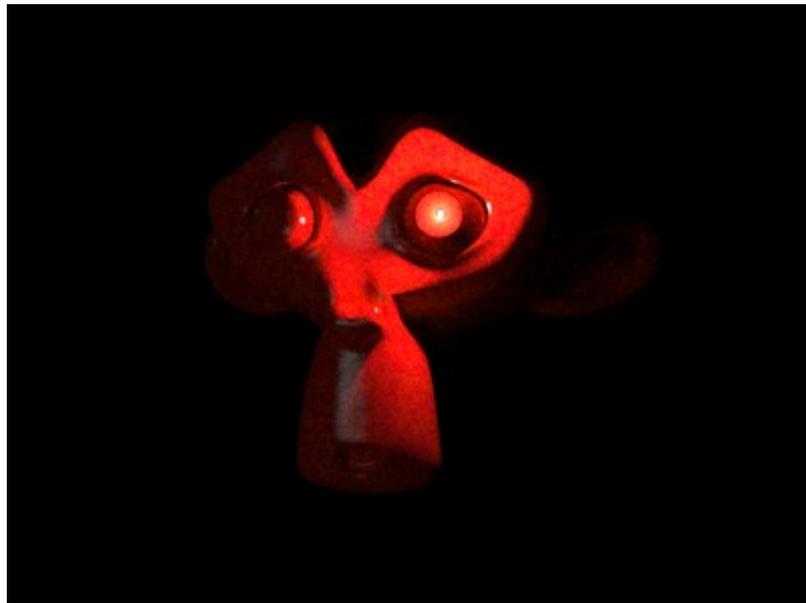


Same scene rendered with a f-stop of 64. Notice that both models are similarly in focus.

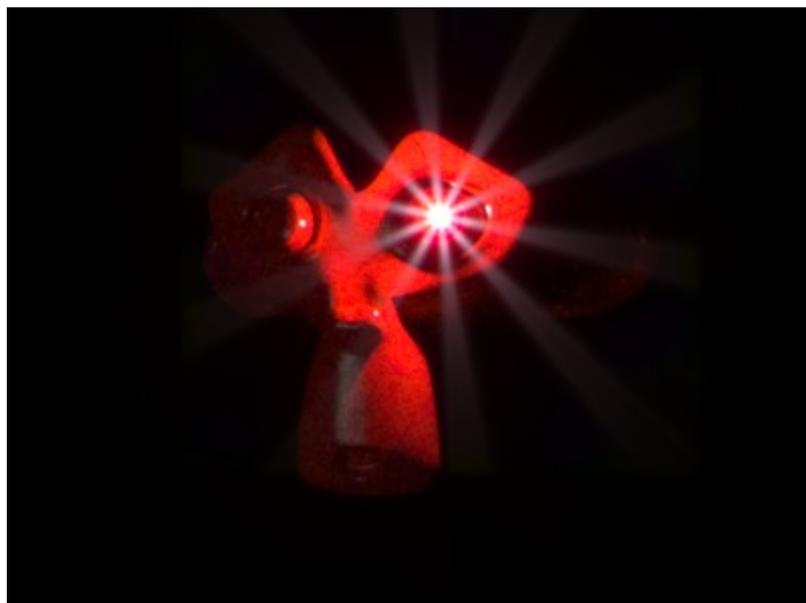
Aperture diffraction

Enabling aperture diffraction causes Indigo to render the 'star' effect around bright objects in the scene. This star effect is commonly seen in photos of bright lights.

To make aperture diffraction visible, you need to set a high f-stop (which causes a smaller camera aperture), and have a small and extremely bright light source visible, and then enable aperture diffraction.



Suzanne rendered with aperture diffraction off



With aperture diffraction on

Blades, Offset and Curvature

These parameters control the shape of the camera aperture . These settings are only visible when viewing the effects of aperture diffraction.



Diffraction with 3 blades



Diffraction with 7 blades

See the Indigo technical manual for more details on configuring the shape of the aperture.

Obstacle map

The obstacle map is for loading an image that will be mapped over the camera lens – this can be used to simulate dust, finger smudges and scratches on the lens.

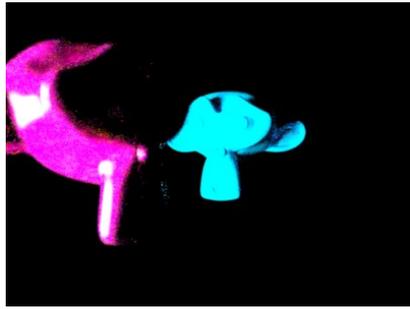
White balance

Controls the whitepoint of the scene. See the Indigo manual for details on configuring white balance, as this can be changed interactively once the scene has started rendering.

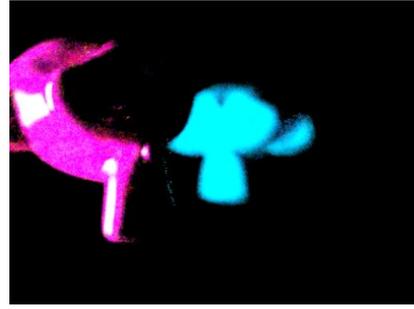
Focal distance

This value will be ignored if Autofocus is set (the **Autofoc** button is pressed). It controls the distance at which the camera is focussed. If you have a low f-stop, items that are not in focus will appear blurry. With higher f-stop

numbers, the focal distance becomes less apparent.



Focus distance of 60 metres



Focus distance of 2 metres

Image size

Changes the height and width of the image rendered. This setting can be changed in the Indigo program as well.

Mesh settings

The mesh page enables Indigo's internal subdivision tool per mesh.



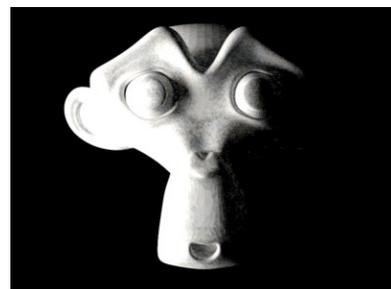
To use it, you need to have Blendigo open, then select a mesh in your scene and enable subdivision. Indigo subdivision works similarly to the subsurf modifier available in Blender.

It can be useful to use Indigo's built in subdivision because the models in Blender can have a low polygon count that are faster to work with – yet you still get a high quality render.

Subdivision in Indigo can also be helpful for getting smooth results on objects that have *displacement mapping*.



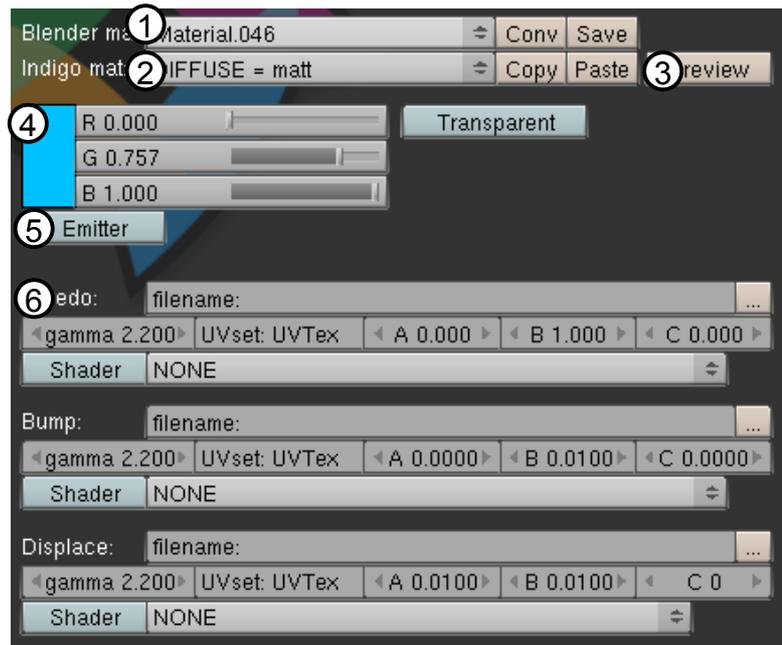
Suzanne without subdivision



Suzanne with 5 levels of subdivision

Material editor

The materials setting page is used to configure the materials in the scene.



Blendigo will try and convert your Blender materials to Indigo materials as far as possible – but we recommend you use Blendigo's material editor for more accuracy and control of your Indigo materials.

1. Blender material name

This is the name of the blender material you are editing. When you select a new object, the object's material will be selected in Blendigo – so just right click on an object in your scene to select it in Blendigo.

The **Conv** button converts the existing blender material into an Indigo material. The **Save** button will save the current Indigo material into an .igm file (for reusing the material in other scenes).

