Made by Cordia Qoet for Alum 3.3.1
Updated for Penumbra v1.0.0.5+

OUTDATED

DT version coming soon™ (no eta yet)

Intro

“I just want some glow without the complicated part”:
https://reniguide.carrd.co/#alumguides (covers hair highlights and iris glow)

This guide is mostly done from the authoring file from there:
https://github.com/Shaderlayan/Atramentum-Luminis-Resources/blob/main/AUTHORING.md

Atramentum Luminis by Nylfae (or Alum in short) is a framework to add various effects to your skin, hair and iris by changing how the shaders work.

Out of the box, Alum has options for vanilla-like glowing eyes textures and materials A with the Asymmetry Adapter built in, applying the Bibo/TBSE/HR3/AVB textures on Gen2/vanilla gears.

You'll need an image editor able to handle RGBA images like Photoshop, GIMP, Photopea.com, CLIP, etc. Exporting to DDS can be needed since PNG often doesn't store color values if the alpha is set to 0.

Here is a Tutorial where I create a glowing texture for hair with Photoshop and set it up in Penumbra.

Notes about compatibility

Activating Alum with vanilla textures/materials has no effect, textures/materials need to be edited with Alum in mind to have it doing something, so the compatibility with standard textures should be perfect.

Textures made for Alum with this one disabled or not installed will show correctly (minus the missing effects), Alum only looks for channels and textures not used in the vanilla game.

Levels

Alum have three levels, each one giving more freedom but at the cost of harder authoring.

Level 1: Textures only **Is depreciated, will probably be removed with 7.0 update**
Level 2: Textures and materials Alum guide
Level 3: Allow the use of additional textures: diffuse for iris and hairs, Emissive map for all, Effect map for all Alum guide
Level T: Allow use of color table (like gear), details will come soon. Alum guide

List of possible effects

- Glow Alum guide
- Iridescence (skin and hair only) Alum guide
- Asymmetry Adapter (skin and iris only) Alum guide
- Hair on standard (non-Hrothgar) bodies (skin only) Alum guide
- Adding a diffuse to iris and hair Alum guide

- Perma-wetness effect (BETA) (skin only) Alum guide
- Metallic finish effect (BETA) (skin only) Alum guide
- Limbal ring on eyes ***(new with 3.3)*** Alum guide
- Full color table on skin, hair and iris (Level T) ***(new with 3.3)*** Alum guide

Glow

Level 1

At this level it is only available on iris and skin.

For iris, the glow data is on the alpha channel of the multi map (texture ending with _s).
For skin, the glow data is on the alpha channel of the diffuse (texture ending with _d).

- Where the alpha channel is "white" (so the texel is opaque), things will behave as in the vanilla game, with no glow;
- Where the alpha channel is "black" (so the texel is transparent), the diffuse will be wholly turned into emissive, in other words the glow will be at maximum intensity;
- In-between alpha values can be used to locally adjust the intensity of the effect.

Once you edited your textures, import them in game like any loose file:
https://reniguide.info/#loosefiles

Level 2

Intro to lvl2: Alum guide

This level enables glow on hair.

Material constant is named **[Alum] Emissive (Glow)** and values are:
- The first value is the global glow multiplier in dark environments;
- The second value is the global glow multiplier in well-lit environments.

There are two more values for “Legacy Bloom”, acting the same way the old Alum version did.

Texture wise, alpha values on skin diffuse and iris multi are still used the same way except you can now use the full range since you'll be able to set the strength of the glow later ("white" is no glow, "black" is full glow).

For hair, the glow information is to be added to the multi map's blue channel ("black" is no glow, "white" is full glow).

Level 3

Setup for level 3: Alum guide

The red, green and blue channels of the emissive map are actual color data.

The alpha channel of the emissive map is interpreted as "how much does this map override the emissive that level 2 would have generated".

Alpha channel of the effect mask is used to locally control the bloom effect.

The glow adjustment parameter still applies to the emissive map.

Note: if you want a “secret tattoo” effect, set your dark environment to a positive value and your well-lit environment to a negative value.

Iridescence

Level 2

Intro to lvl2: Alum guide

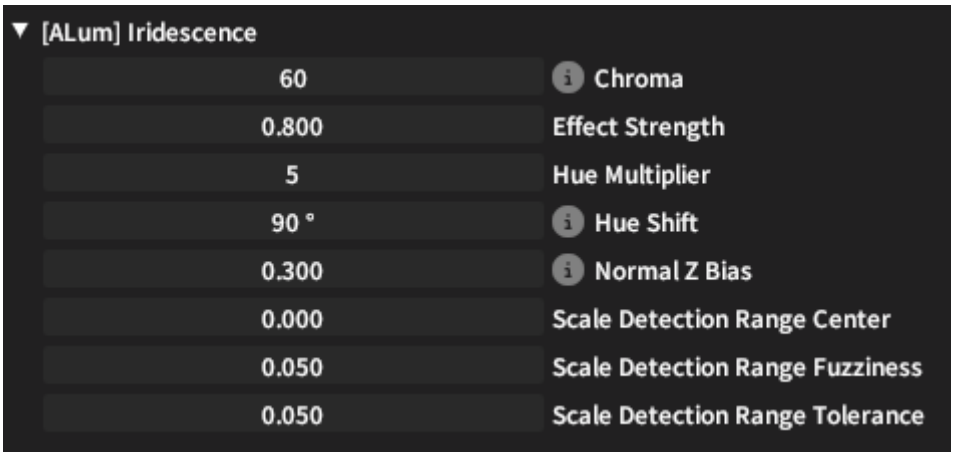
At this level, only available on skin.

By default, this setting is meant to add this effect on auri's scales, but could be applied on any part of the skin by editing the red channel of the multi map. Beware though this channel is used for skin color influence. You'll need to switch to level 3 if you want to apply this effect on a part of the skin without changing the color influence.

Material constant is named **[Alum] Iridescence** and values are:

- “Chroma” value is the maximum chroma radius to use: 0 will make the effect gray, 50 will be equivalent to HSO;
- “Effect Strength” is the global iridescence effect multiplier;
- “Hue Multiplier” is the hue angle multiplier (it will be rounded to the nearest integer).

- “Hue Shift” is the hue angle shift in degrees: 0 gives a reddish hue to scales that face towards the right of the screen, positive values rotate the effect counterclockwise;
- “Normal Z Bias” attenuates the effect by applying a bias to the normals: 0 is equivalent to HSO's "Vibrant" options, 0.5 is equivalent to HSO's "Normal" options, 1 is equivalent to HSO's "Faint" options;
- “Scale Detection Range Center” shifts the scale detection range: for example (assuming other control values are 0), 0 means 25% to 75%, -0.2 means 5% to 55%;
- “Scale Detection Range Fuzziness” narrows or expands the scale detection range: for example (assuming other control values are 0), 0 means 25% to 75%, 0.1 means 15% to 85%;
- “Scale Detection Range Tolerance” sharpens or softens the ends of the scale detection range: for example (assuming other control values are 0), 0 means that the effect gradually rolls off from 30% to 20%, -0.05 means that it's all-or-nothing above and below 25%;



Level 3

Setup for level 3: Alum guide

Level 3 enables iridescence effects on hair.

⚠️ Enabling level 3 disables the scale detection of the level 2. The other values still apply. ⚠️

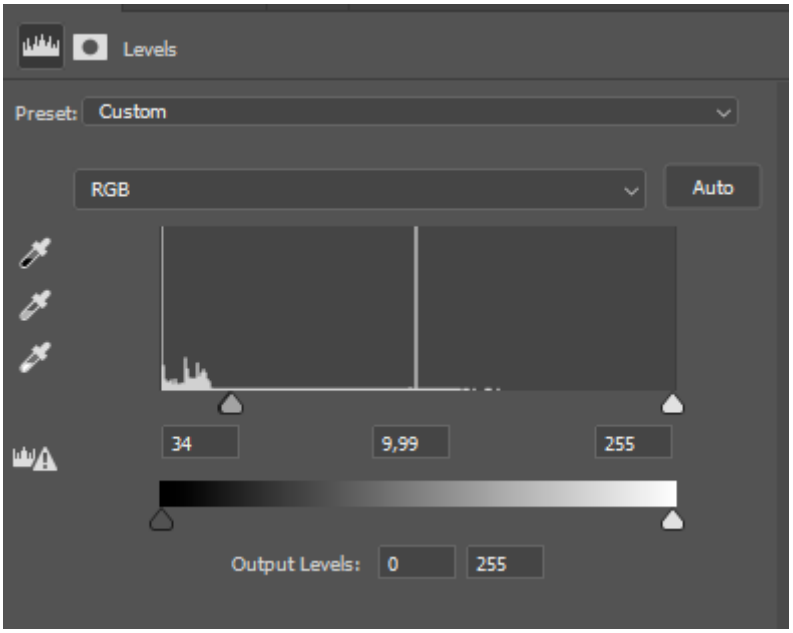
Red channel of the effect mask is used to control the iridescence effect (instead of a function of the multi map's red channel as in level 2): where the red channel is black, the iridescence effect will be disabled, where the red channel is red, the iridescence effect will be at full power.

You can use the following JSON file in PNG Mapper to automatically generate an effect mask with scale iridescence out of a multi, assuming scale detection control values are all zero (otherwise, the script can be tweaked accordingly):

```
{
  "inputs": [ "in_m" ],
  "outputs": [ "out_x" ],
  "mapping": "out_x.r = 1.0 - smoothstep(\n  0.2, 0.3, Math.abs(in_m.r - 0.5));\n\nout_x.g = 0.0;\nout_x.b = 0.0;\nout_x.a = 1.0;"
}
```

Or in Photoshop:

- Open your multi map
- Invert it with CTRL+I
- Double click on it and set the “Advanced Blending” to “R” only
- Add a level filter
- Play with the sliders until only the scales are full red, this settings work nicely for me:



Asymmetry Adapter

Level 2 and 3 only. Works on skin and iris.
Intro to lvl2: Alum guide

Material constant is under “General Settings” and is named **[Alum] Asymmetry Adapter** and value is:

- If your texture matches your model, the value must be set to “None”;
- If your texture is asymmetric and your model is symmetric, the value must be set to “Sym. model, asym. textures”;
- If your texture is symmetric and your model is asymmetric, the value must be set to “Asym. model, sym. textures”.

The most used case is to apply Bibo/TBSE/HR3/AVB textures on matA, to do that, you'll need to set the value to 1 and change the textures paths from the standard path to the new ones https://reniguide.info/#pathselection. Alum already comes with material A configured that way.

Hair on standard (non-Hrothgar) bodies

Level 2 and 3 only. Works only on skin.
Intro to lvl2: Alum guide

Add the hair influence information (just like the green channel for the Hrothgar shader) to the blue channel, and add the primary/secondary mix information (just like the blue channel for the Hrothgar shader) to the alpha channel.

The multi map's green channel will still be used as a specular map (instead of the hardcoded 20% value the Hrothgar shader uses).

Material constant is under “General Settings” and is named **[Alum] Enable Hair Influence**.

Add a diffuse to iris and hair

Level 3 only.
Setup for level 3: Alum guide

The red, green and blue channels of the diffuse are actual color data.

The alpha channel of the diffuse is interpreted as "how much does this map override the diffuse that level 2 would have generated".

Perma-wetness effect (BETA)

Level 3 only. Skin and hair only
Setup for level 3: Alum guide

Green channel of the effect mask is used to control the perma-wetness effect (BETA): where the green channel is black, the skin will be normally dry or wet depending on the environment, where the green channel is green, the skin will be permanently wet.

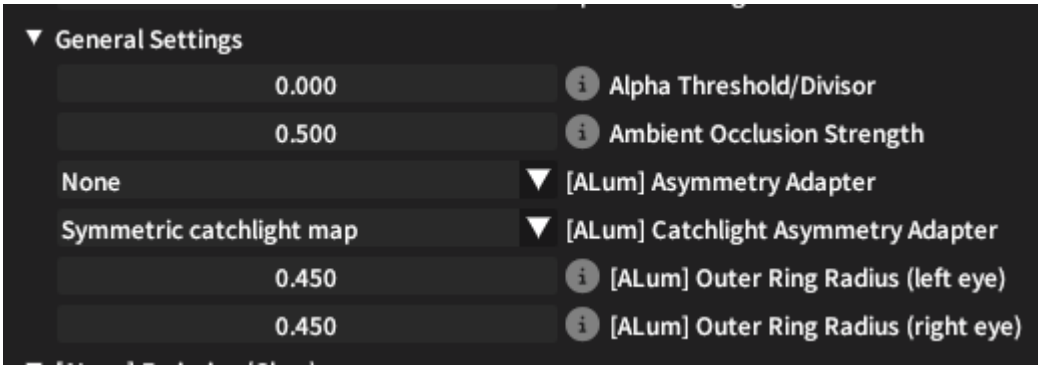
Metallic finish effect (BETA)

Level 3 only. Skin and hair only
Setup for level 3: Alum guide

Blue channel of the effect mask is used to control the metallic finish effect (BETA): where the blue channel is black, the effect will be disabled, when the blue channel is blue, the skin will get a metallic finish, which can be used for example for visible implants.

Limbal ring on eyes *(New with 3.3)*

You can now add a limbal ring effect on eyes, the setting is in the iris material as you can see here.



If the value is set to 0, the effect is disabled. As you increase the value, the ring goes from the full eyes to only a fraction of the eye radius.

The color of the ring is the “racial feature” color (“tattoo color” on most races, “limbal color” on Aura, etc…).

You can see here some values with eye color set to a green-ish color and the tattoo color set to red:

Level 2: Textures and materials

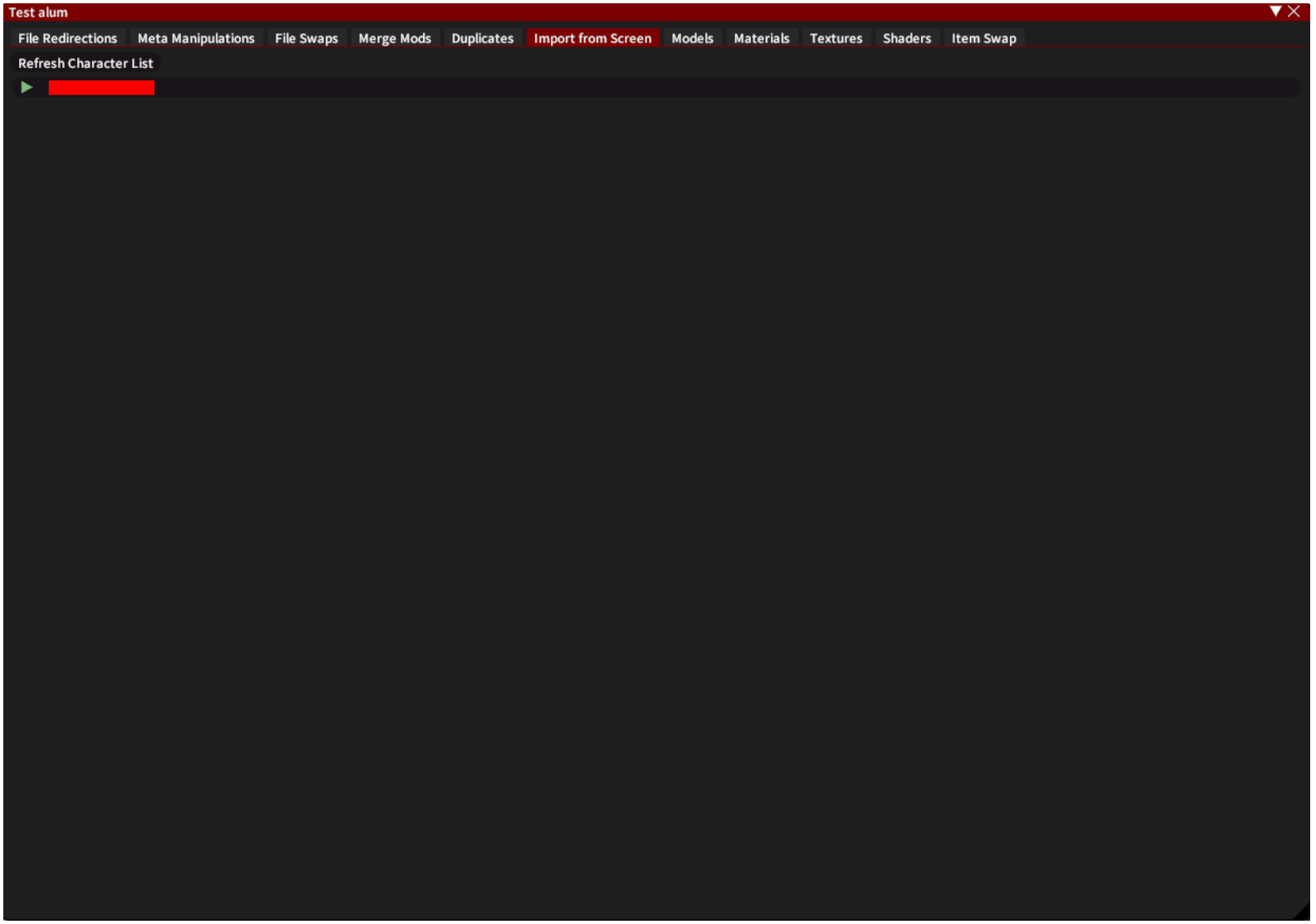
This level allows:

- Glow on hair
- Hair on Standard (non-Hrothgar) Body
- Iridescence on skin
- Asymmetry Adapter on skin and iris

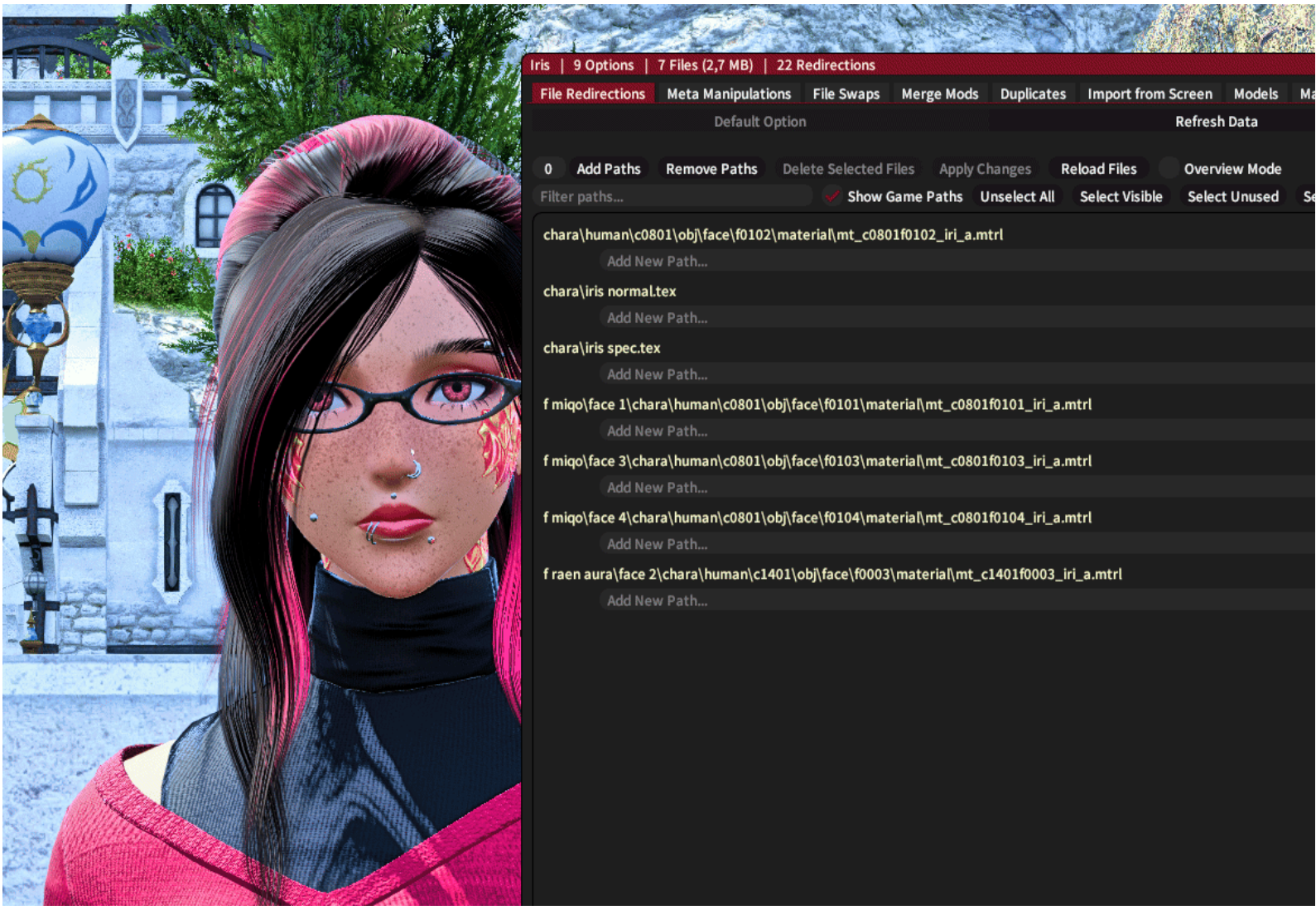
You need Alum set to “Textures and Materials” for the framework you want to use.

In this level, you'll need to edit the material constants. For that, you'll need to get the material for the element you want to edit (skin, iris or hair). There are many ways for that, I'll show one with the "Import from Screen" tab.

Make sure your character is currently using the material you want to get (for example, if you want to get the material from Bibo, make sure your either naked or wearing a Bibo clothe mod), create a new empty mod, go in "Advanced Editing", and then in the "Import from Screen" tab and hit Refresh Character List.

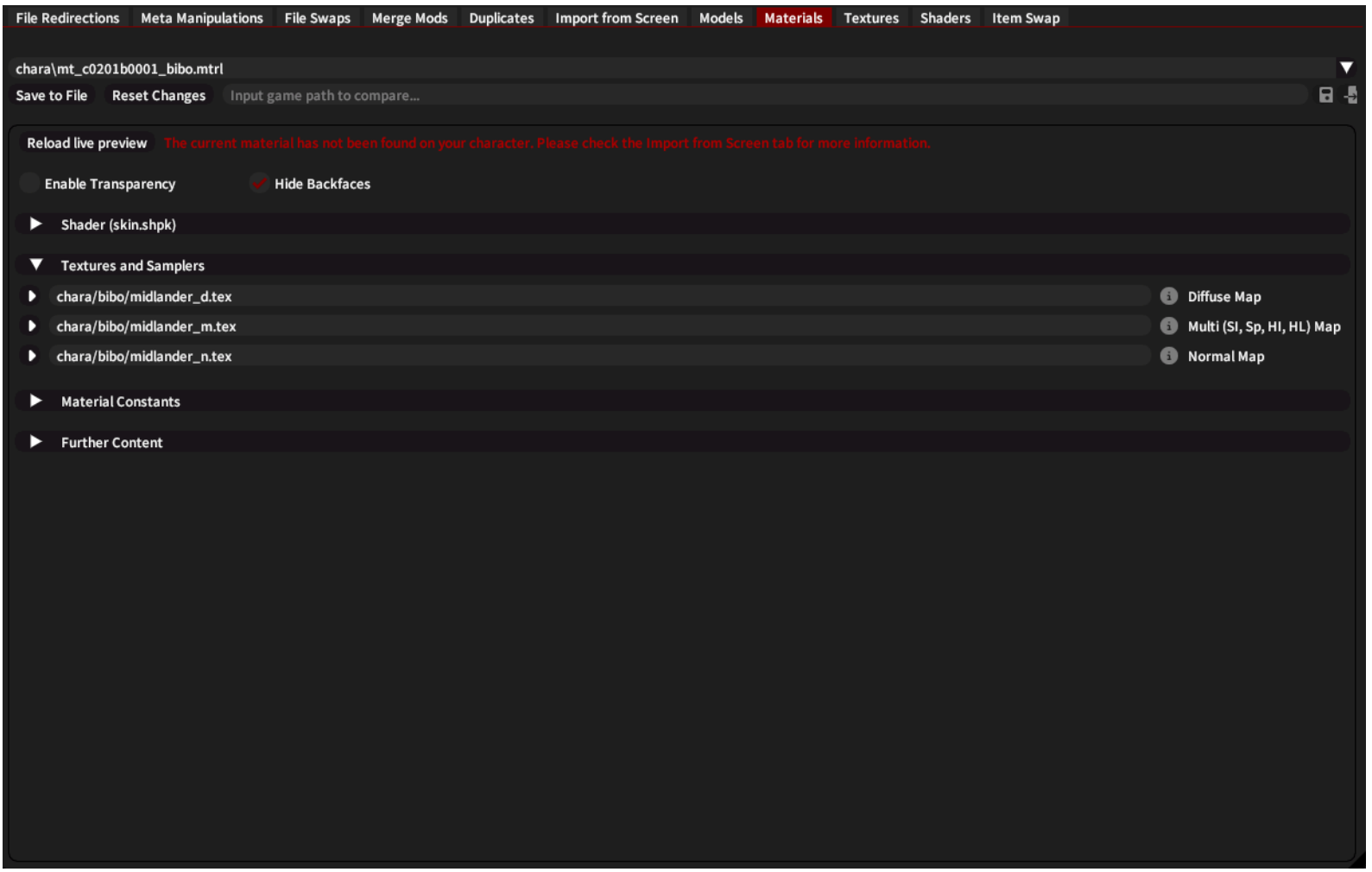


Then you'll need to edit the material to change the constant's values you want.
Example below showing adding glow constants to Iris, don't forget to save to file when you have a result you like.
If you can't see these values, that means Alum is either disabled or not set to "textures and materials".


Iris | 9 Options | 7 Files (2,7 MB) | 22 Redirections
File Redirections
Meta Manipulations
File Swaps
Merge Mods
Duplicates
Import from Screen
Models
Default Option
Refresh Data
0
Add Paths
Remove Paths
Delete Selected Files
Apply Changes
Reload Files
Overview Mode
Filter paths...
Show Game Paths
Unselect All
Select Visible
Select Unused
chara\human\c0801\obj\face\f0102\material\mt_c0801f0102_iri_a.mtrl
Add New Path...
chara\iris normal.tex
Add New Path...
chara\iris spec.tex
Add New Path...
f miqo\face 1\chara\human\c0801\obj\face\f0101\material\mt_c0801f0101_iri_a.mtrl
Add New Path...
f miqo\face 3\chara\human\c0801\obj\face\f0103\material\mt_c0801f0103_iri_a.mtrl
Add New Path...
f miqo\face 4\chara\human\c0801\obj\face\f0104\material\mt_c0801f0104_iri_a.mtrl
Add New Path...
f raen aura\face 2\chara\human\c1401\obj\face\f0003\material\mt_c1401f0003_iri_a.mtrl
Add New Path...

Setup for Level 3

Assuming you're already set for level 2, the only thing you need for level 3 is to go in the Shader part of your material and switch the "Atramentum Luminis Semantics" to Level 3 like the gif below.



It will automatically add new texture paths to chara/common/texture/transparent.tex for the missing maps. These textures are just empty 32x32 textures the time you get (or make) proper ones.

There is no standard path for these new maps, but I suggest following the convention of the existing maps of your material, with a "_d" suffix for the diffuse, "_e" for the emissive and "_x" for the effect mask.

Emissive map summary (Level 3 only)

The red, green and blue channels of the emissive map are actual color data.

The alpha channel of the emissive map is interpreted as "how much does this map override the emissive that level 2 would have generated".

The glow adjustment parameter still applies to the emissive map.

Hair/Iris: diffuse summary (Level 3 only)

The red, green and blue channels of the diffuse are actual color data.

The alpha channel of the diffuse is interpreted as "how much does this map override the diffuse that level 2 would have generated".

Iris: Effect mask summary (Level 3 only)

The red, green and blue channels are currently unused. They should be left at zero (i. e. the texture should be only gradients of black to transparent).

The alpha channel is used to locally control the bloom effect (instead of the inverted multi map's alpha channel in level 2): where the alpha channel is "black" (so the texel is transparent), the bloom effect will be disabled, where the alpha channel is "white" (so the texel is opaque), the bloom effect will be at full power. The glow adjustment and bloom effect parameters still apply.

Skin and hair: Effect mask summary (Level 3 only)

- Red channel is used to control the iridescence effect (instead of a function of the multi map's red channel as in level 2): where the red channel is black, the iridescence effect will be disabled, where the red channel is red, the iridescence effect will be at full power. Consequently, the scale detection control values (second, third and fourth) of the iridescence parameter are ignored. The other values still apply.

- Green channel is used to control the perma-wetness effect (BETA): where the green channel is black, the skin will be normally dry or wet depending on the environment, where the green channel is green, the skin will be permanently wet.

- Blue channel is used to control the metallic finish effect (BETA): where the blue channel is black, the effect will be disabled, when the blue channel is blue, the skin will get a metallic finish, which can be used for example for visible implants.

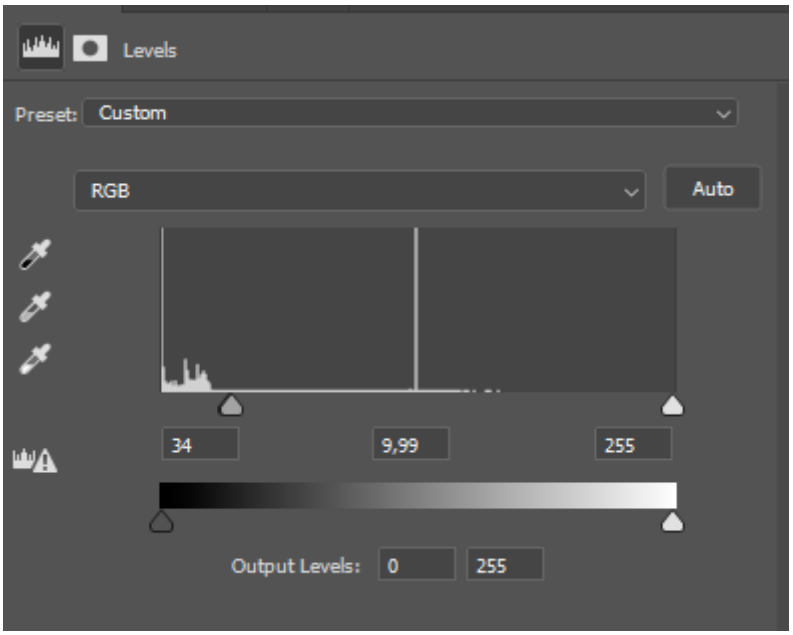
- Alpha channel is used to locally control the bloom effect as in the iris effect mask. The glow adjustment and bloom effect parameters still apply.

You can use the following JSON file in PNG Mapper to automatically generate an effect mask with scale iridescence out of a multi, assuming scale detection control values are all zero (otherwise, the script can be tweaked accordingly):

```
{
  "inputs": [ "in_m" ],
  "outputs": [ "out_x" ],
  "mapping": "out_x.r = 1.0 - smoothstep(\n  0.2, 0.3, Math.abs(in_m.r - 0.5));\n\nout_x.g = 0.0;\nout_x.b = 0.0;\nout_x.a = 1.0;"
}
```

Or in Photoshop:

- Open your multi map
- Invert it with CTRL+I
- Double click on it and set the “Advanced Blending” to “R” only
- Add a level filter
- Play with the sliders until only the scales are full red, this settings work nicely for me:



List of solid color textures

The game provides a few solid color textures at the following paths (figuring out which texture has which color is left as an exercise to the reader 😉):

- chara/common/texture/transparent.tex
- chara/common/texture/black.tex
- chara/common/texture/white.tex
- chara/common/texture/red.tex
- chara/common/texture/green.tex
- chara/common/texture/blue.tex

While all of the samplers (and associated textures) are mandatory for a level 3 material, if you don't need one of them or want to set what it controls to a uniform value, you can use these textures instead of making your own.

Level T (WIP) *(New with 3.3)*

Level T adds a new effect map, all features from level 3 except:

- metallic, can now be achieved with color table
- glow is handled slightly differently: no more emissive map, glow are managed with the color table and material constants, diffuse alpha is used to…

Add the color table on skin, hair and iris, see general “colorset guides” for authoring it.
Here is a template for Bibo (soon™)

Hair

Index map (also known as “colorset”) is on the normal blue channel. There are a really few modded hair who won’t like it.

Effect map is as follow:

- Red: Iridescence
- Green: Wetness
- Blue: Color table influence (set to full white the color table will fully take over, set to black the color table will be ignored)
- Alpha: Legacy bloom

If you want all the hair being handled by the color table, use chara/common/texture/blue.tex for your effect map and clear your diffuse alpha.

Iris

Index map (also known as “colorset”) is on the normal alpha channel
Multi blue channel acts like an eye color influence, like the multi red channel for skin.

Effect map is as follow:

- Red: Iridescence
- Green: Unused
- Blue: Emissive brightness
- Alpha: Legacy bloom

If you want the glow being fully handled by the color table, use chara/common/texture/blue.tex for your effect map and clear your diffuse alpha.

Skin

Index map (also known as “colorset”) is on the normal alpha channel

Effect map is as follow:

- Red: Iridescence
- Green: Wetness
- Blue: Emissive brightness
- Alpha: Legacy bloom

If you want the glow being fully handled by the color table, use chara/common/texture/blue.tex for your effect map and clear your diffuse alpha.