Exploring the Artistic Frontier: Unleashing Creativity in 3D Models with glTF and PBR

glTF Meetup
September 19, 2023

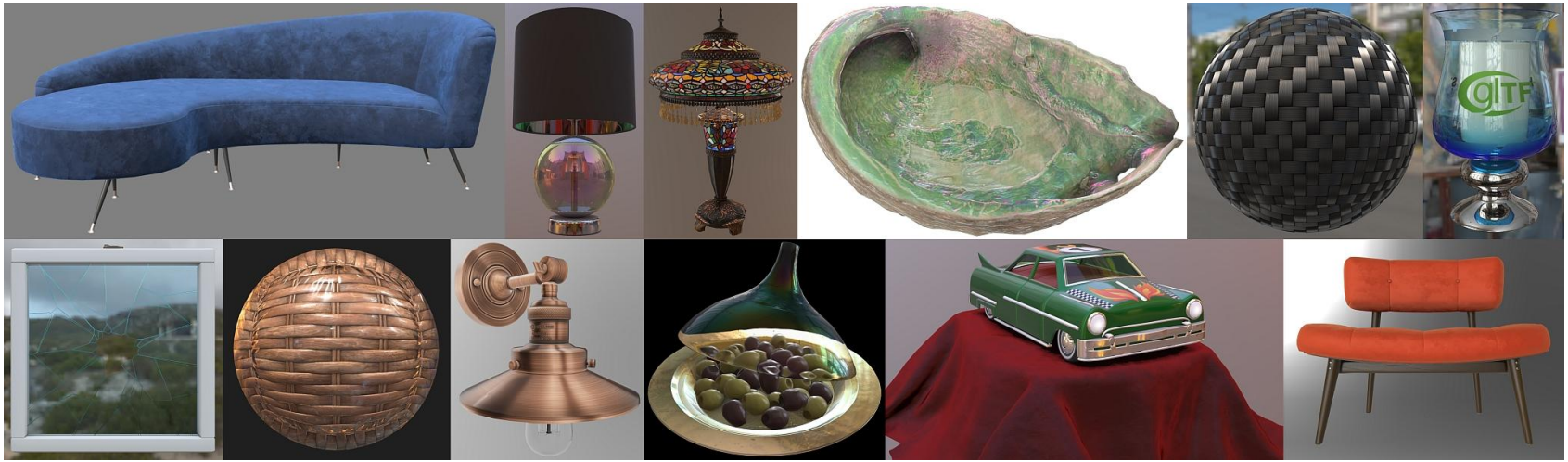
KHRONOS GROUP / WEBINARS & MEETUPS

glTF™

Eric Chadwick, Senior 3D Technical Artist, DGG

echadwick@dgg3d.com

- Workflow improvements for 3D rendering and interactivity
- 20 years in game development
- Polycount admin, forum + wiki



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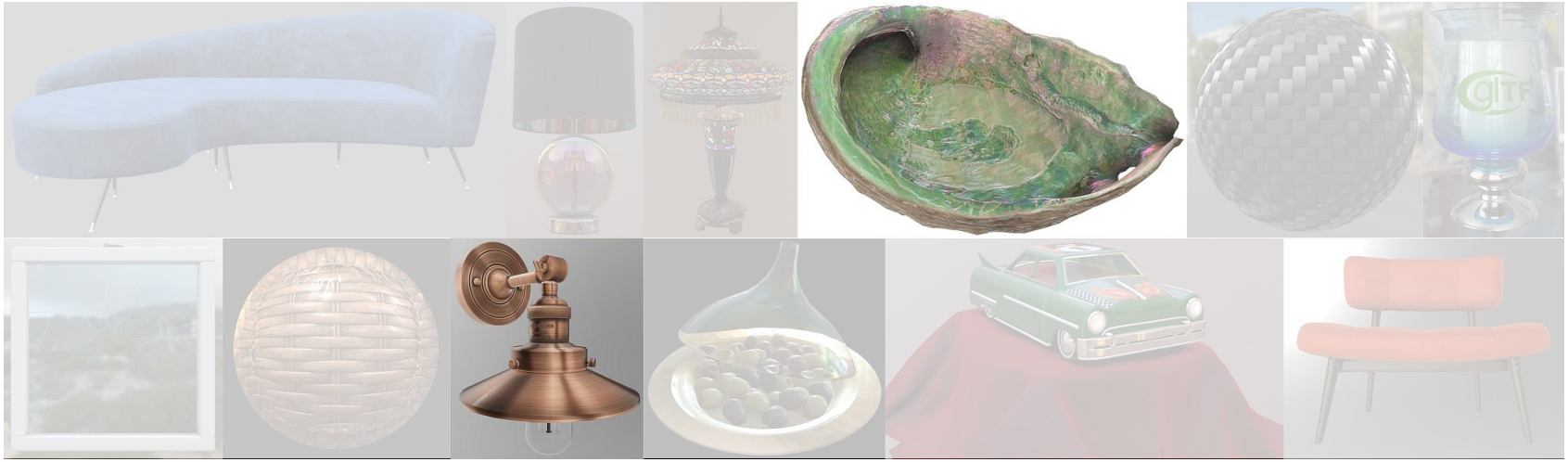
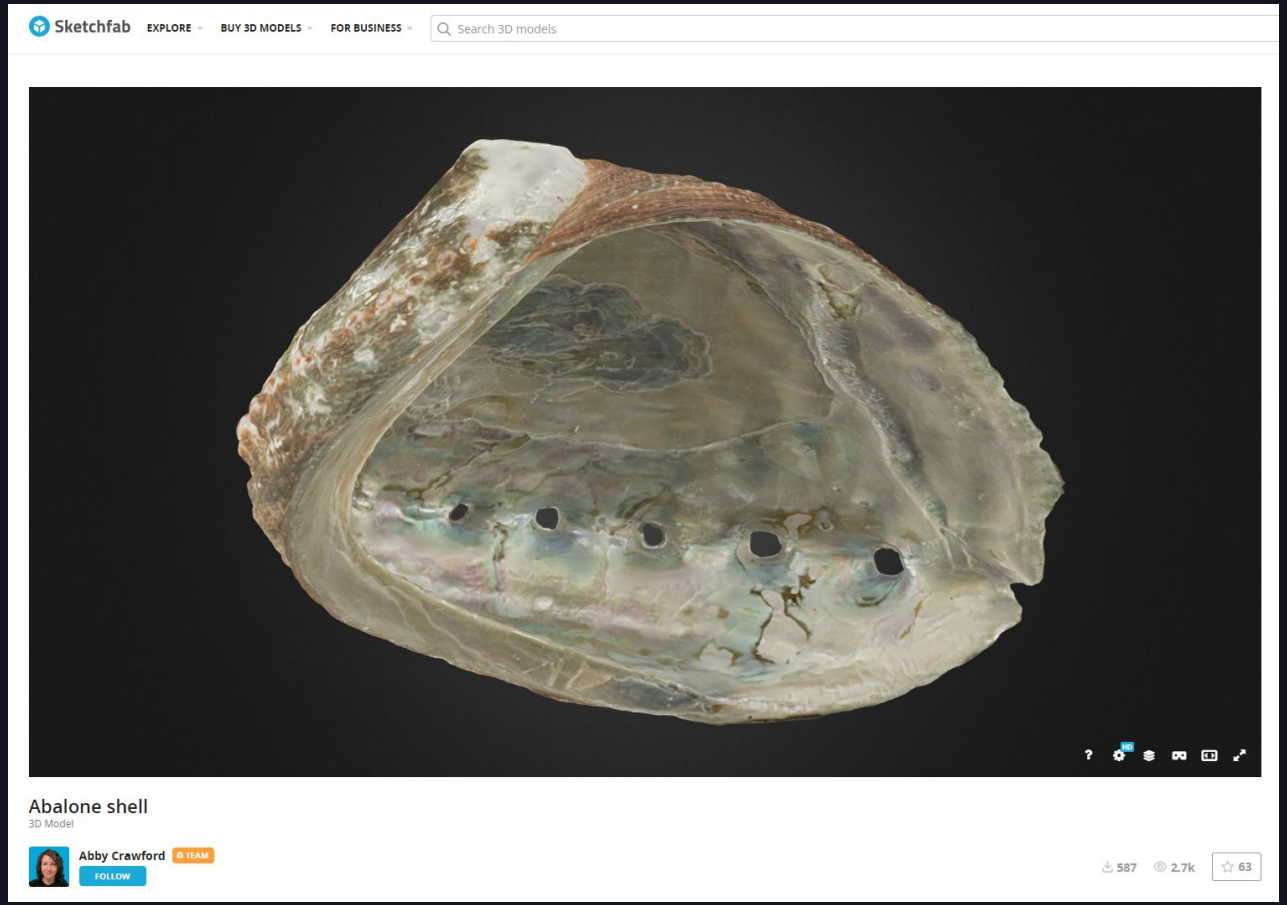


Khronos Group for open source standards, including glTF

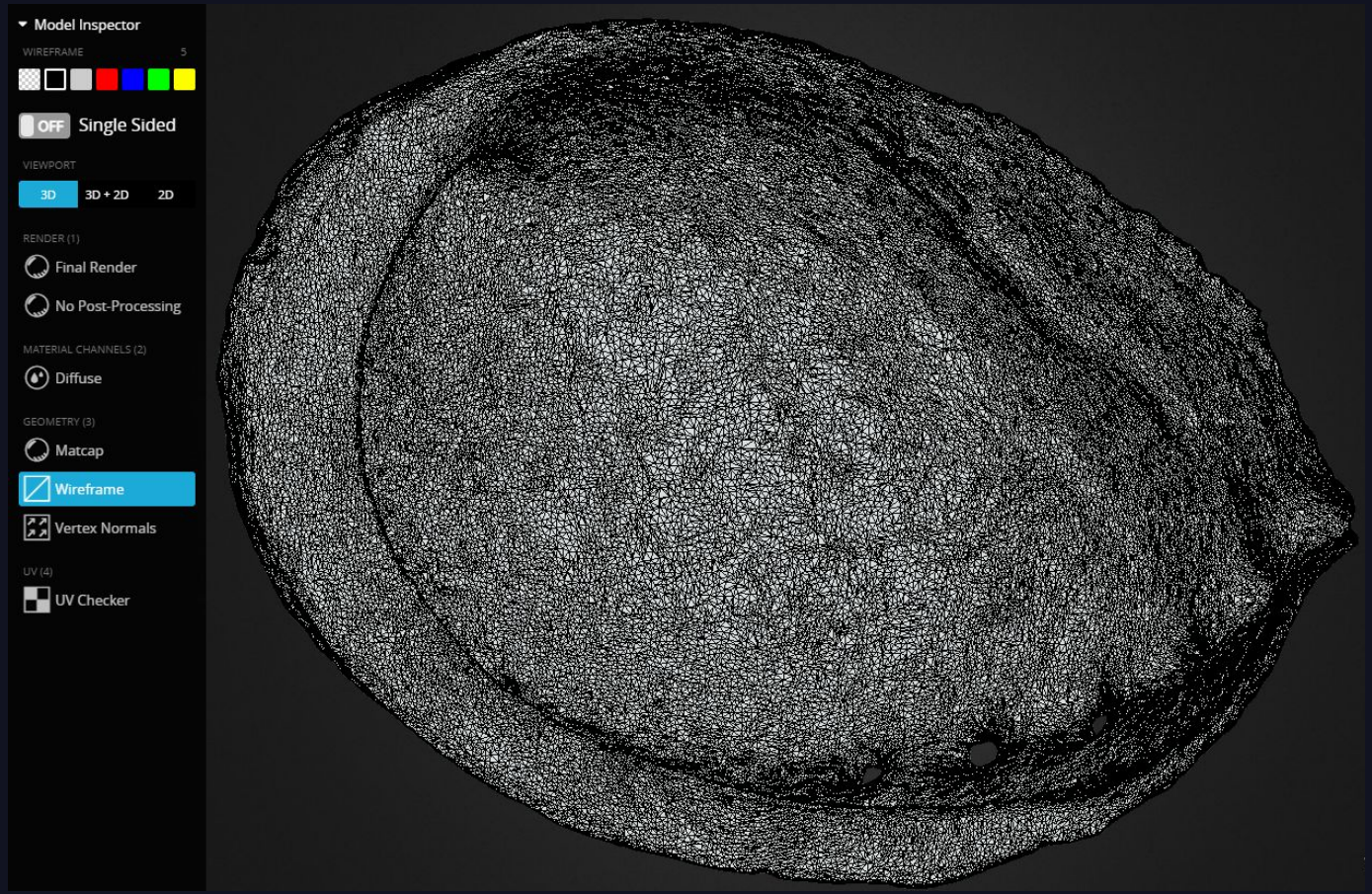
Weekly conference calls: glTF features, interop, extensions, workflow, tooling, tutorials …


gITF Sample Viewer
github.khronos.org/glTF-Sample-Viewer-Release/
Models
Models
IridescenceAbalone
Flavor
glb
Scenes
0
Cameras
User Camera
Display
Animation
{ }
Credits
Material by Eric Chadwick, model by Abby Crawford (https://skfb.ly/GTLF), both licensed under CC BY 4.0 (http://creativecommons.org/licenses/by/4.0/).
Advanced Controls

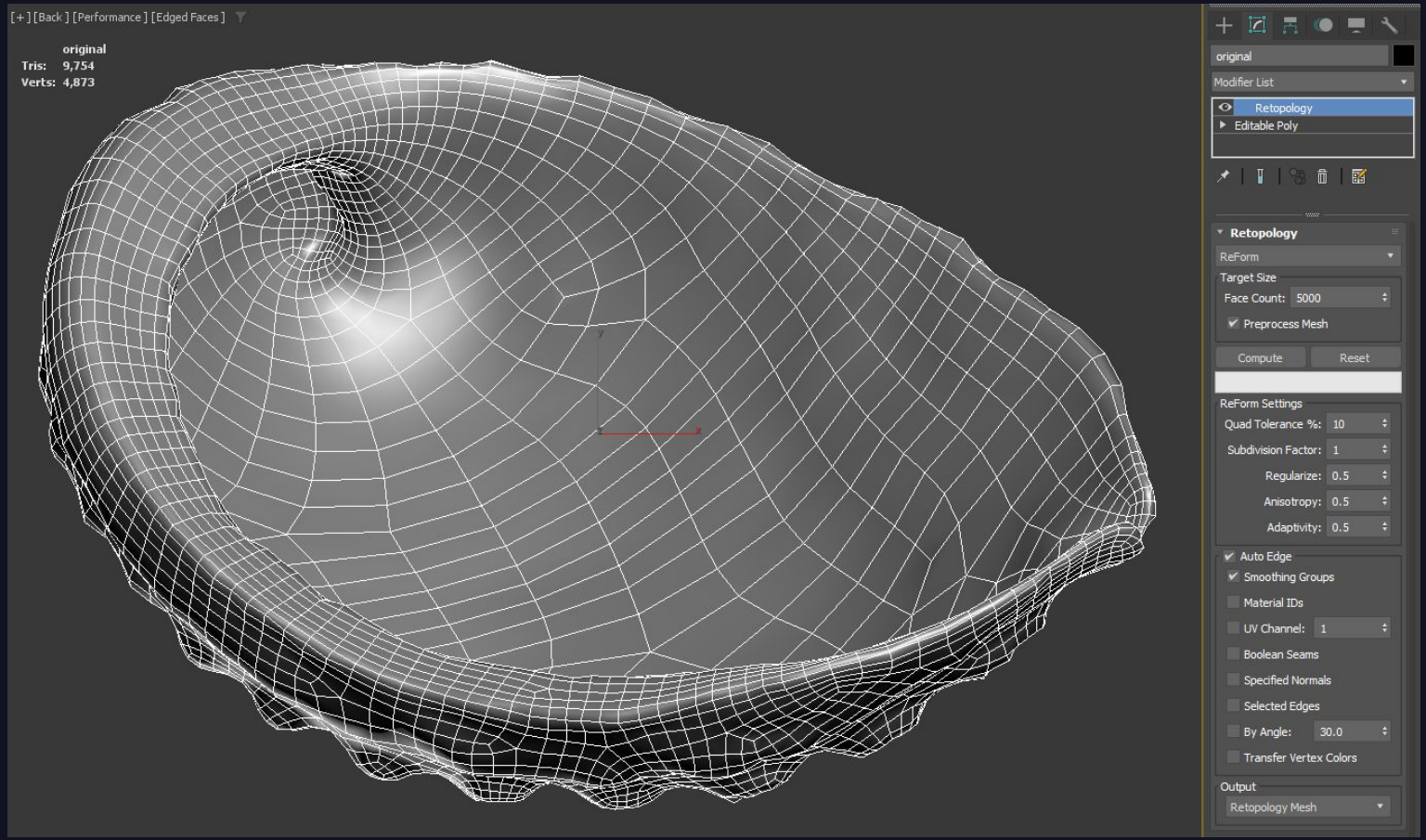
Sketchfab, photogrammetry by Abby Crawford, https://skfb.ly/GTLF



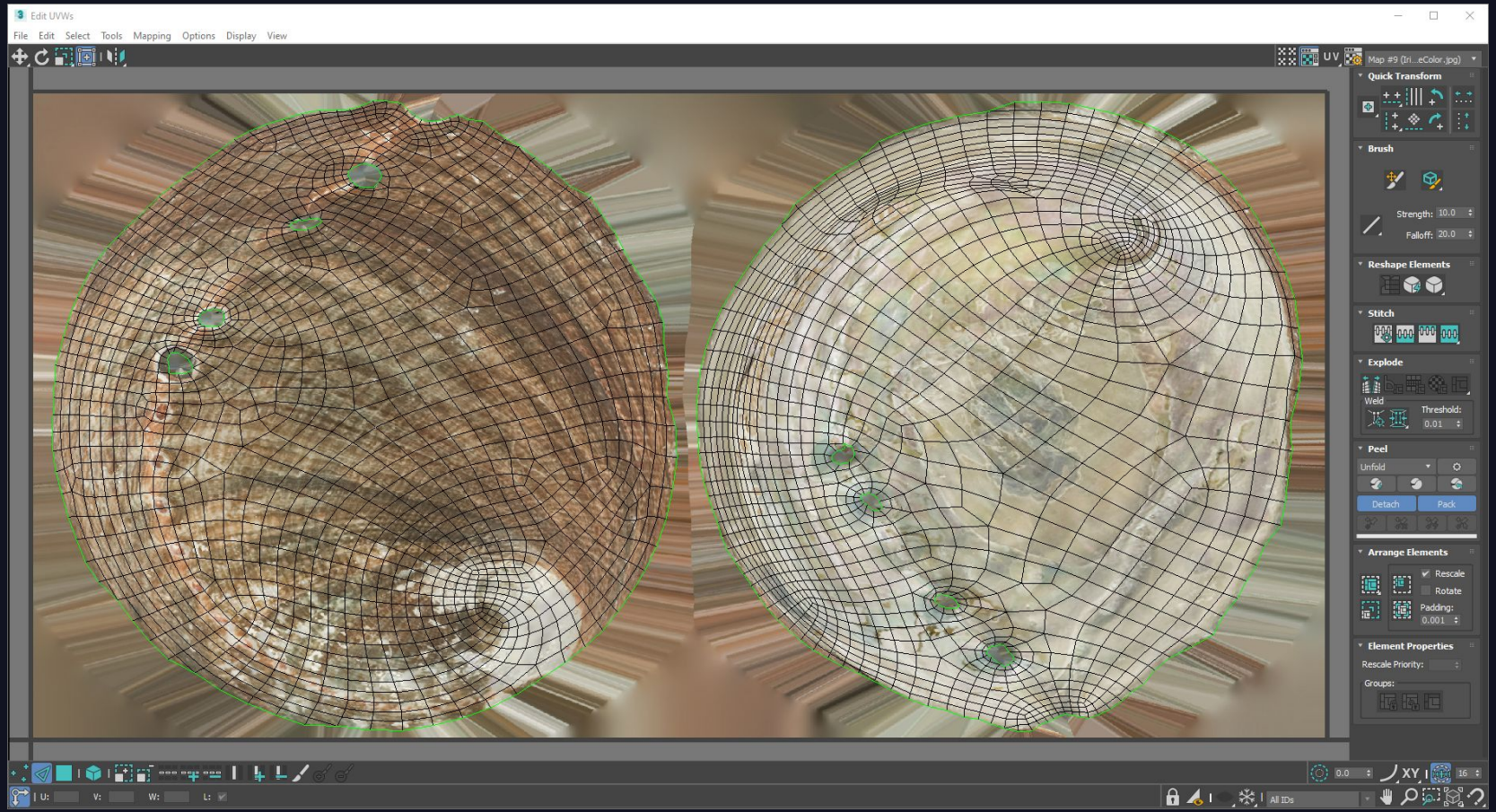
Triangles: 336,300 Material: Diffuse texture



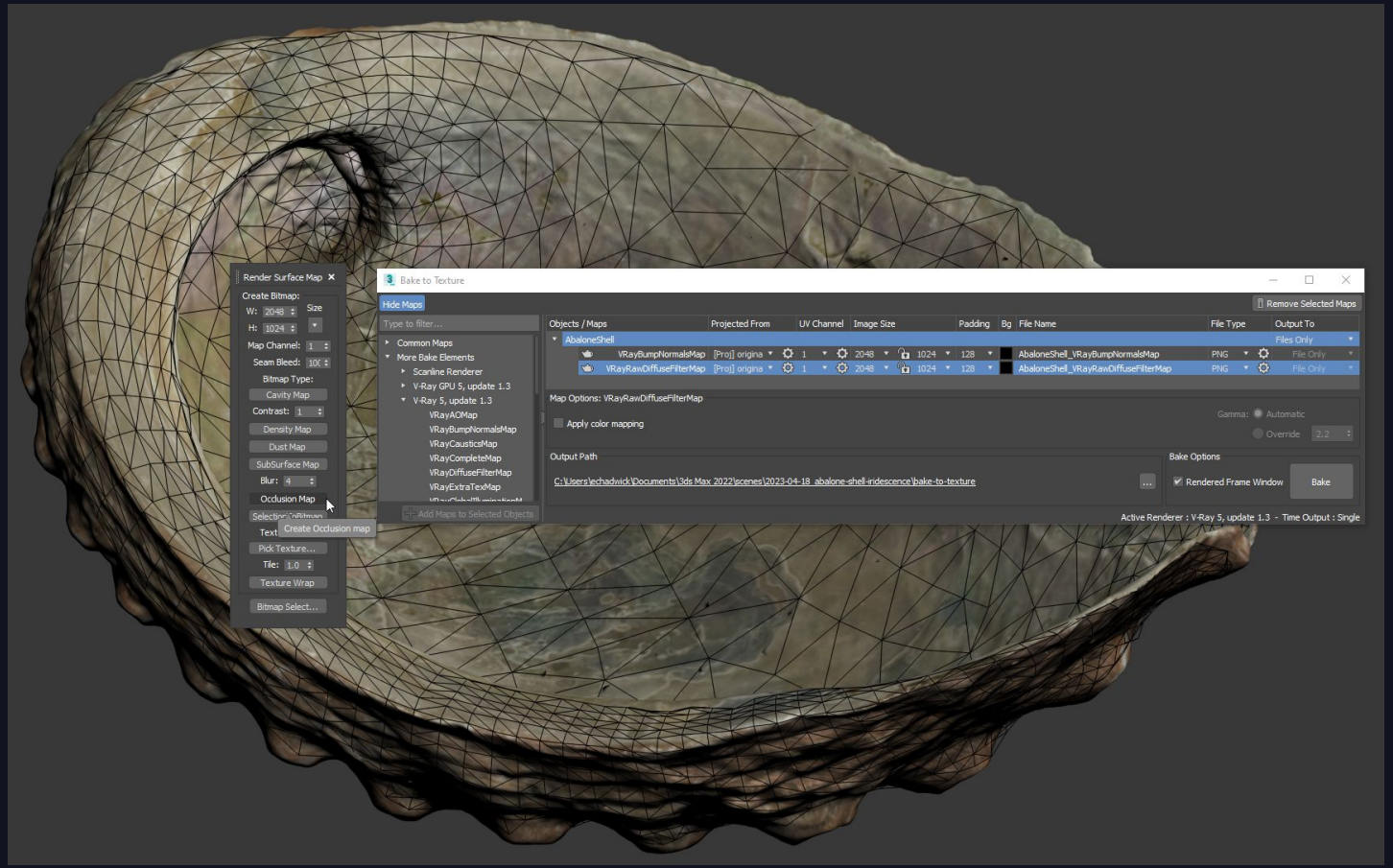
Retopology in 3ds Max



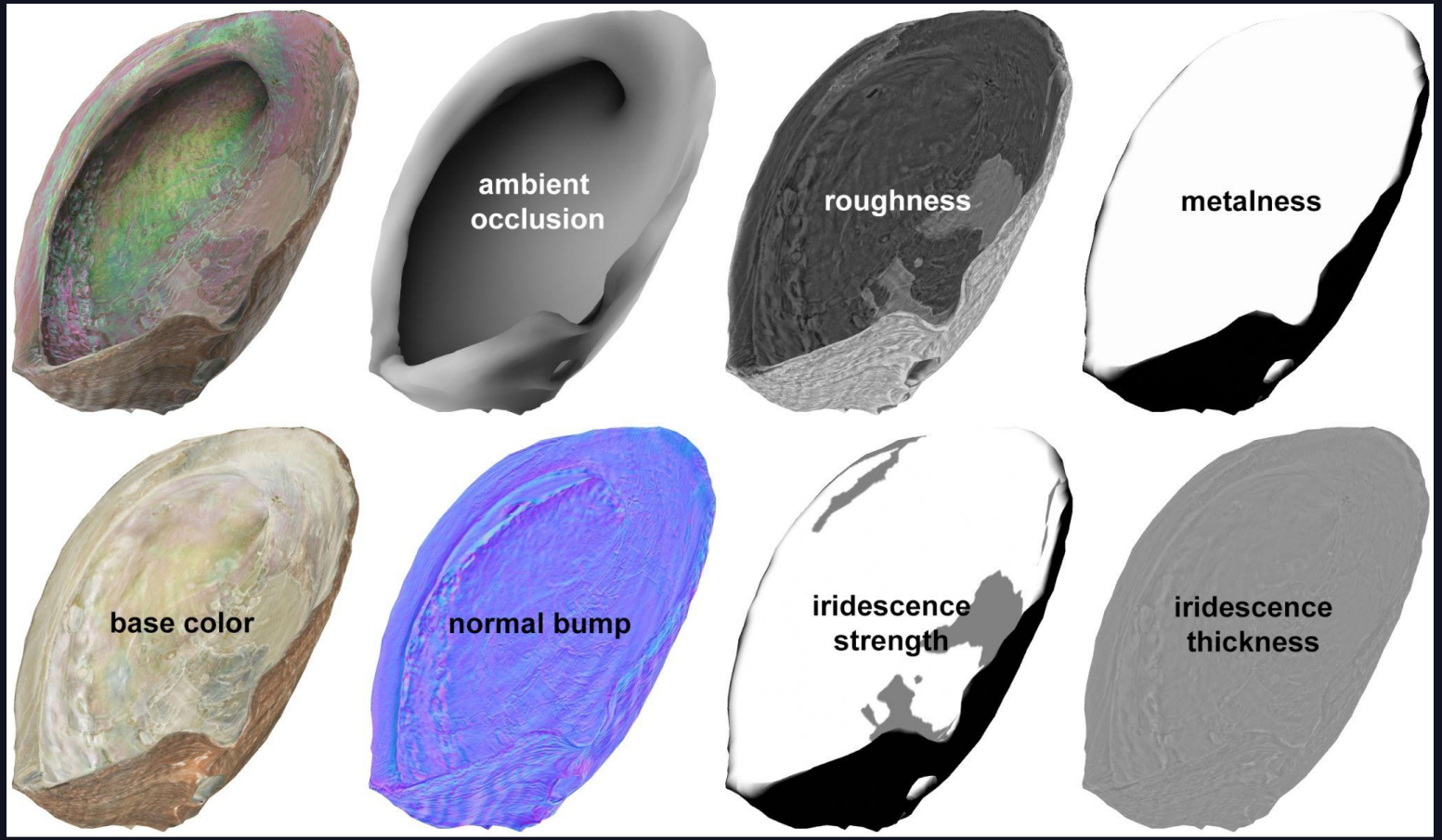
Unfold UVs, Relax UVs, Pack into 2048x1024



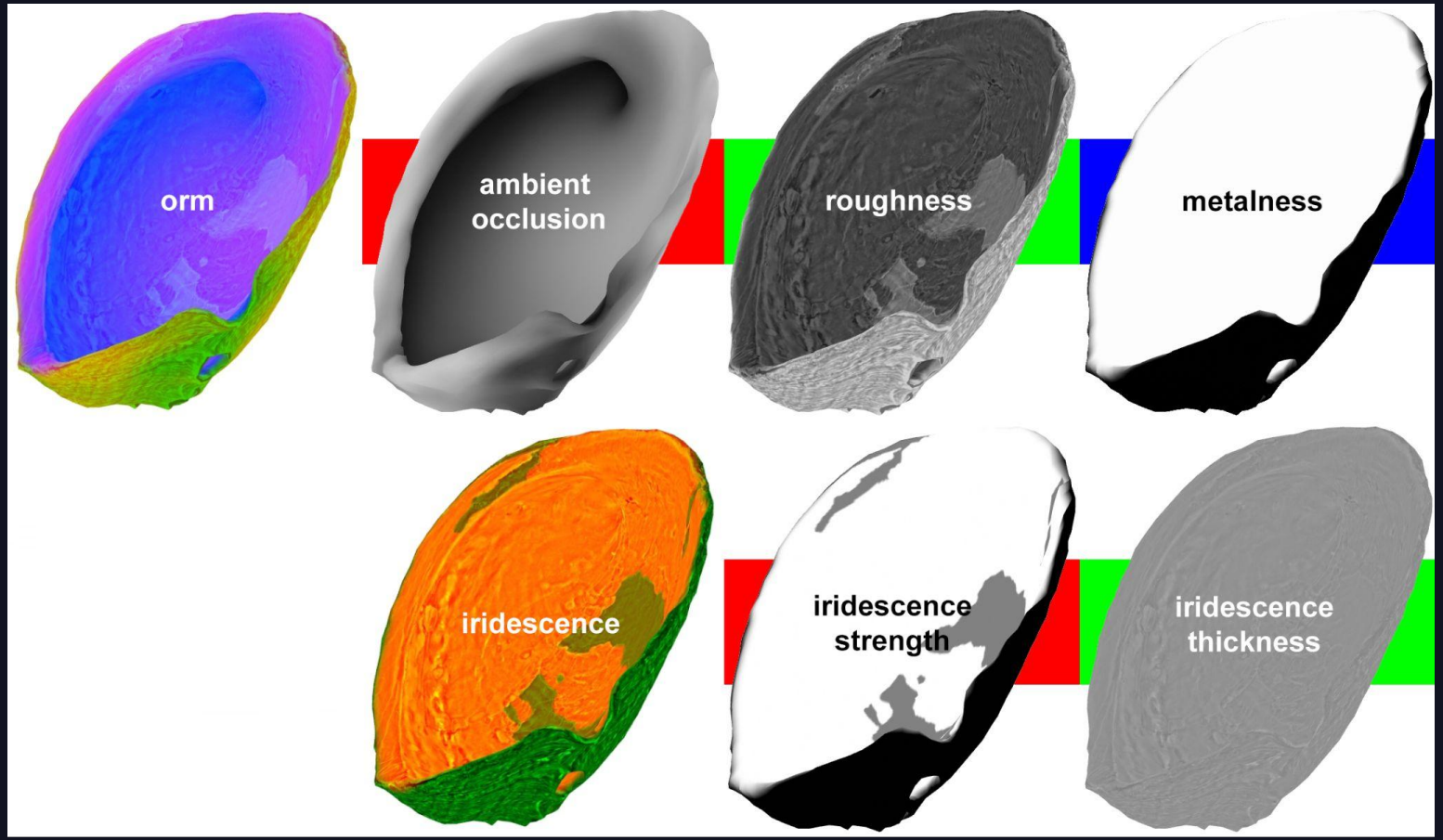
Bake To Texture: normal, diffuse, occlusion



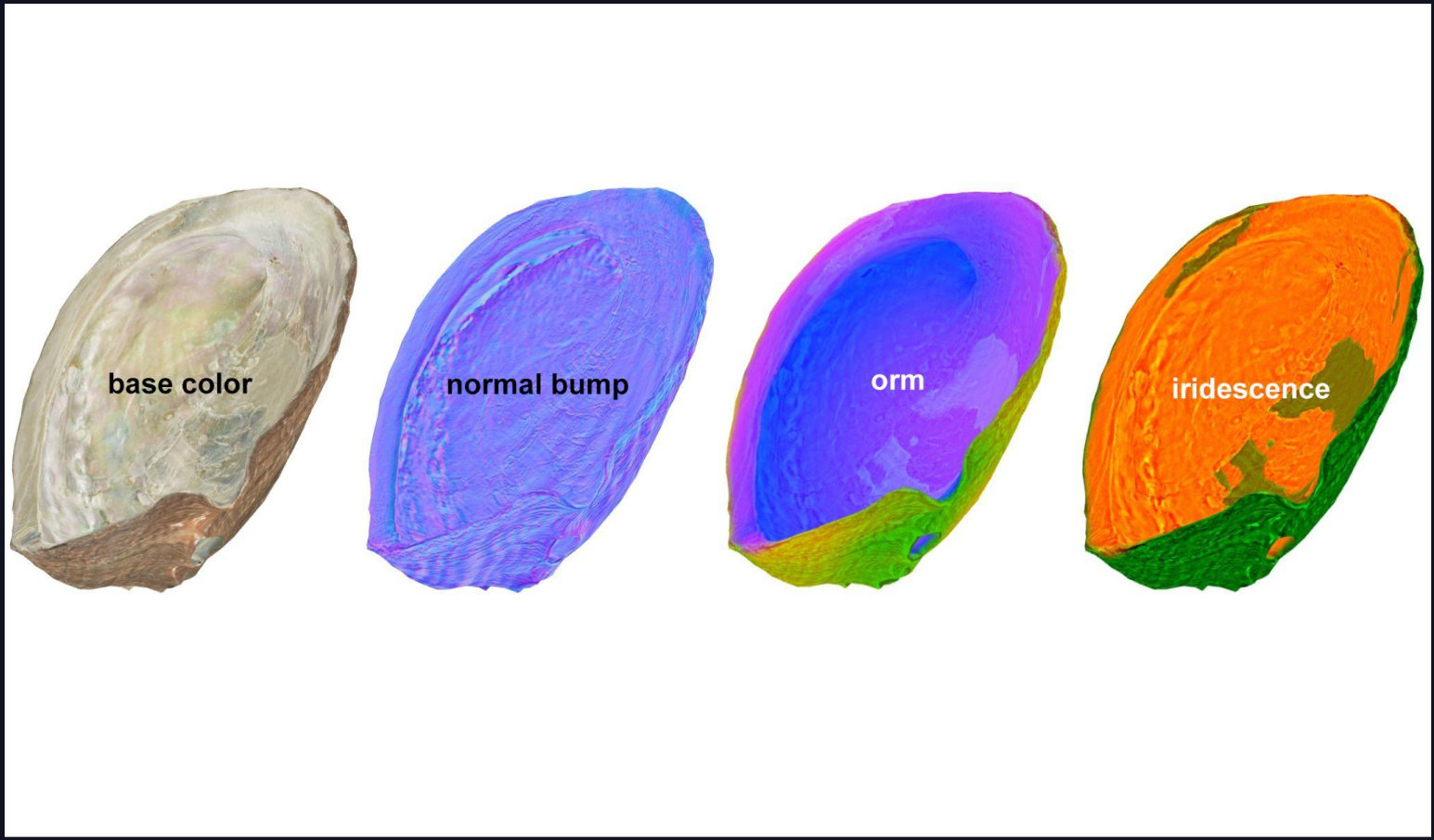
Generating Textures



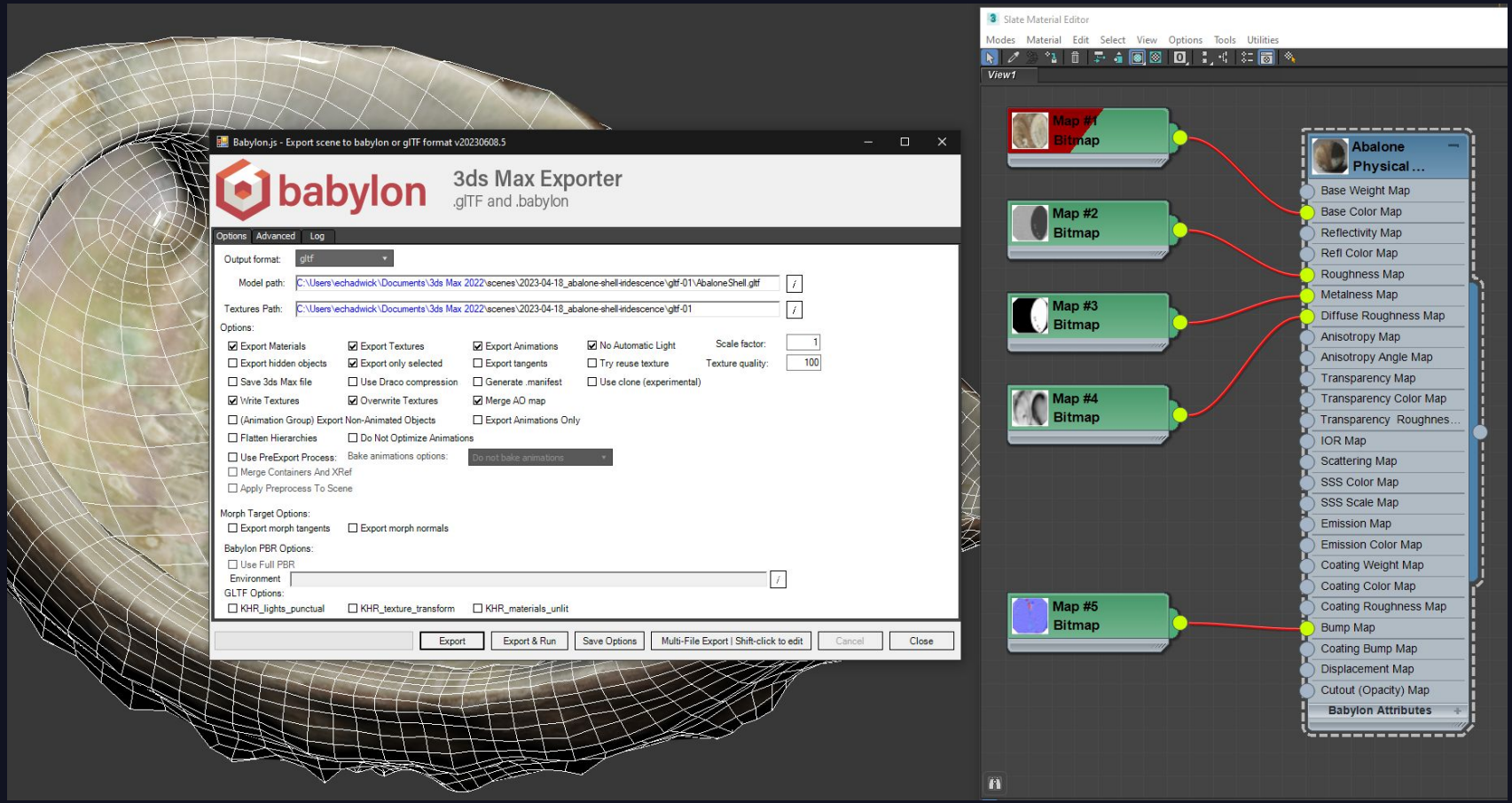
Channel-Packed Textures



Final Textures



BabylonJS Exporter for 3ds Max



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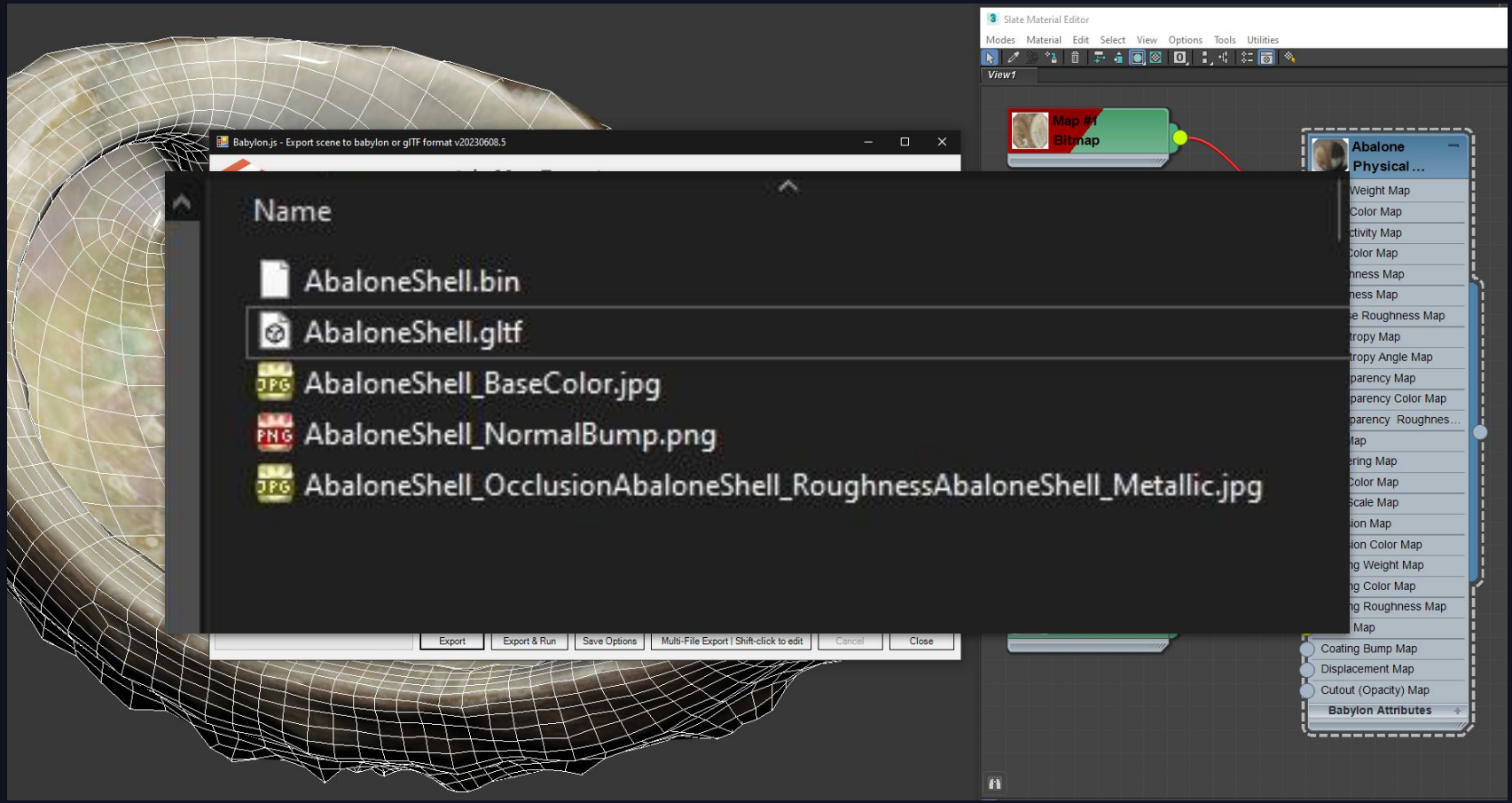
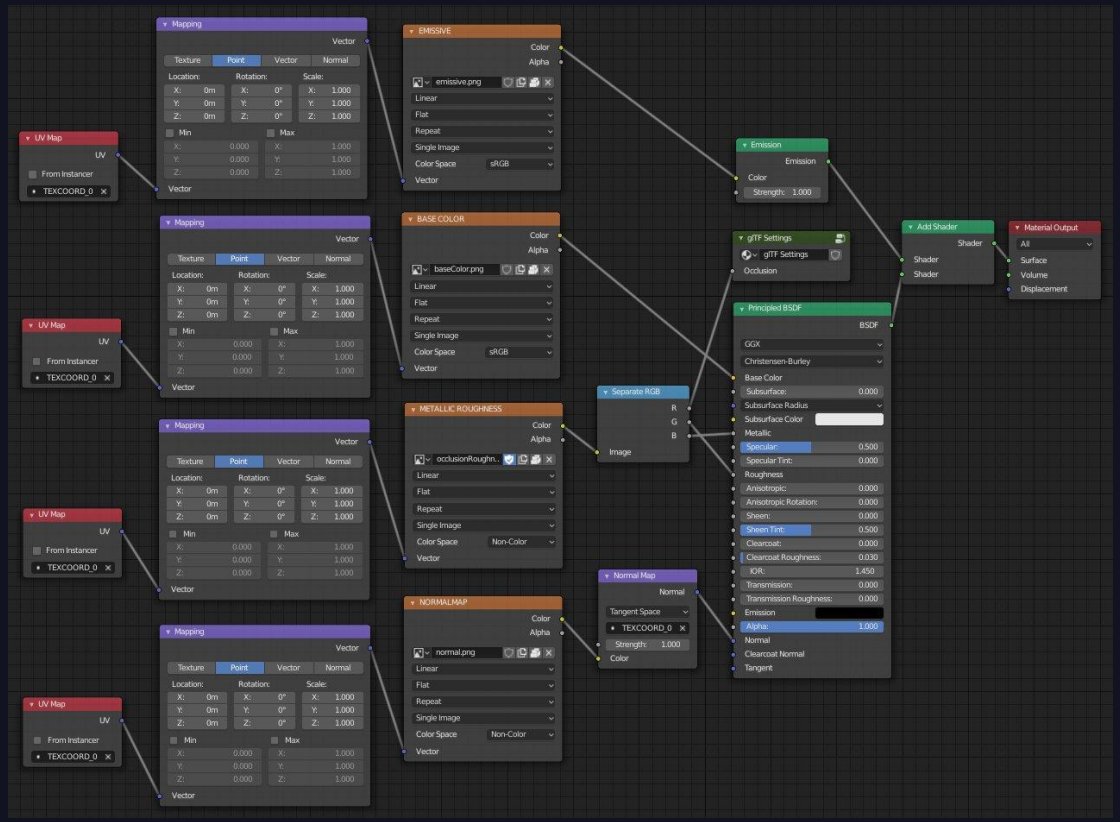


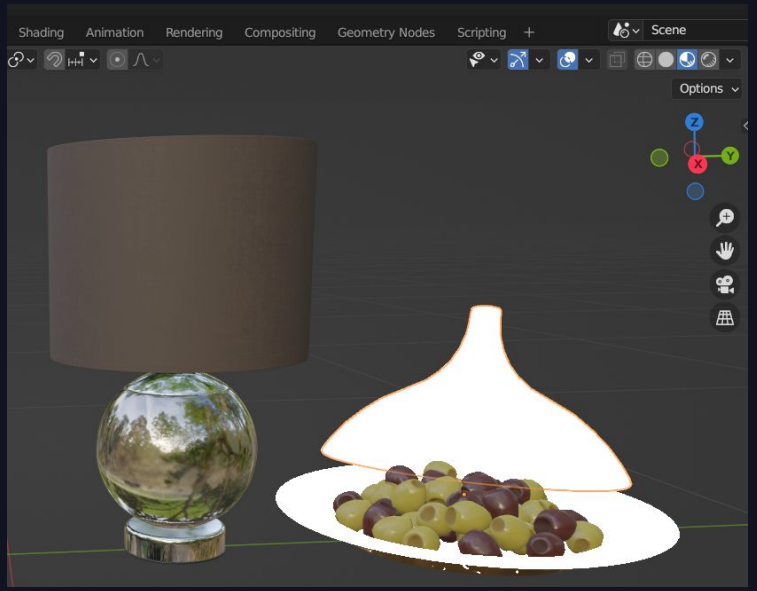
Blender glTF

https://docs.blender.org/manual/en/2.80/addons/io_scene_gltf2.html



Blender glTF

glTF Sample Viewer

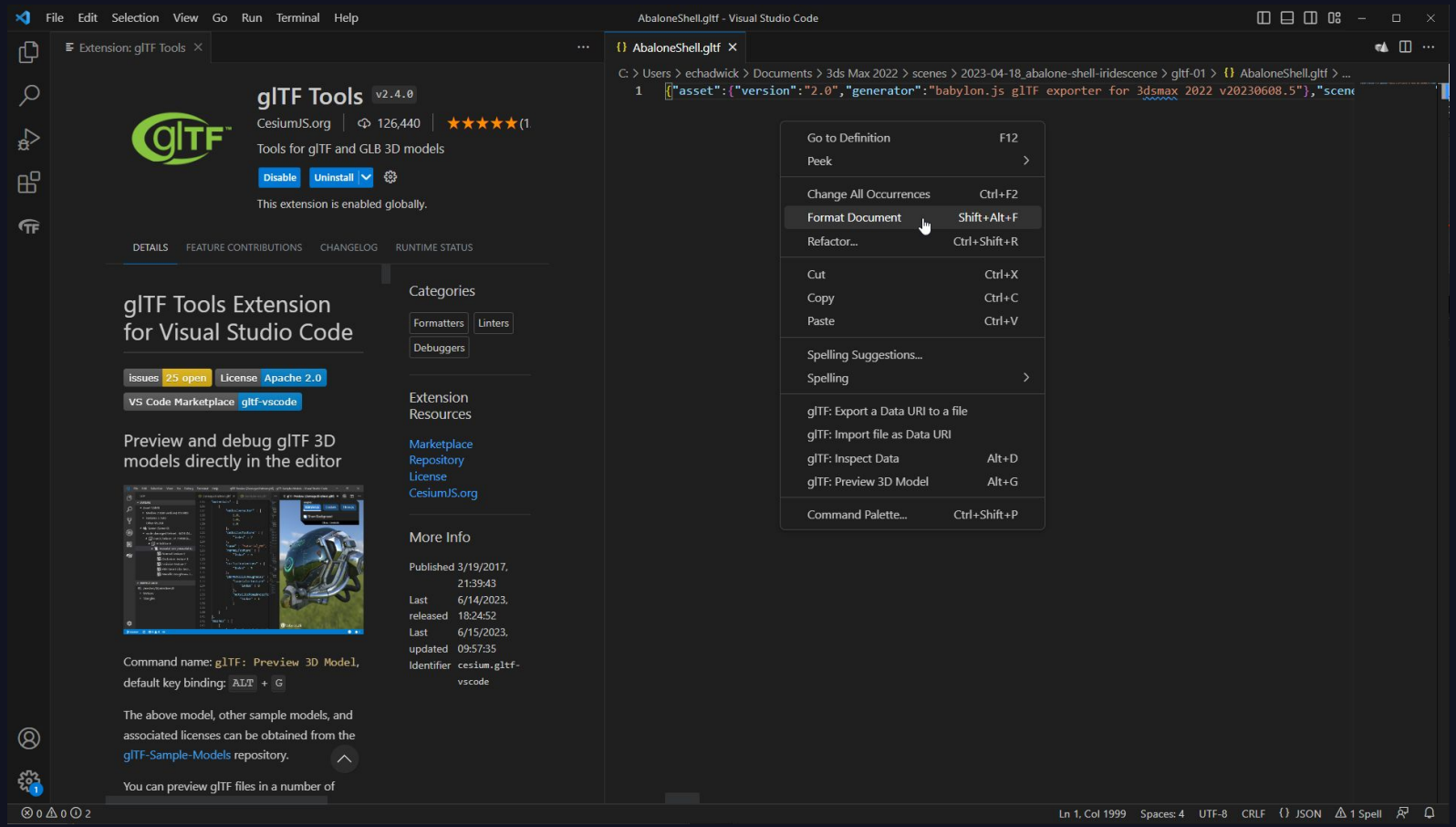


Blender import

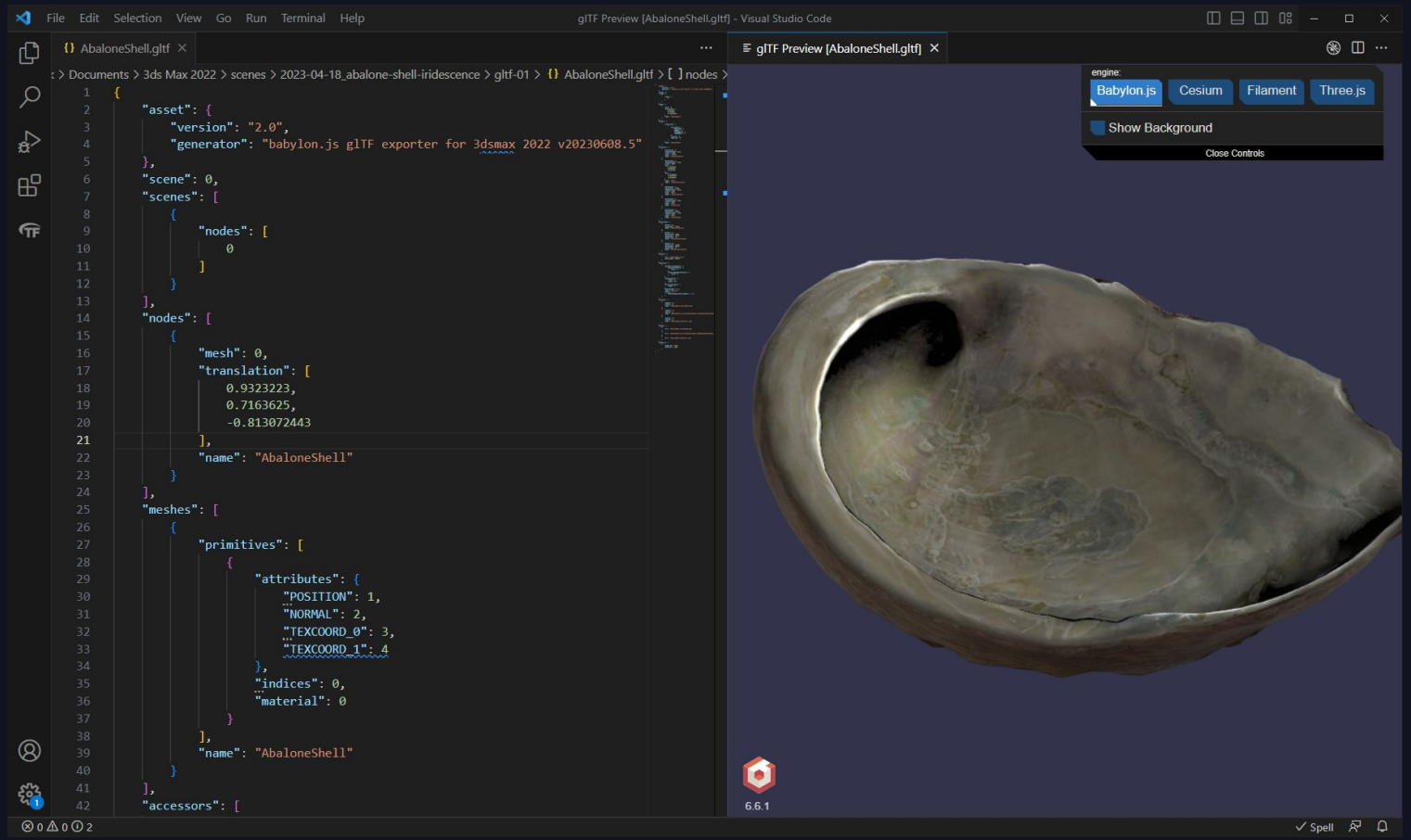
Different rendering models, no glTF renderer in Blender, feature compatibility not 100%

In development... Principled v2 BSDF shader node
https://projects.blender.org/blender/blender/issues/99447

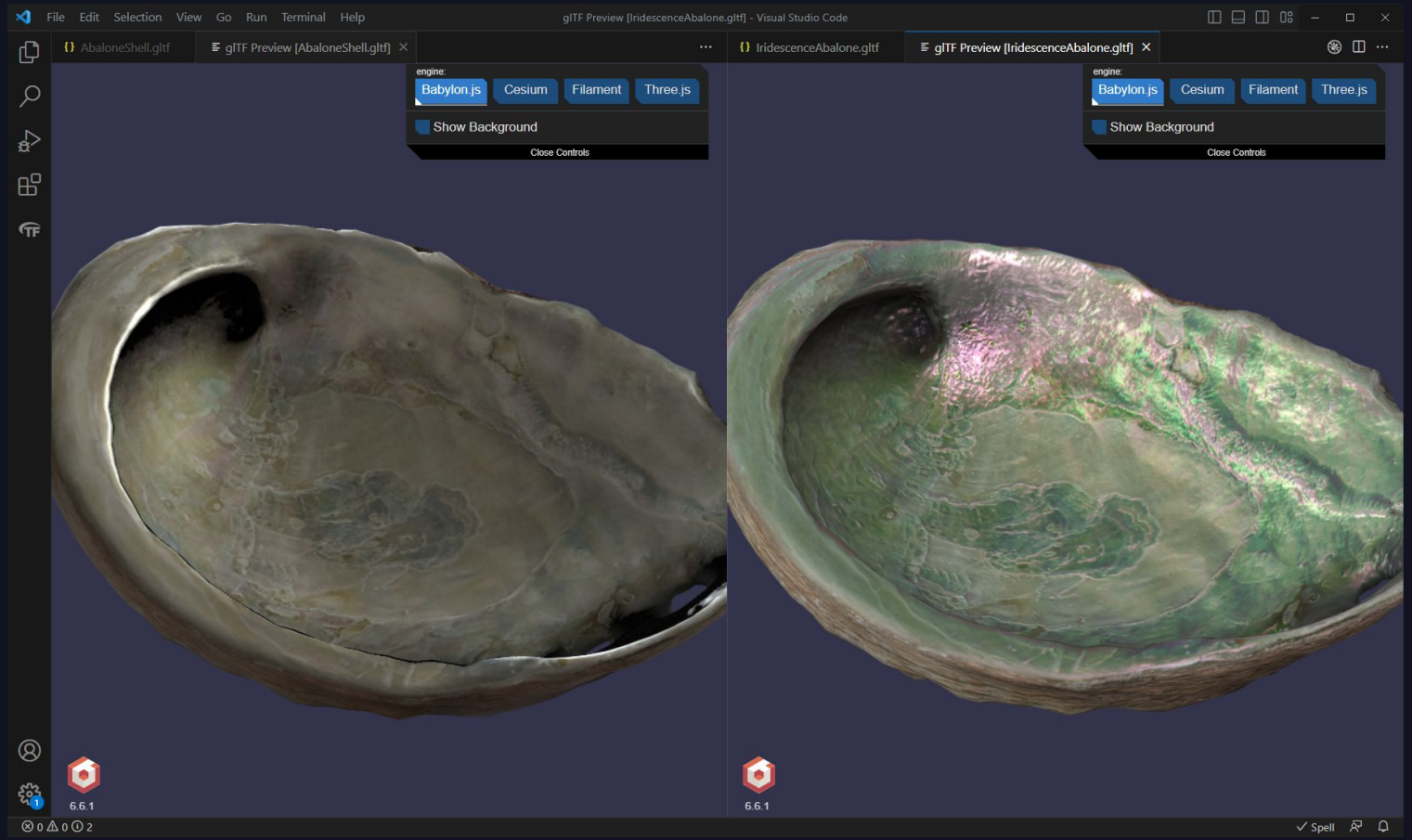
Visual Studio Code + Cesium's glTF Tools Extension



Editing glTF in VS Code

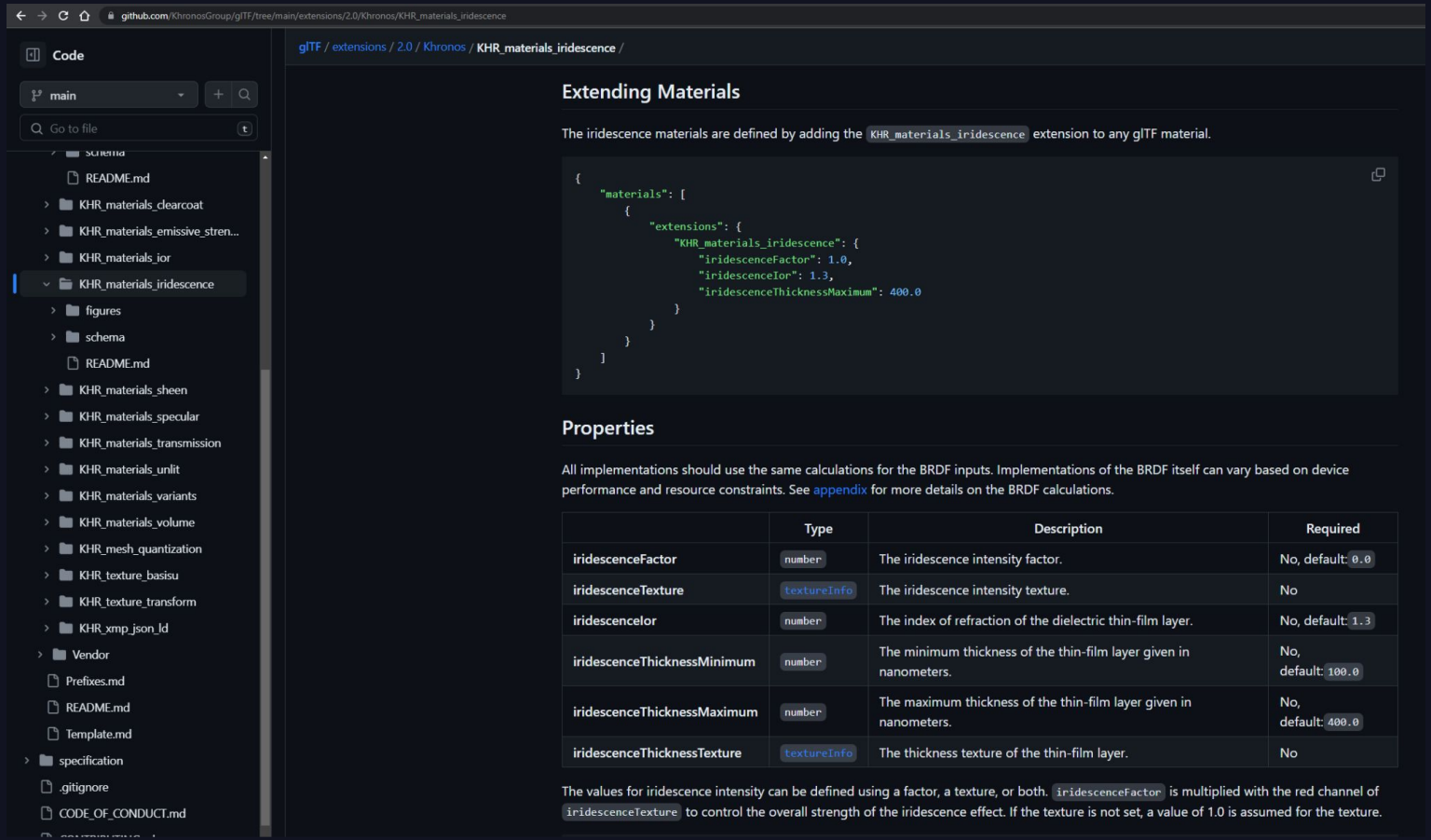


Materials: Before and After

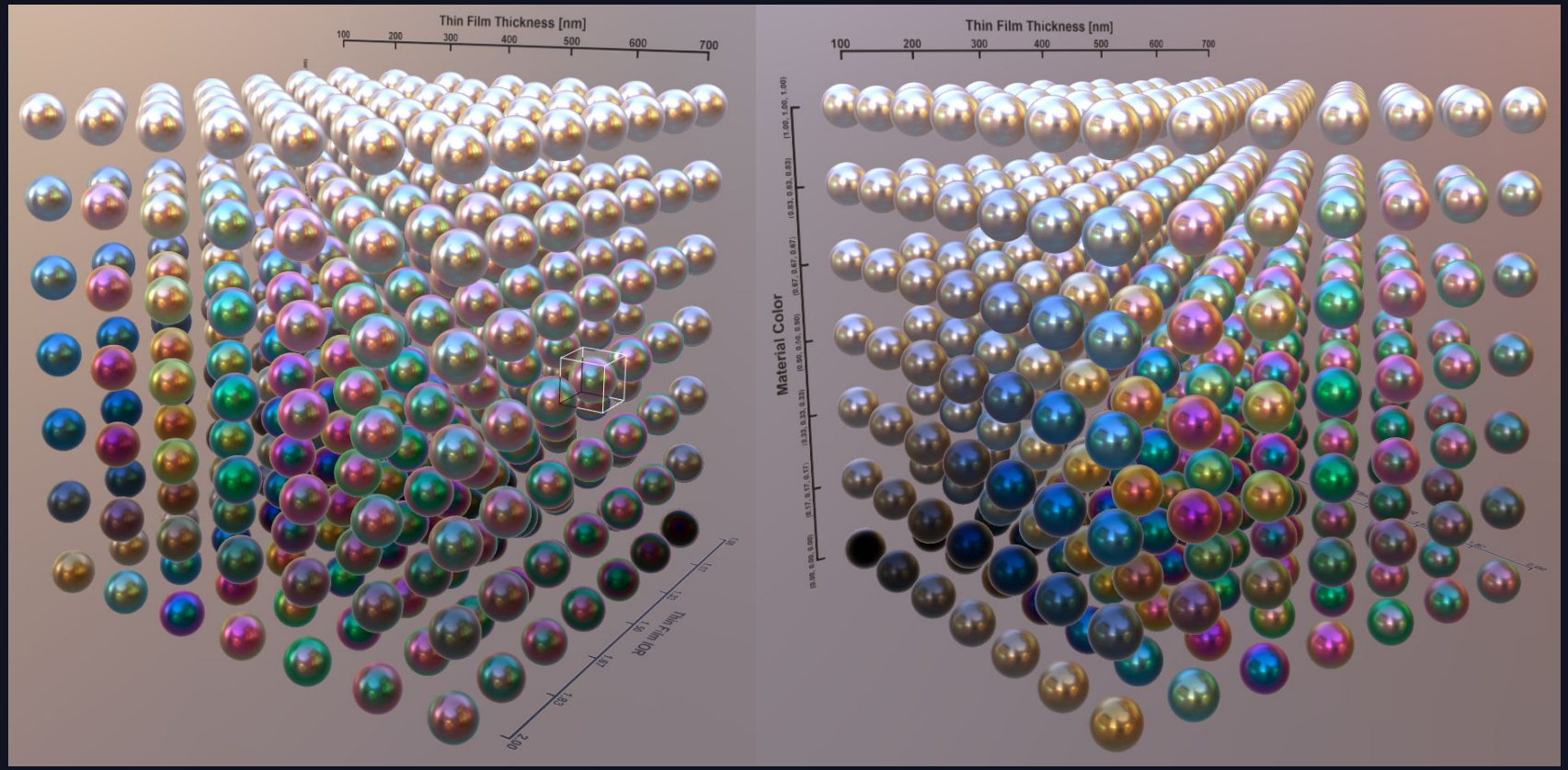


What are the Iridescence Parameters?

Check the spec: KHR_materials_iridescence



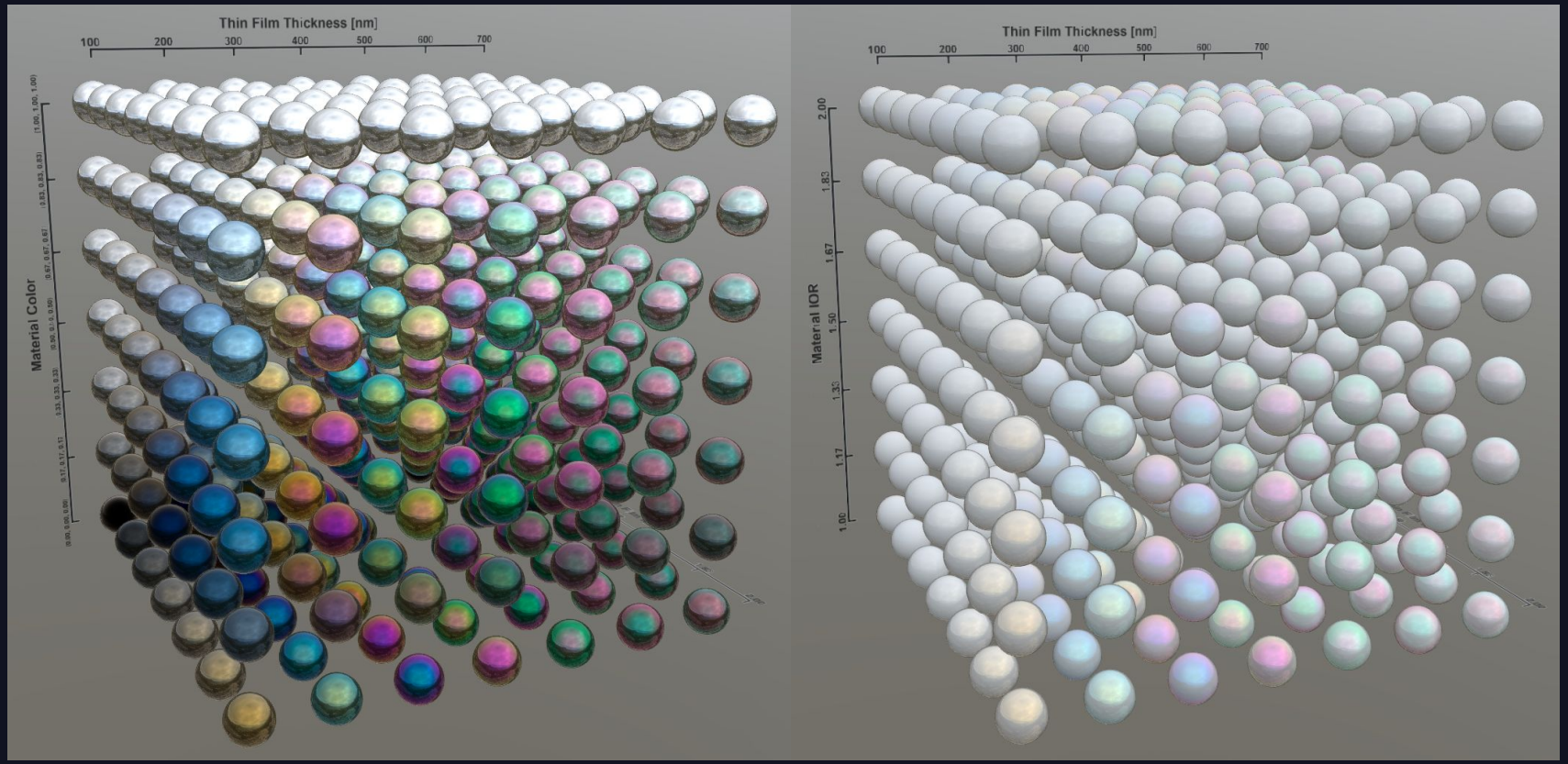
Iridescence Parameters Thickness, IOR, Color



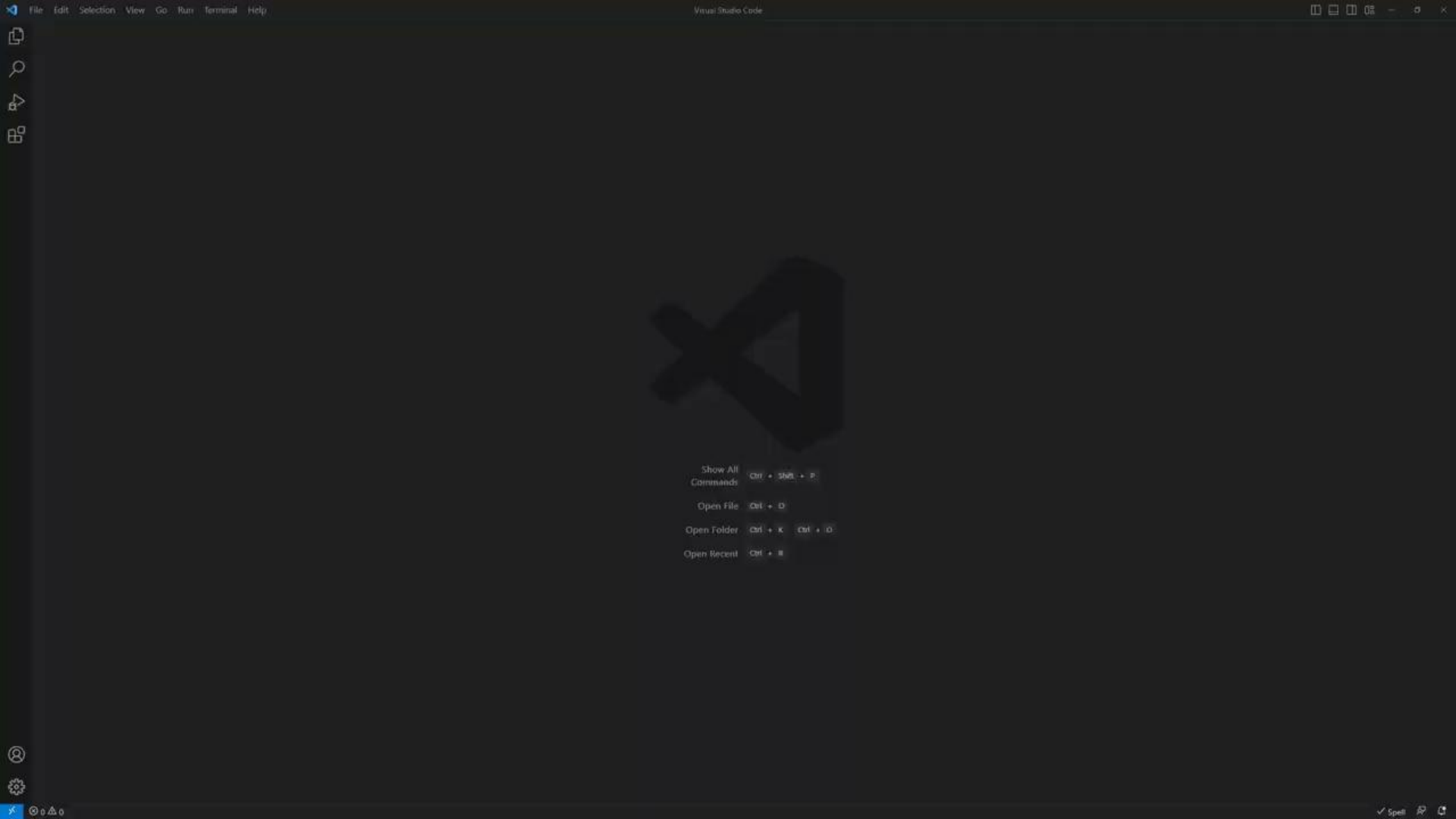
https://github.com/KhronosGroup/glTF-Sample-Assets/tree/main/Models/IridescenceMetallicSpheres

Iridescence Parameters

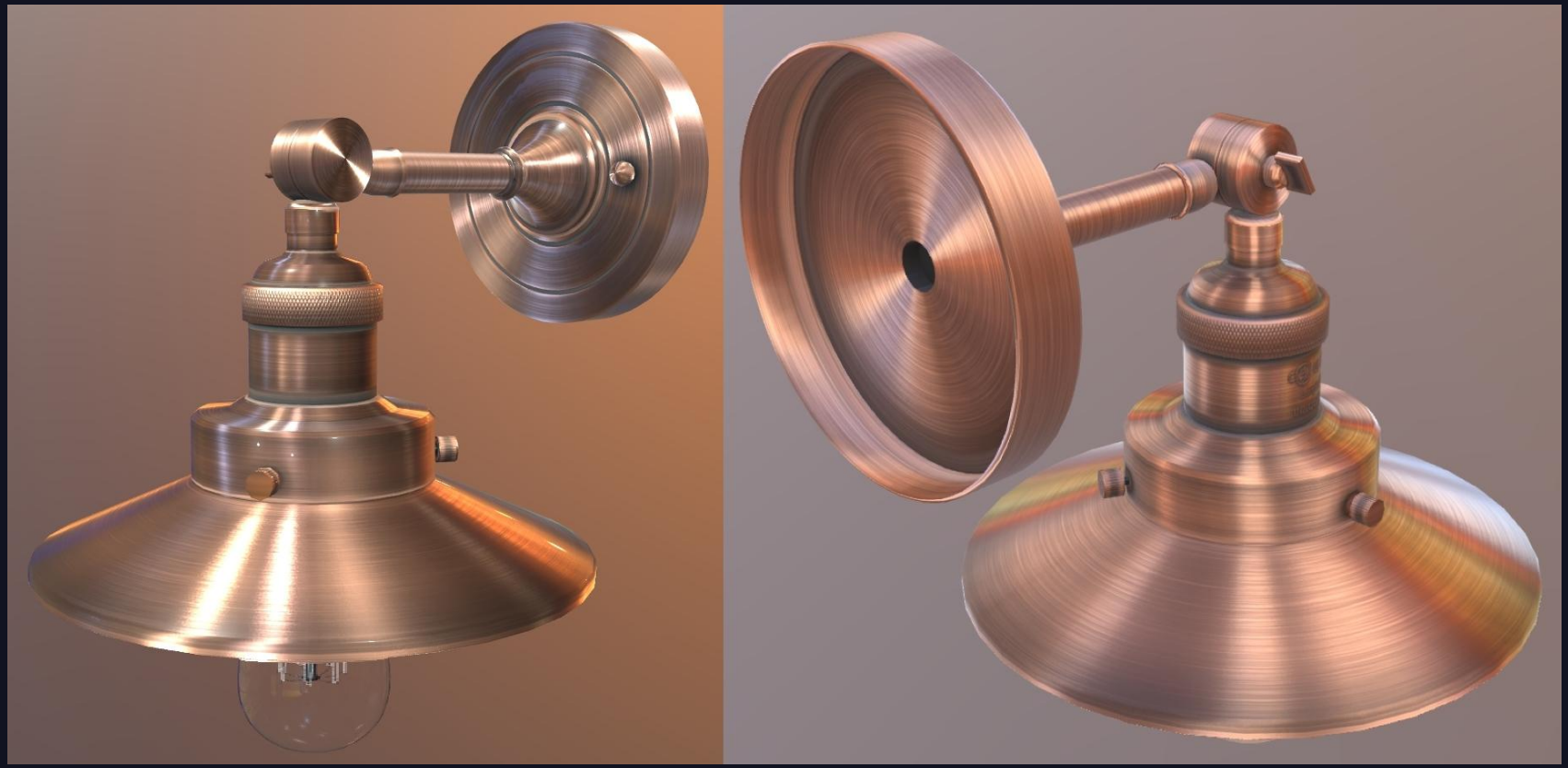
Metallic vs. Dielectric



https://github.com/KhronosGroup/glTF-Sample-Assets/tree/main/Models/IridescenceDielectricSpheres


File Edit Selection View Go Run Terminal Help
Visual Studio Code
Show All Commands Ctrl + Shift + P
Open File Ctrl + O
Open Folder Ctrl + K Ctrl + O
Open Recent Ctrl + R
Spell

glTF Extension - KHR_materials_anisotropy



Based on a Real Product

Antique Copper Barn Light on Wayfair

Brushed copper with a clearcoat finish

Anisotropy examples

Horse: Sabu Varghese
Record: Ryankusumojr
Braid: Stilfehler
Pan: NatalieMaynor/

Models

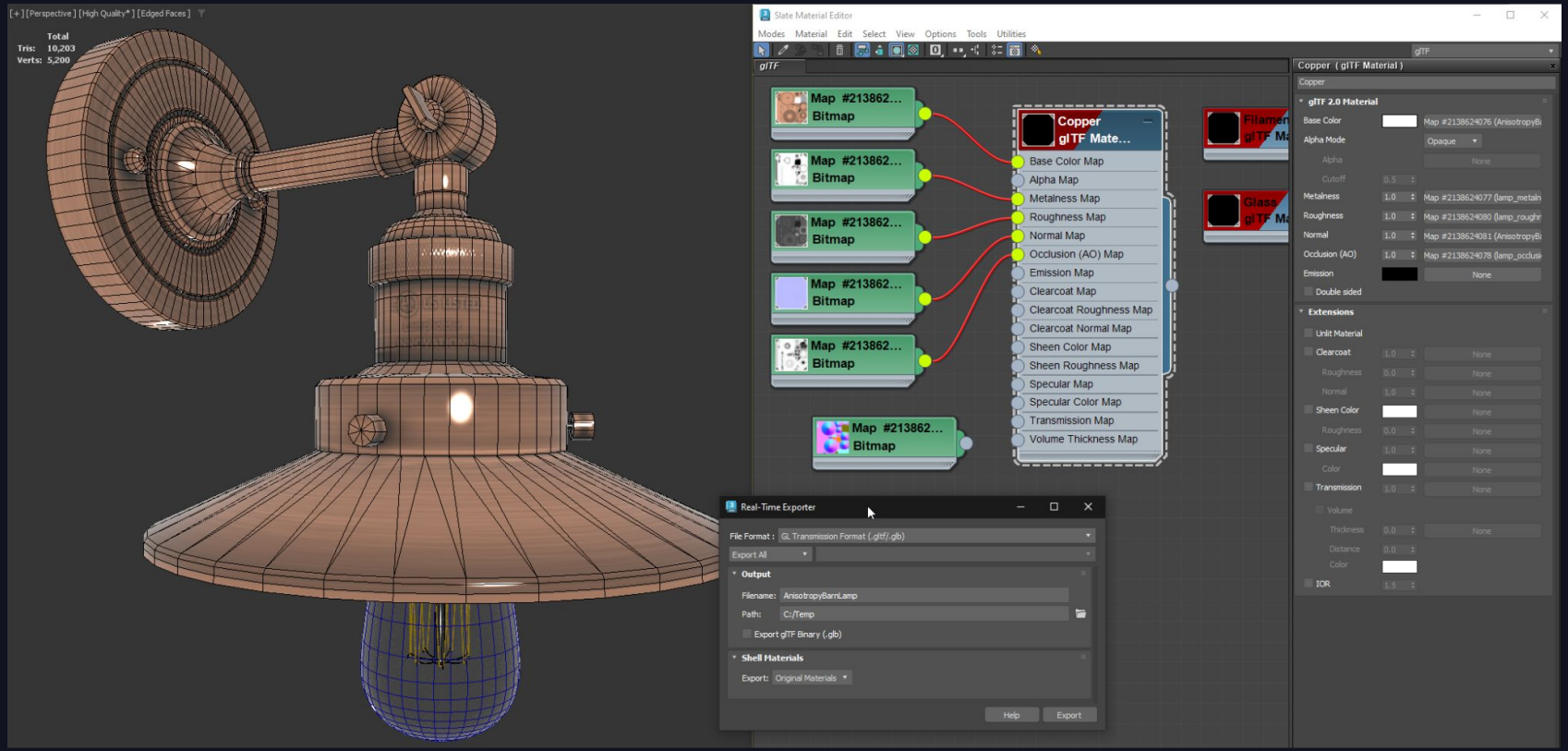
Display

Animation

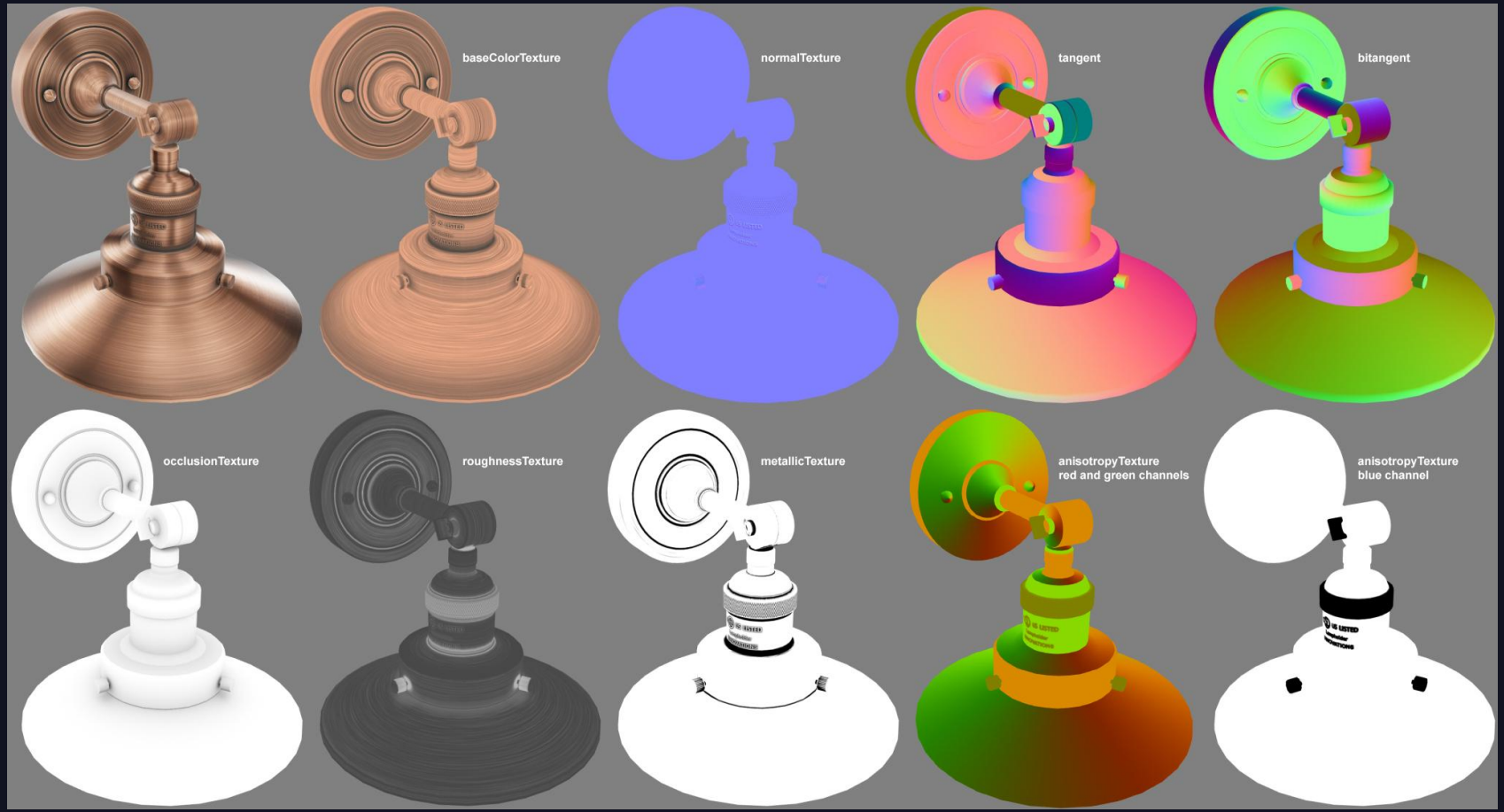
Credits

Advanced Controls

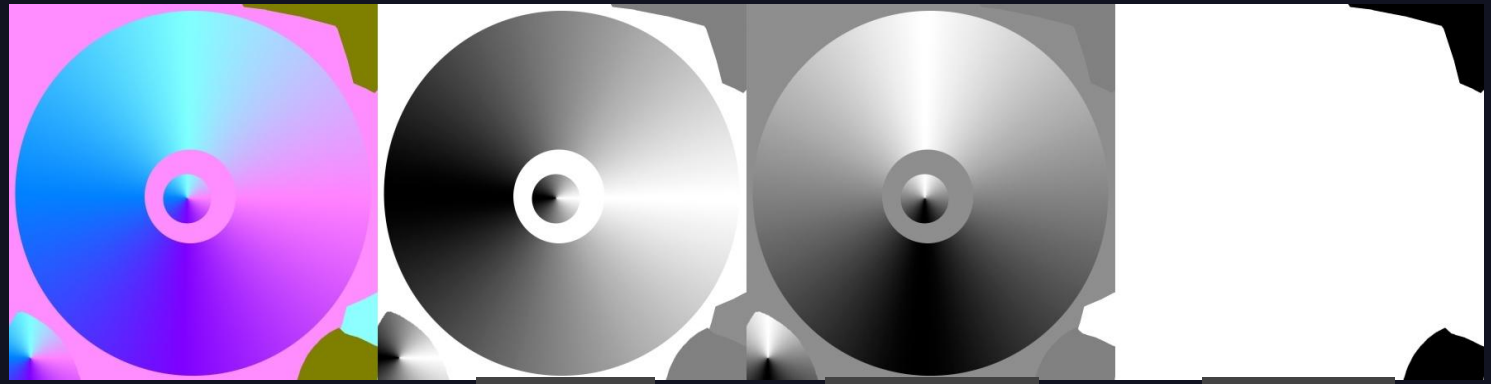
glTF Material & glTF Exporter in 3ds Max



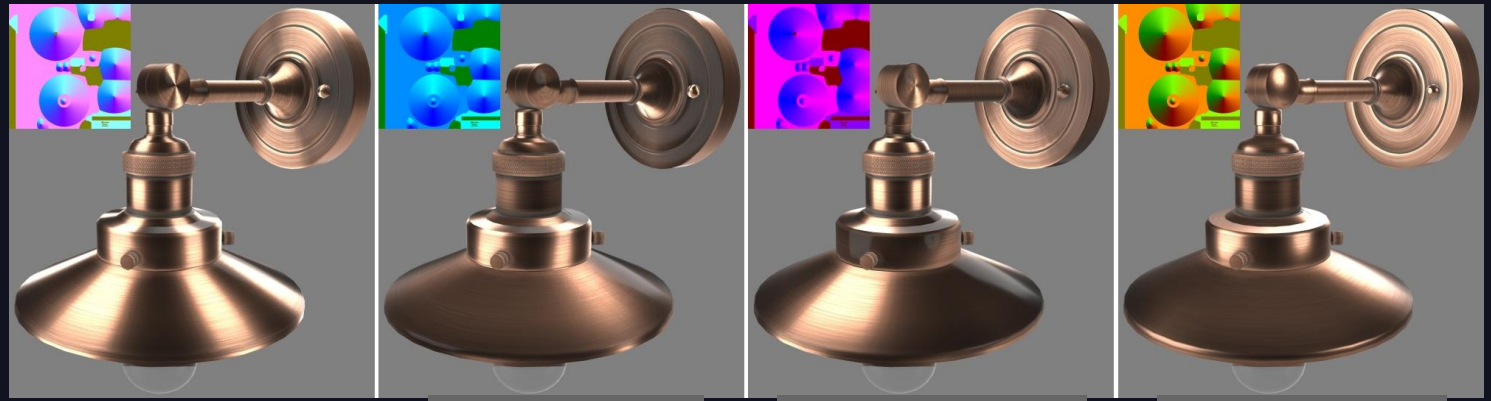
Anisotropy - Inputs



Anisotropy Texture - RGB Channels

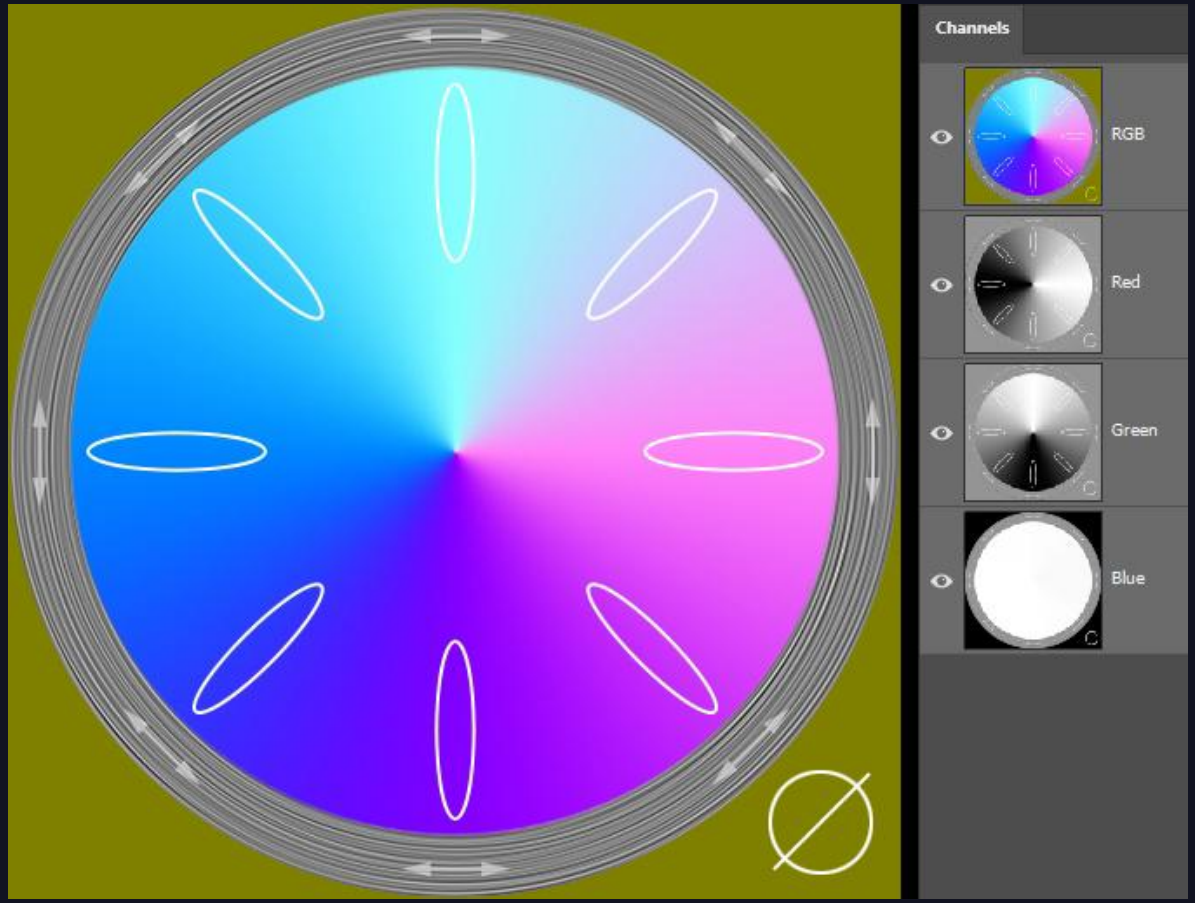


red channel | green channel | blue channel

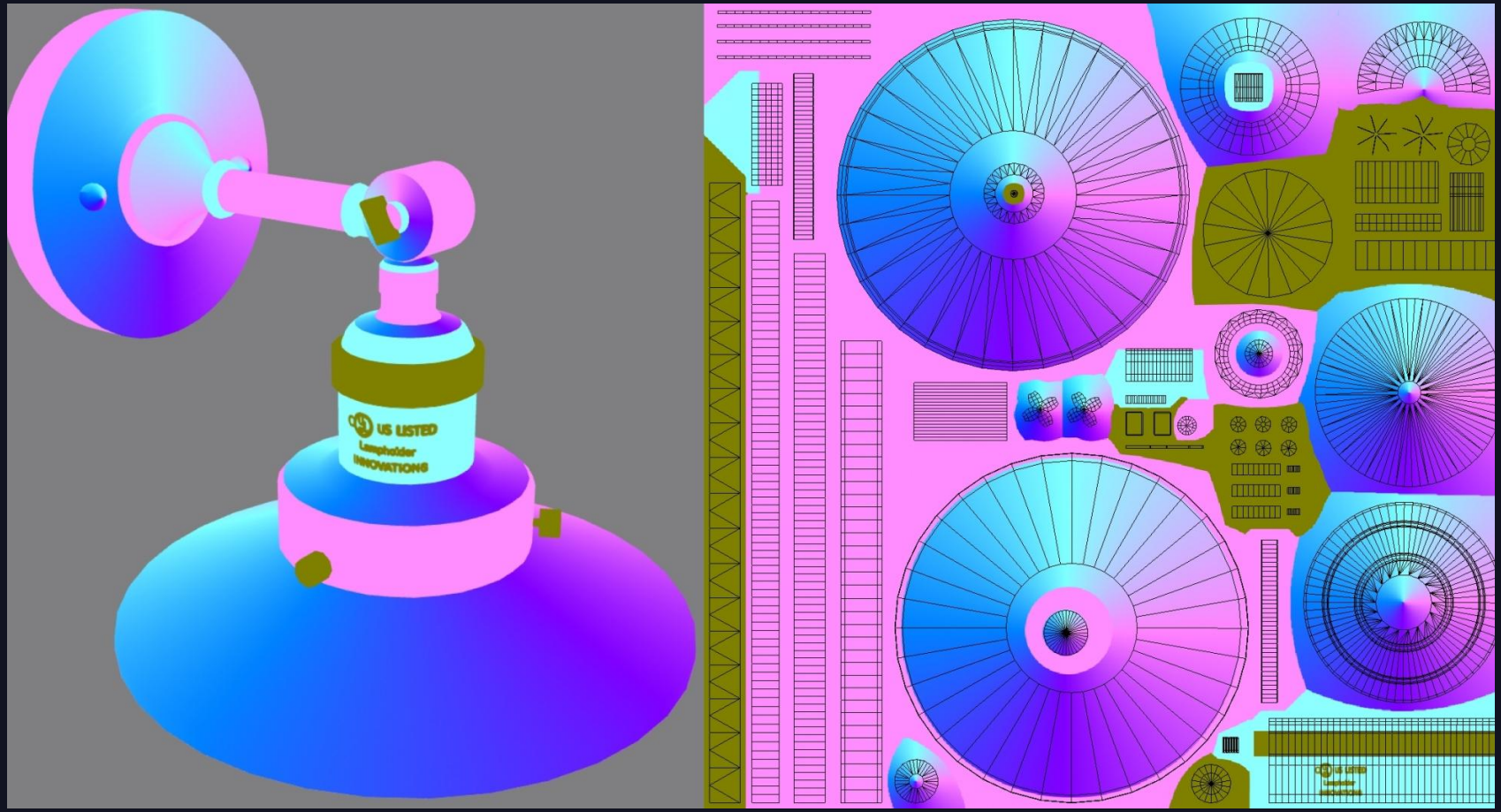


w/out red channel | w/out green channel | w/out blue channel

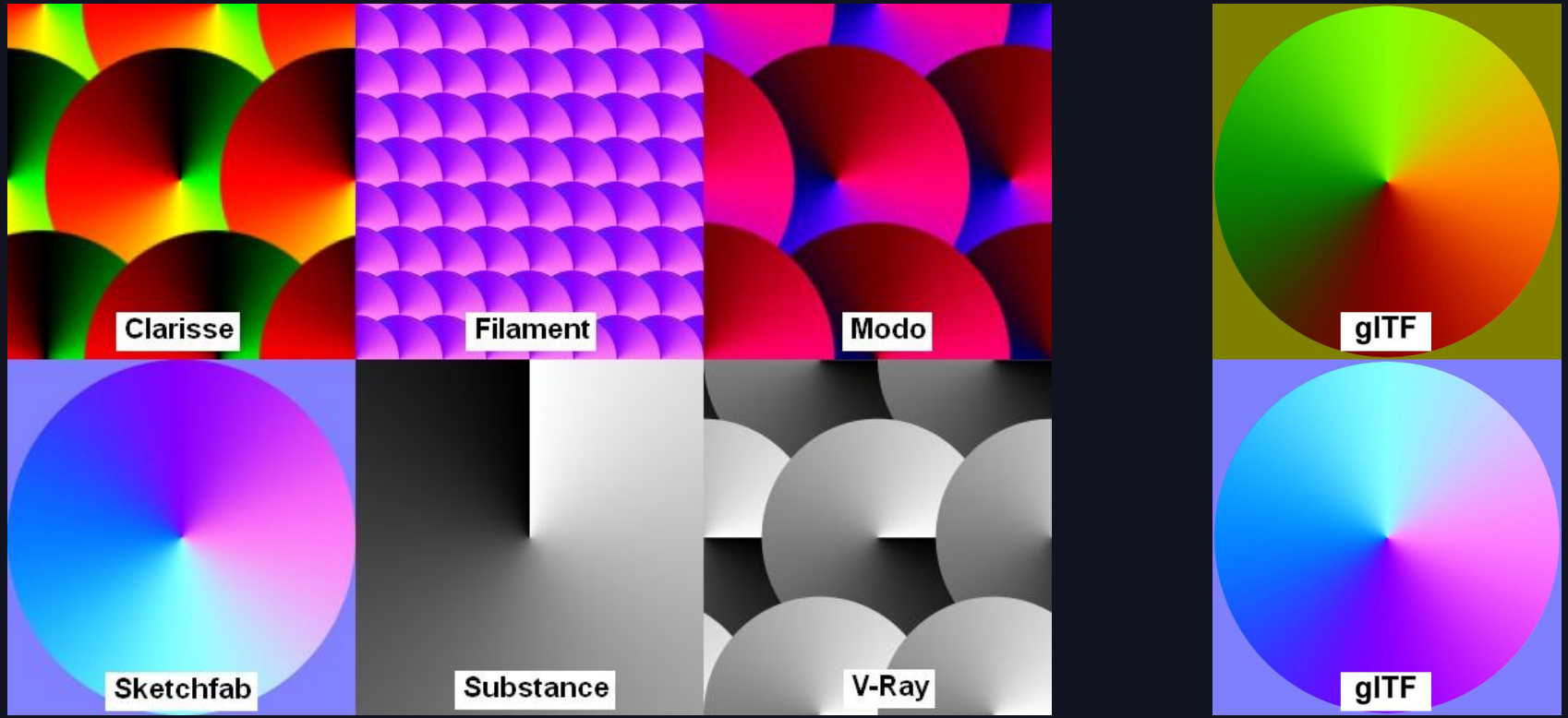
Anisotropy Texture - Radial Directions



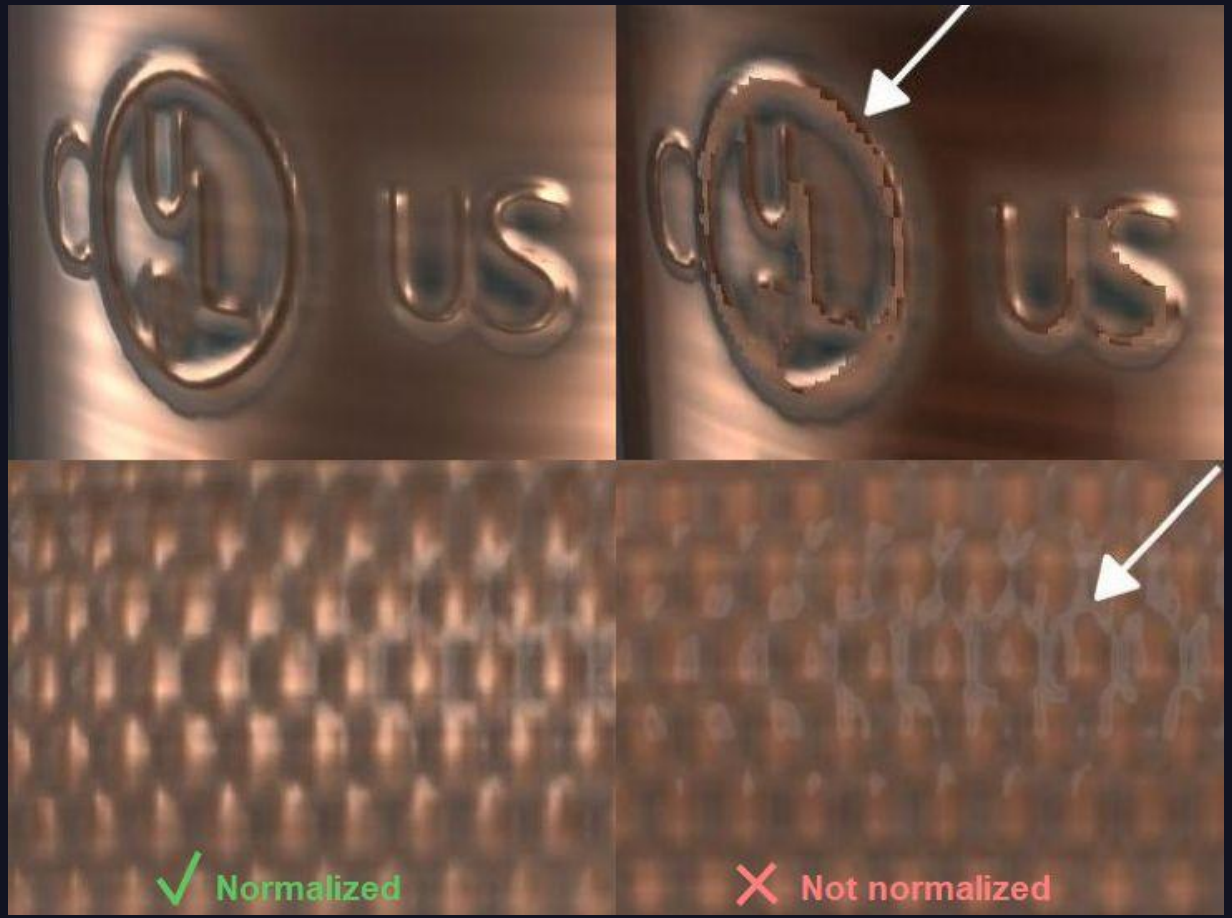
Anisotropy Texture - UV Directions



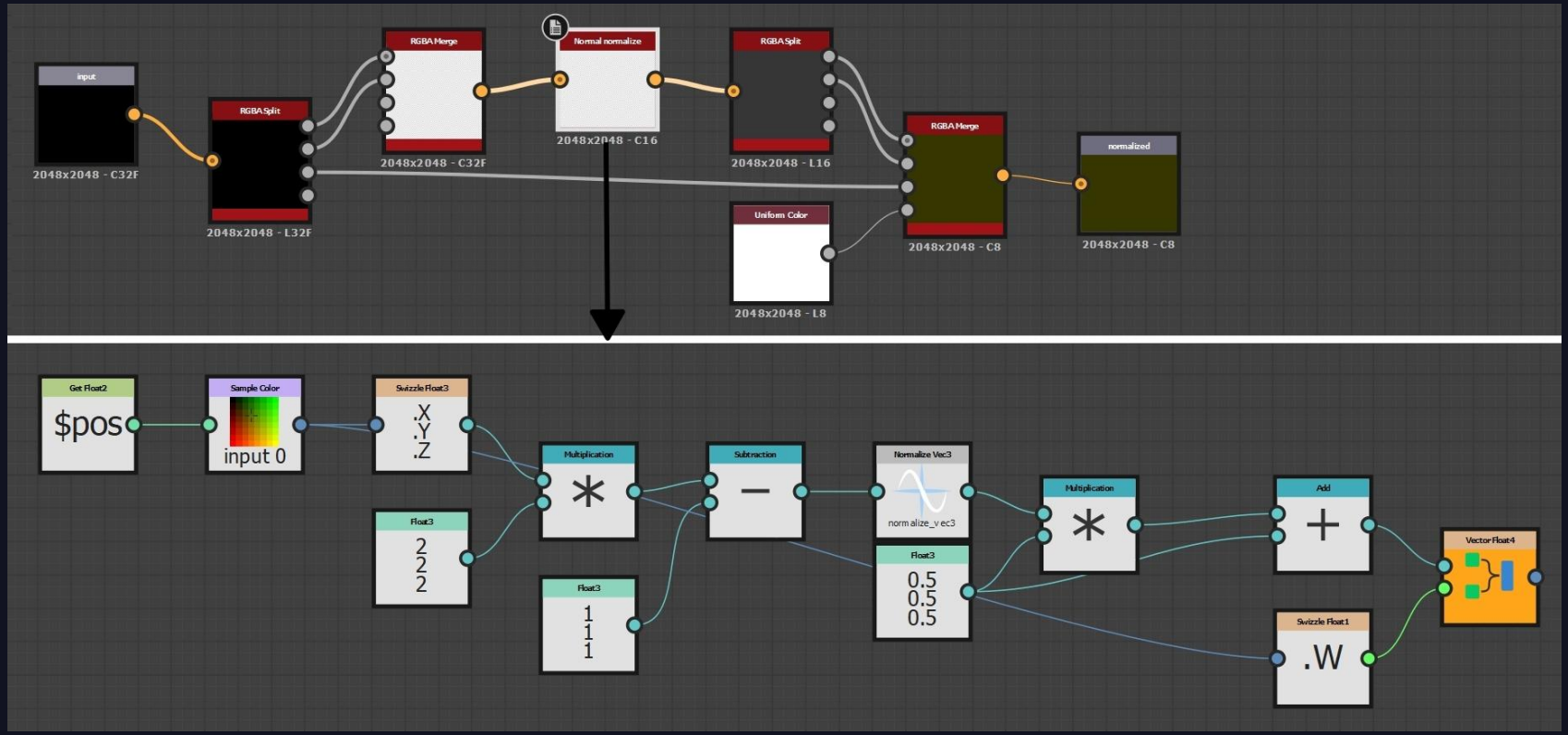
Anisotropy Texture - Compared to Other Renderers



Anisotropy Texture - Normalized vs. Not

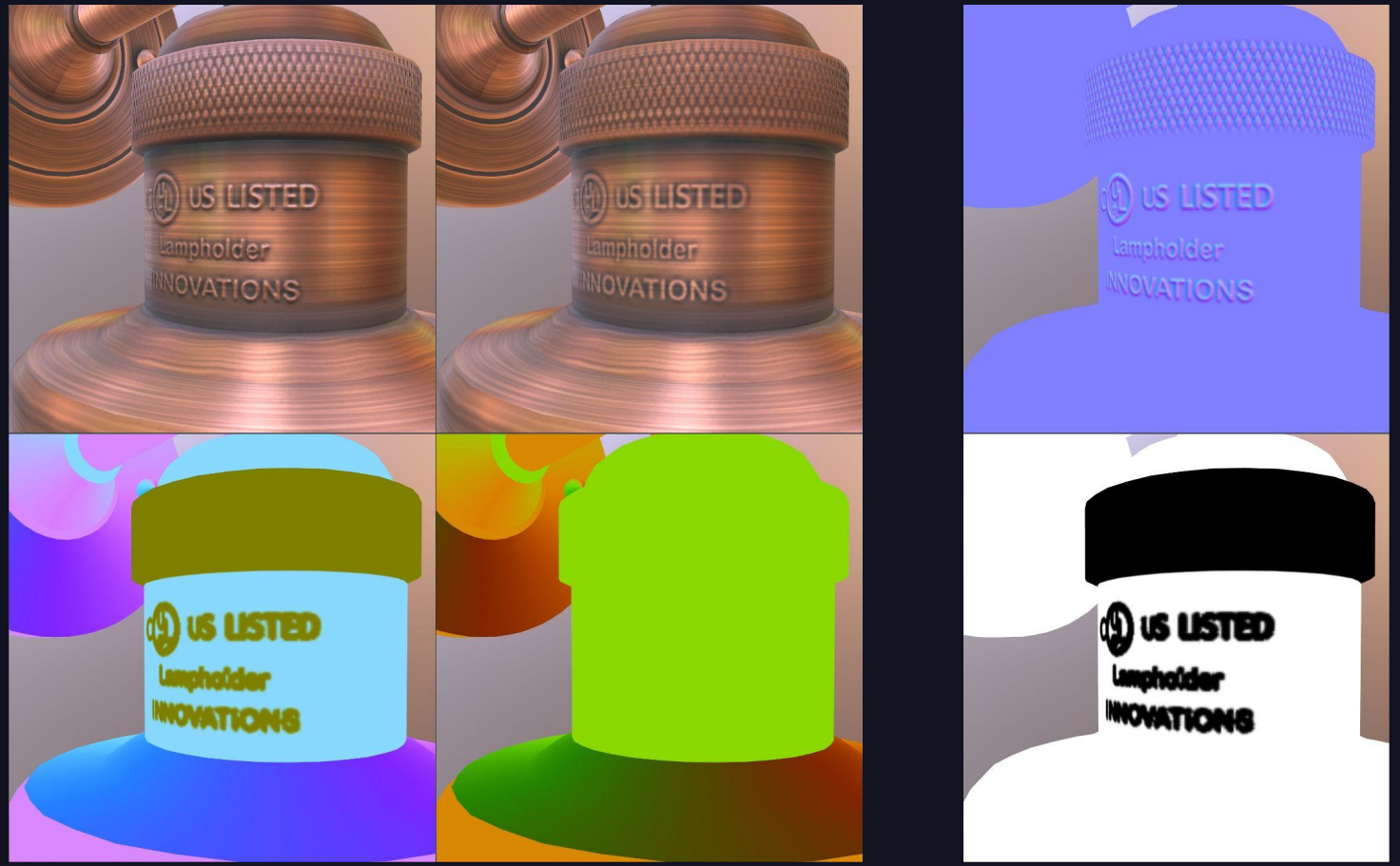


Anisotropy Texture - Normalize in Substance3D Designer



https://github.com/KhronosGroup/glTF-Sample-Assets/blob/main/Models/AnisotropyBarnLamp/screenshot/Substance_NormalizeRG.zip
(https://shorturl.at/lwSX5)

Normal Bump - Masking



Links

Game portfolio: ericchadwick.com

Event Page for Video and Slides

glTF Iridescence

- IridescenceAbalone glTF sample asset
- KHR_materials_iridescence specification
- BabylonJS Exporters for 3ds Max, Blender, Cinema 4D, Maya, etc.
- Blender glTF Exporter Blender Manual
- Blender BSDF v2 Blender Projects
- Visual Studio Code and Cesium glTF Tools
- IridescenceMetallicSpheres glTF sample asset
- IridescenceDielectricSpheres glTF sample asset

glTF Anisotropy

- AnisotropyBarnLamp glTF sample asset
- KHR_materials_anisotropy specification
- 3ds Max glTF Exporter help

Bonus! Adding Material Extensions to glTF Models

A recording of this presentation and the slides will be available on the Khronos Group website.

www.khronos.org/events

For more information on glTF and links to online resources, please visit

www.khronos.org/gltf

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