

Rendering Jewelry

October 5, 2017



Before we Begin...

- This will be recorded
- Slideshow PDF will be available
- KSPs will be available
- Computer: Dual Intel Xeon CPU E5-2630 v3 (8 Cores, 16 Threads, 2.40 GHz), 32 Threads in total, 32 GB RAM, Windows 10 Pro
- Performance: 185 FPS (camera scene)
- If you have questions...
- **Pro** features will be called out



Topics

- **Anatomy of a jewelry shot**
- **Model best practices**
- **Material best practices**
- **Lighting best practices**
- **Camera best practices**
- **Post-processing in Photoshop**
- **Hands on: from import to finish**
- **Q & A**



Anatomy of a jewelry shot

Jewelry examples

- Harry Winston
- Cartier
- Van Cleef & Arpels
- Buccellati
- Tiffany & Co.
- Graff
- Piaget
- Bvlgari
- Mikimoto
- Chopard



Image: Piaget



Image: Tiffany & Co.

Different and unique styles

- Different and unique styles
 - Each brand has a unique style
 - Soft vs. hard reflections
 - Natural vs. idealized
 - There is no “one look” for jewelry
 - Jewelry = emotion
 - The emotion dictates the style



Image: Buccellati



Image: Van Cleef & Arpels

Trinity of model, materials and lighting (+ camera)

- **Model, materials and lighting are equally important**

Model + Materials + Lighting

=

Rendering

Model best practices

Well-prepared model = best foundation

- **Clearances for gemstones**
- **Holes in shank for gemstone setting**
- **Edge blends on metal for smooth appearance**

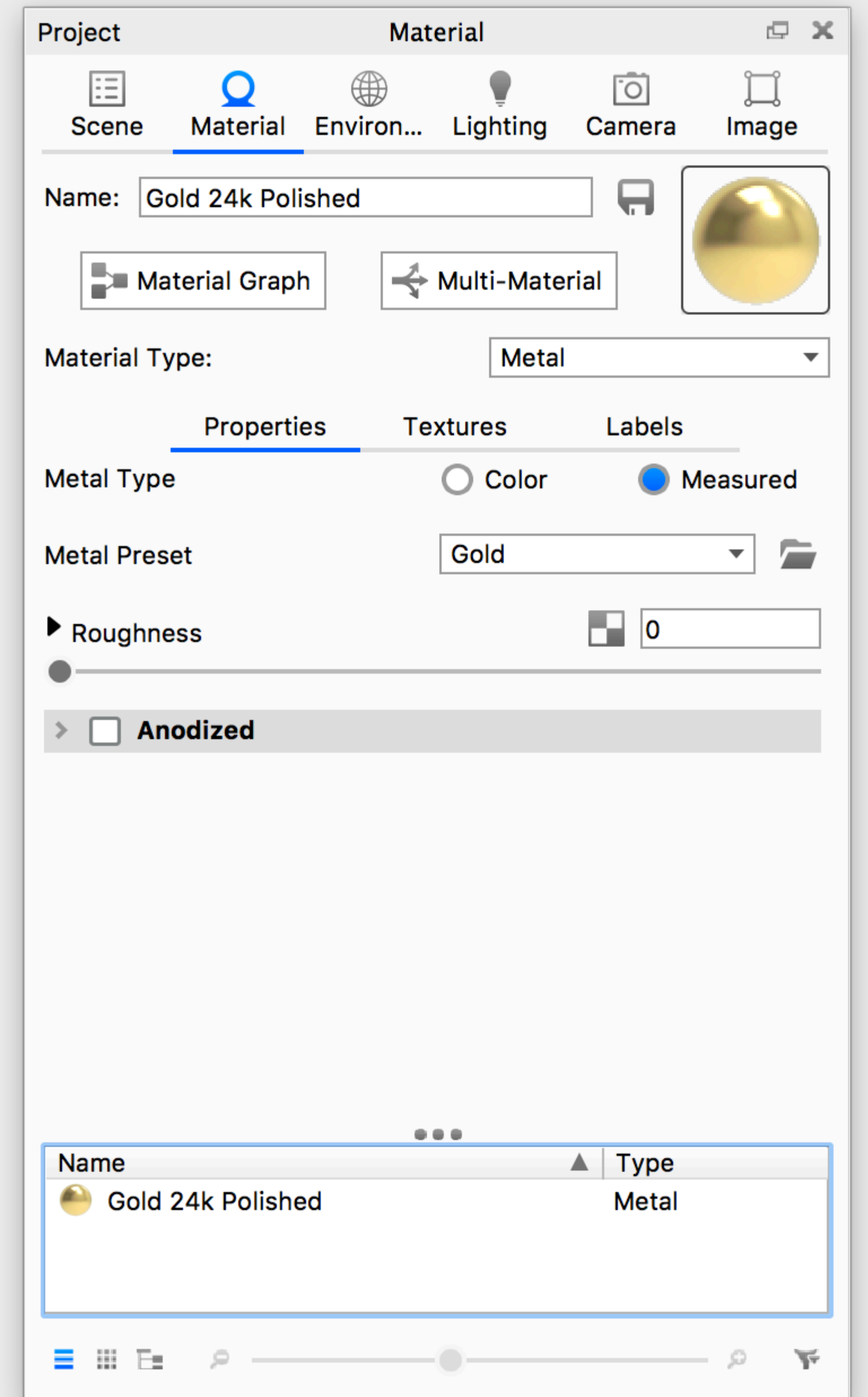
KeyShot features to improve model workflow

- Not always practical to prepare model
- KeyShot has features to simulate properly modeled geometry
 - Rounded Edges (Part property)
 - Simulate blended edges
 - Ignore Intersecting Geometry (Gem material)
 - Render gems as if there is proper clearance

Material best practices

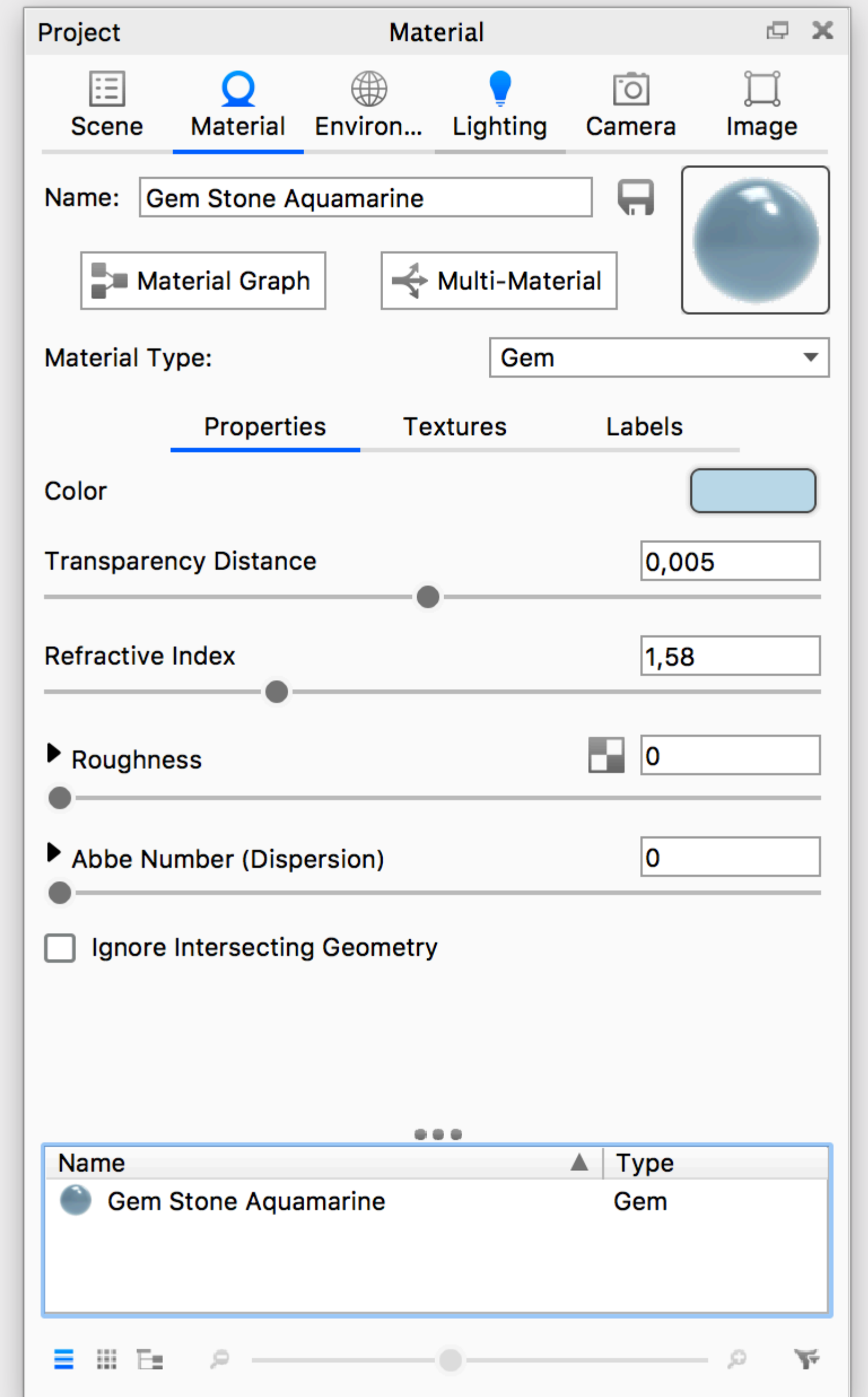
Accurate Metals

- “Metal > Precious” in KeyShot Library
- Measured Metal Type
 - Presets for common metals
 - Most accurate reflection and color behavior



Accurate Gemstones

- “Gem Stones” in KeyShot Library
 - Correct color, refractive index and Abbe number



Optical properties of Gem material

- **Color and Transparency Distance**
 - **White for diamond**
- **Refractive Index**
 - **How much light is bent (refracted) when entering a material**
 - **2.418 for diamond**
- **Abbe Number**
 - **A measure for a material's dispersion**
 - **Dispersion: separation of white light into colors**
 - **High Abbe number = low dispersion = less colors**
 - **55 for diamond**
 - **note: 30 for “Gem Stone Diamond” in Library**

refractiveindex.info

E.g. Shelf: 3D / Book: Crystals

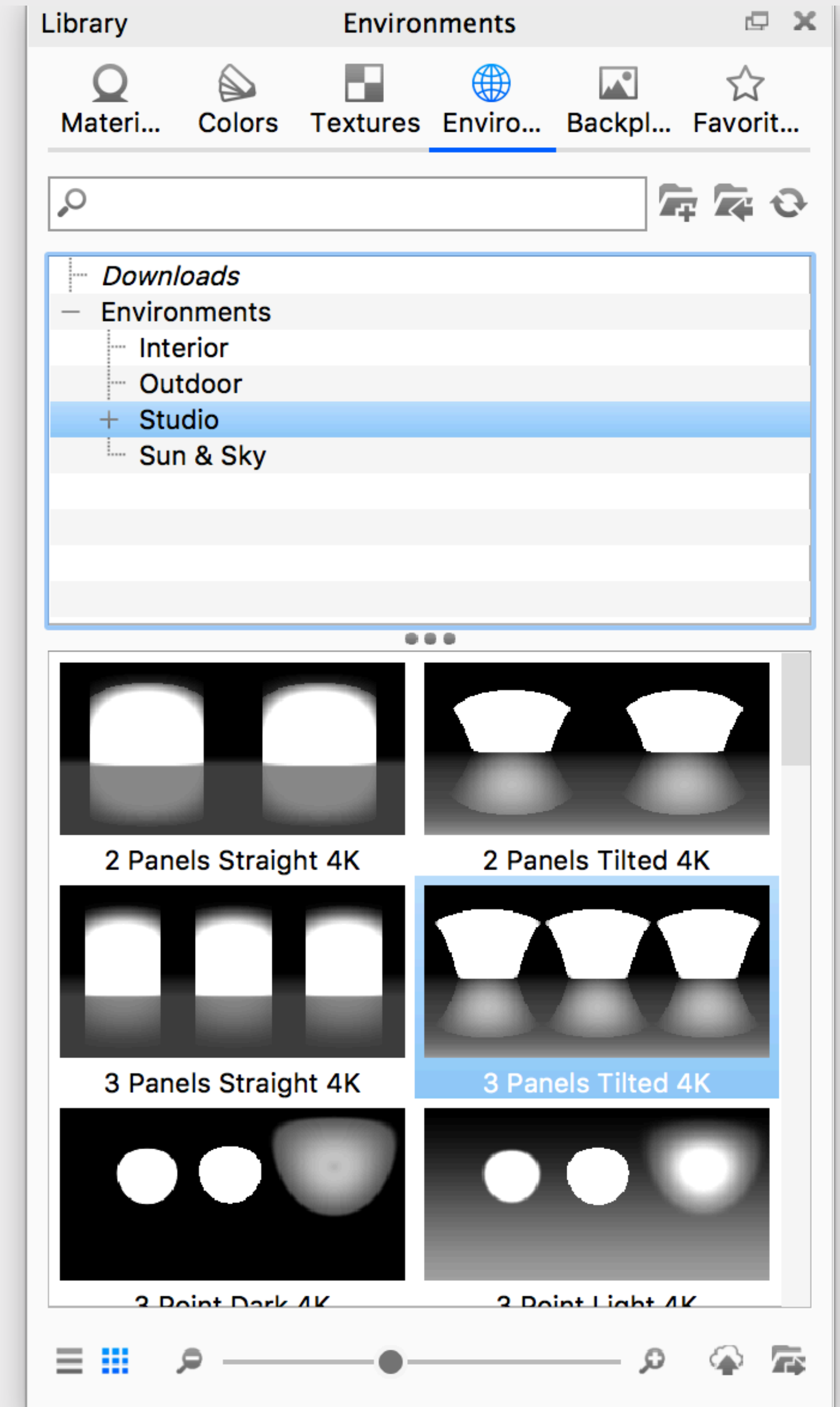
Reality vs. desirability

- **What looks best to you is not necessarily the most realistic**

Lighting best practices

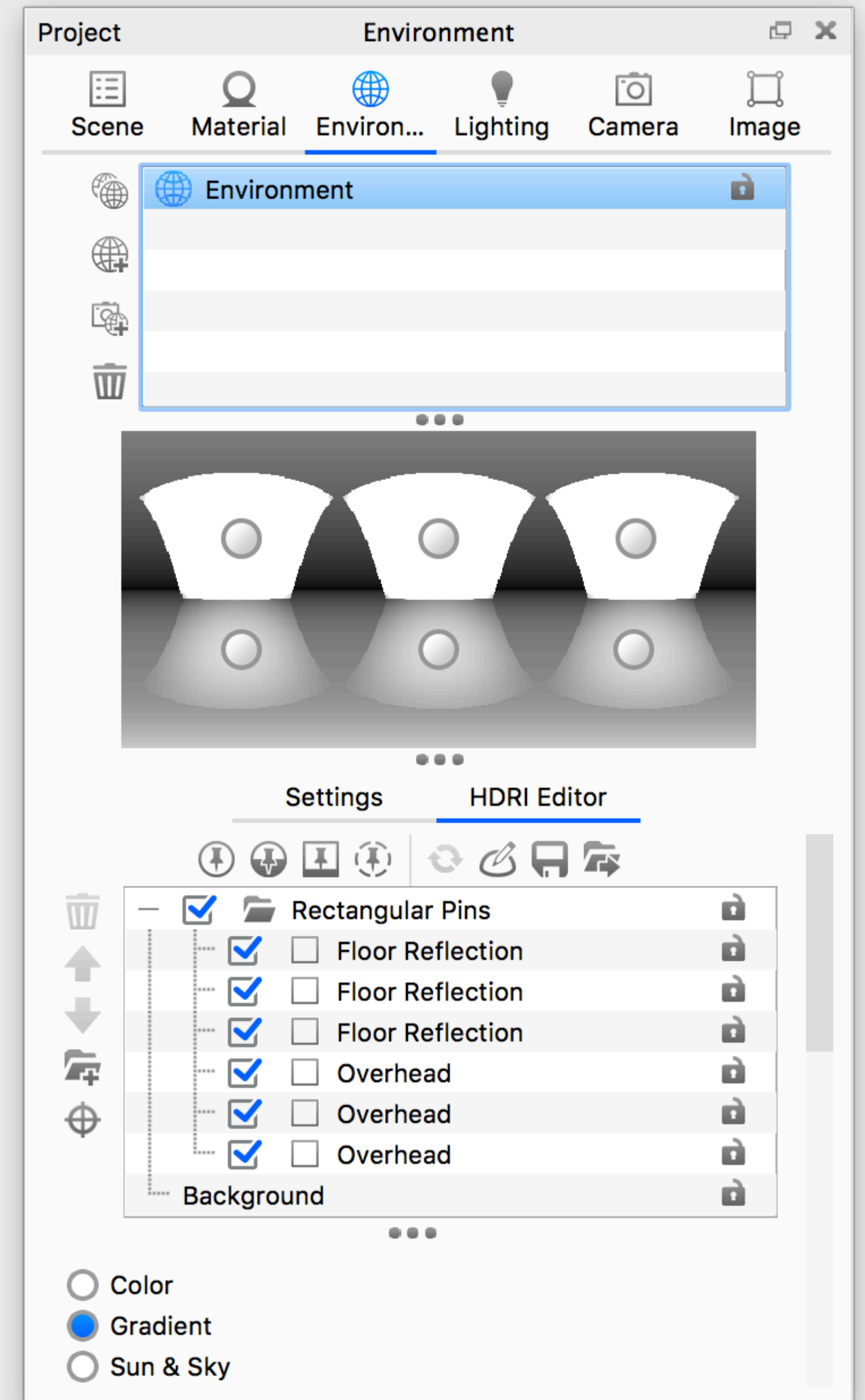
Studio lighting

- Studio Environments in KeyShot Library
- Avoid HDRIs with color
 - Desaturate and blur interior HDRIs (HDRI Editor (**PRO**))



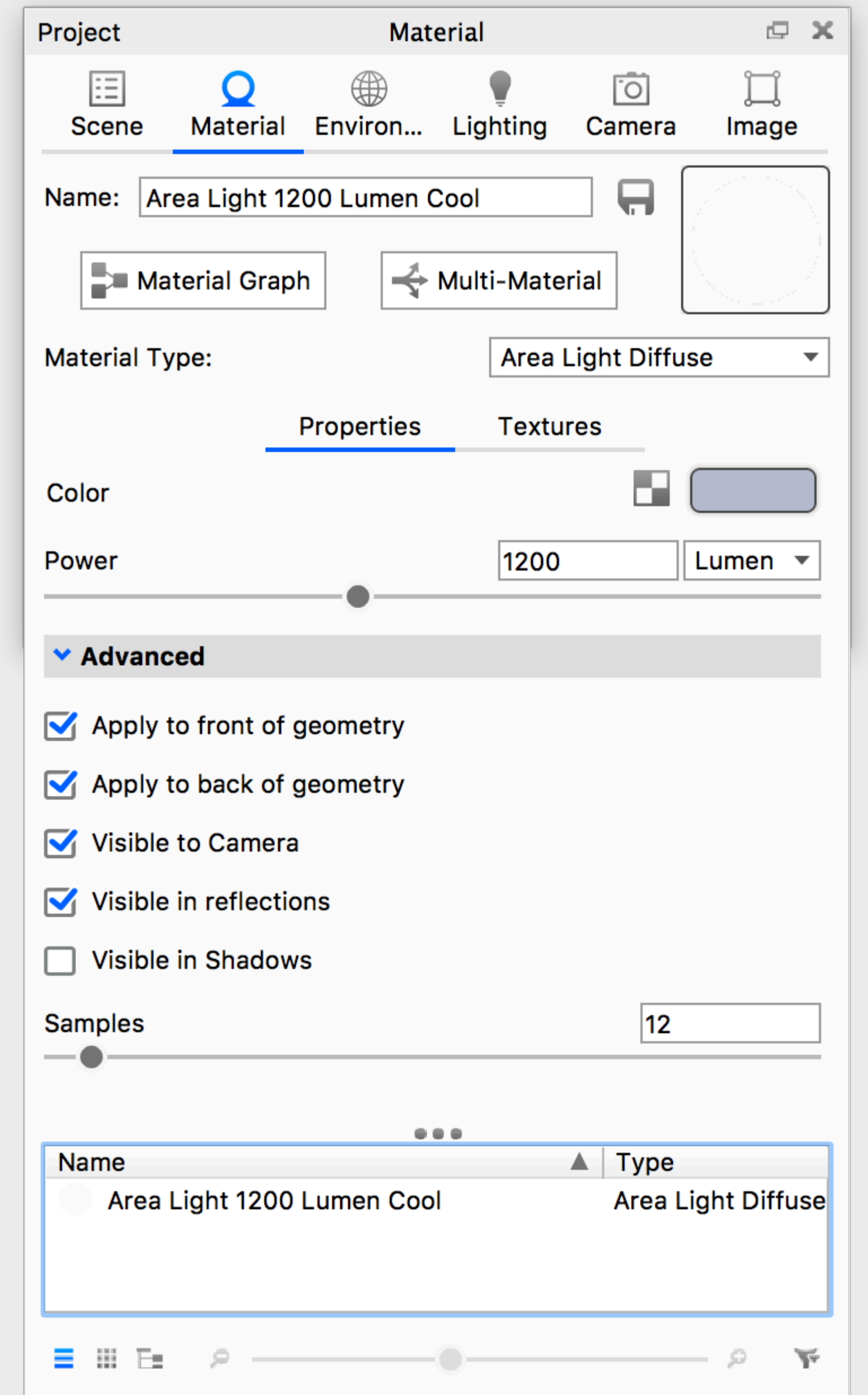
Custom HDRI lighting

- HDRI Editor (**PRO**)
 - Pins
 - Set Highlight
- White background
 - Most flexible in post-processing



Physical lights to enhance shadows

- Point Light
- IES Light
- Area Light



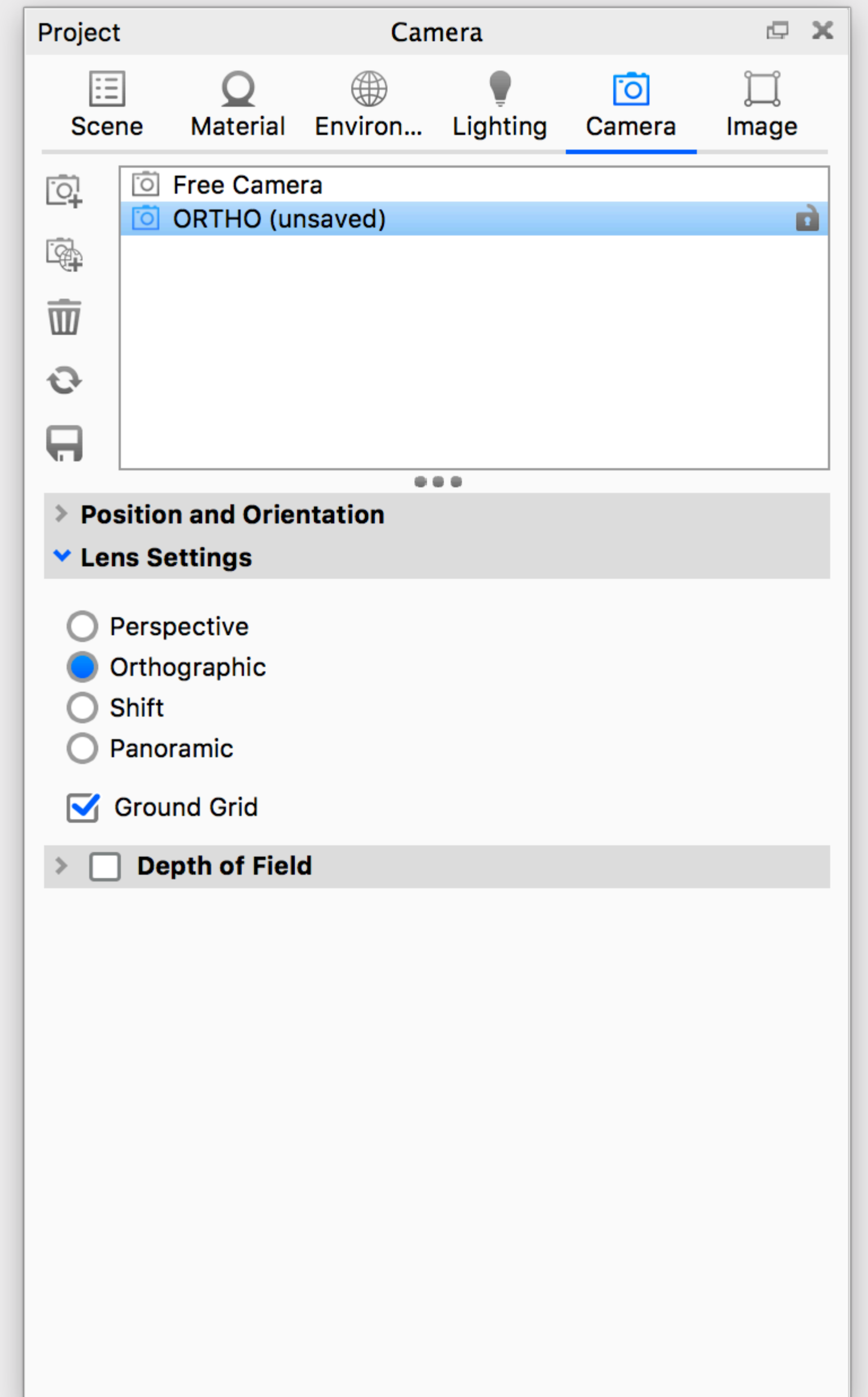
Caustics

- **Light focused by reflective and refractive surfaces**
- **Enabled by default for Jewelry Lighting Preset**
- **Typically only affects ground plane for jewelry**
- **Can help to accentuate the refraction and dispersion of gems**
- **Rendering is faster when disabled**

Camera best practices

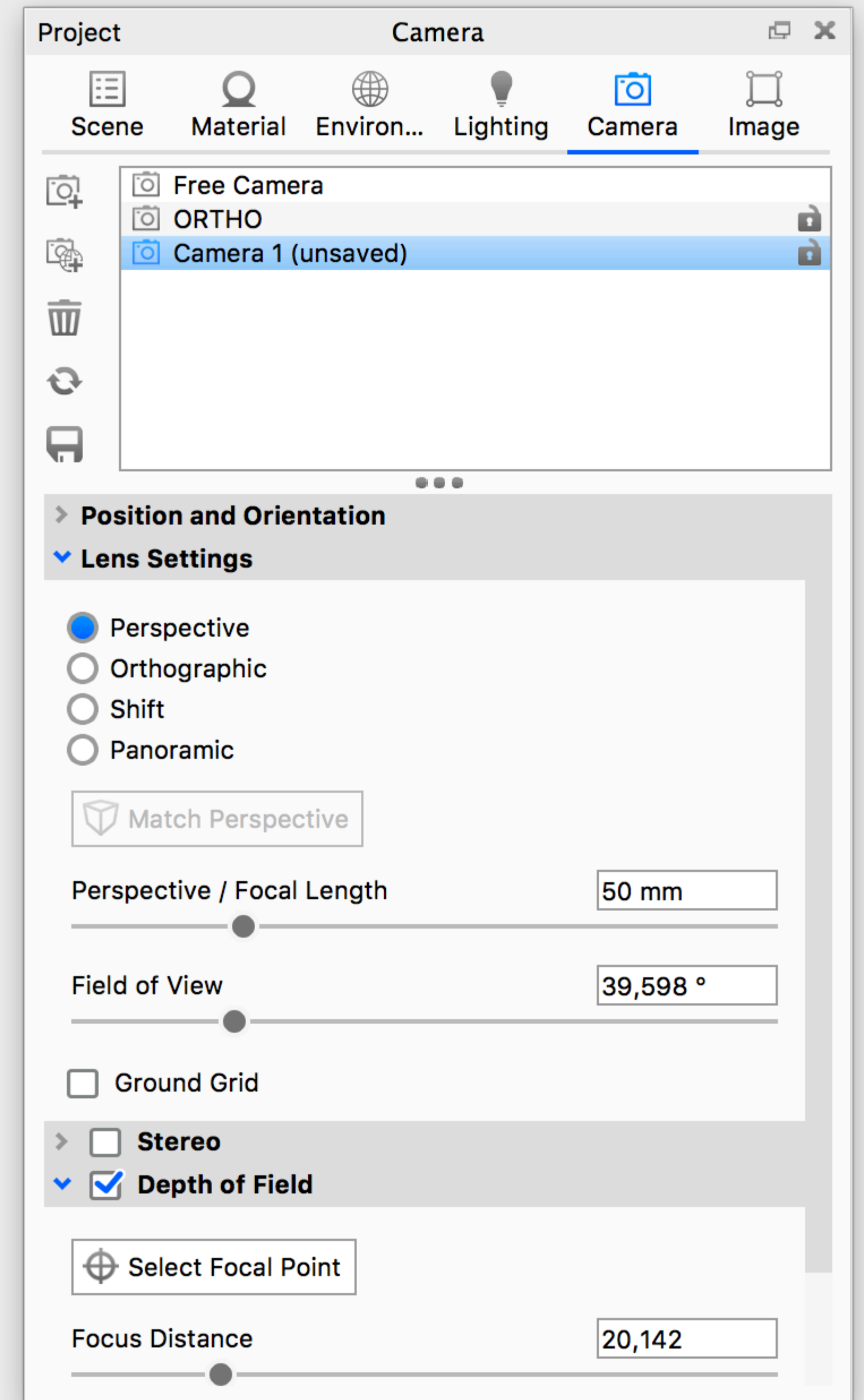
Orthographic lens

- Useful when positioning geometry
- Ground Grid for alignment



Perspective lens

- Simulate macro photography (close-up shots)
- Focal Length for jewelry is typically 50 to 100 mm

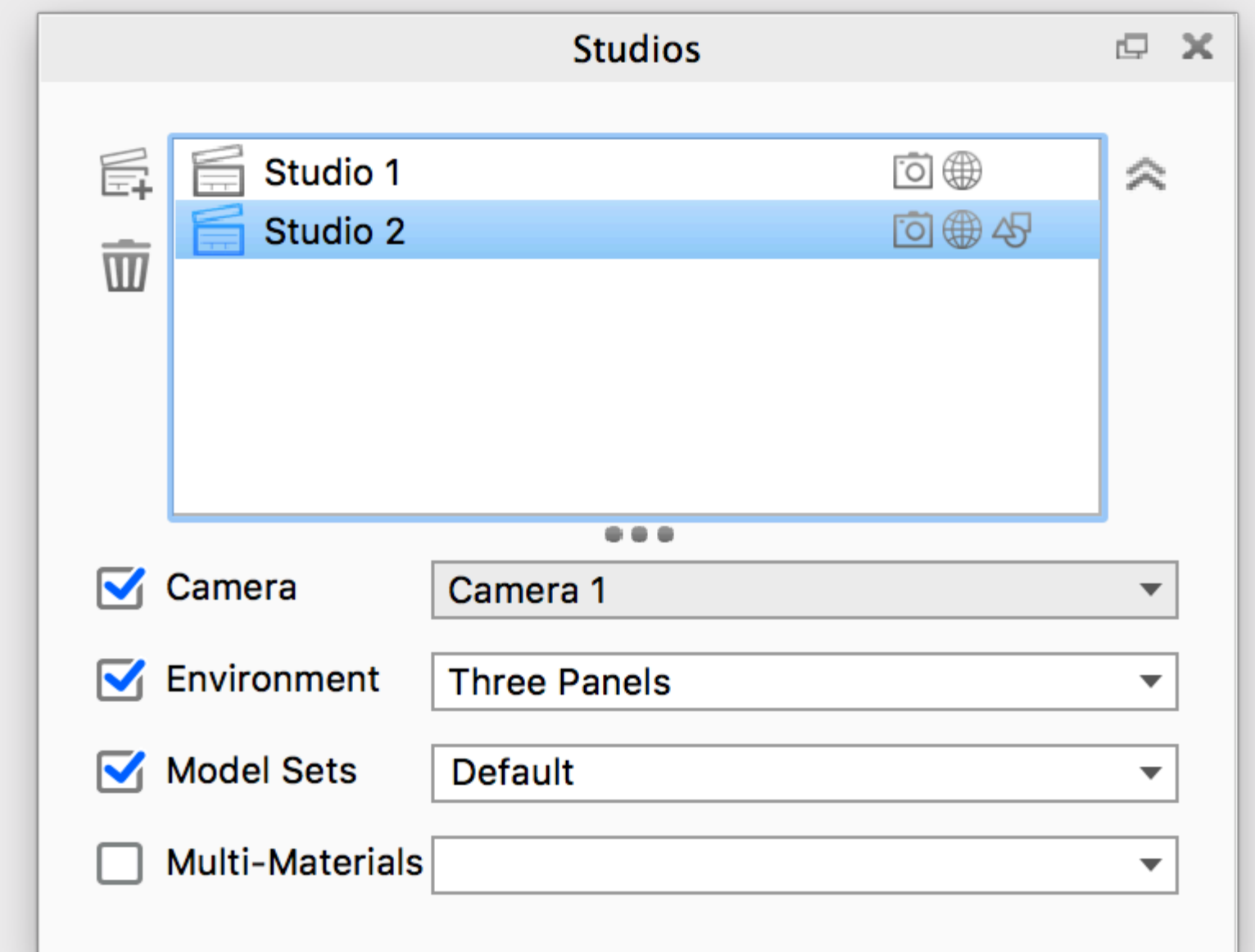


Depth of Field (DOF)

- **Focus range or “sharpness range”**
 - **Deep focus = large DOF = large area in focus**
 - **Shallow focus = small DOF = small area in focus**
- **F-stop to control focus range**
 - **Analogy to real-life camera**
 - **Larger F-stop = smaller aperture = deeper focus**
 - **Often a very high F-stop is required for close-ups to get an acceptable sharpness**
 - **KeyShot can achieve a higher F-stop than a real camera**

Studios (**PRO**)

- Tie together Model Set(s), Camera, Environment and Multi-Material(s)
- Custom Environment for each Camera
 - Studios replace Viewsets from KeyShot 6
- Very powerful productivity tool
 - e.g. Studio for Occlusion Ground Shadows
 - Shared camera with “beauty” Studio
 - More flexible in post-processing



Post-processing in Photoshop

Render Layers and Passes (**PRO**)

- **Render Layers**
 - **Separate gems and metal**
 - **Rendered as transparent images**
- **Render Passes**
 - **Reflection**
 - **Refraction**
 - **Shadow**
 - **Ambient Occlusion**
 - **Caustics**
- **Add to PSD**

32 bit output

- **More flexibility in post-processing**
 - **Colors do not get clamped**
 - **No color detail is lost in blown out areas**
- **Supported formats: EXR, TIFF 32 BIT, PSD 32 BIT**



Hands On

Ring model kindly provided by
Simply Rhino Ltd (UK)



Q & A

