

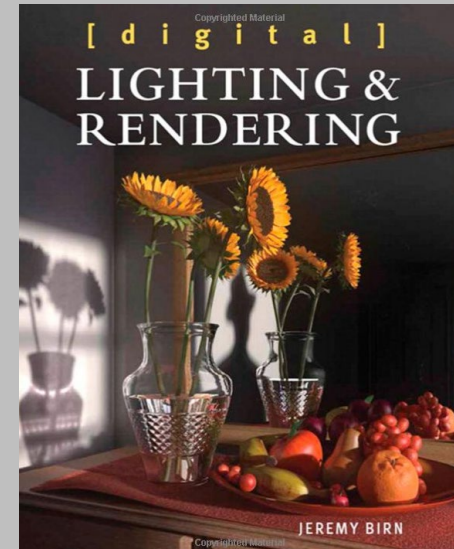
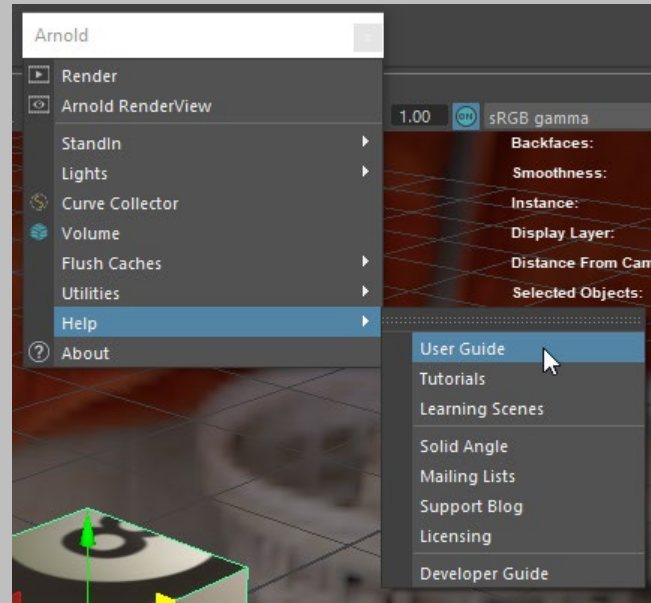
LIGHTING IN ARNOLD

Books and Other Sources of Information

There is a lot of information on real-world lighting for film, TV, photography, and games, and we are gonna look at a lot of that kind of thing. WHY, they asked in panic? Well what if you need to composite a VFX shot into a live-action production? The correct response when asked to do this would not be “I am a CG lighter and don’t understand real cameras”. You DO need to understand real world cameras and we will look at things like DOF, camera aspect ratios, and lenses, and how they apply in Arnold.

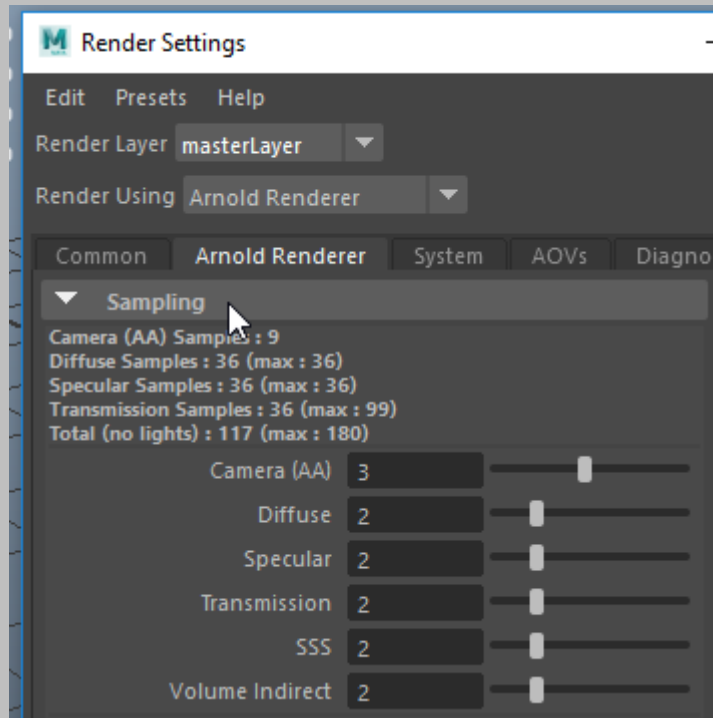
My favorite CG lighting book is (get the 3rd edition)—

The Solid Angle website is the definitive place for all things Arnold (kick.ass), and is easily accessible from Maya (just remember we are using Arnold 5):



Where to Begin?

Most important are the SAMPLING settings--

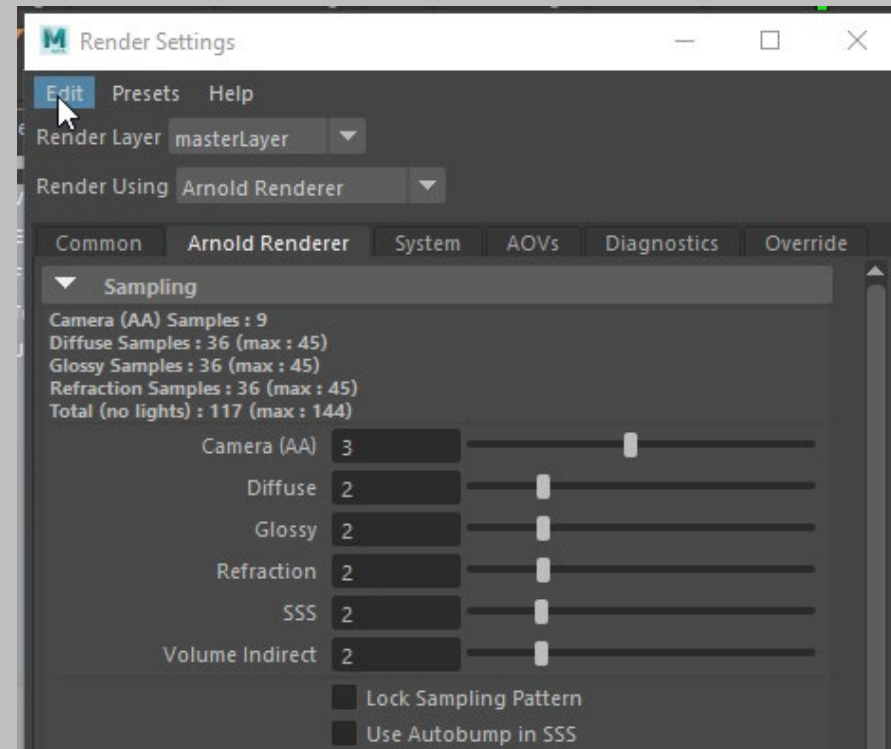
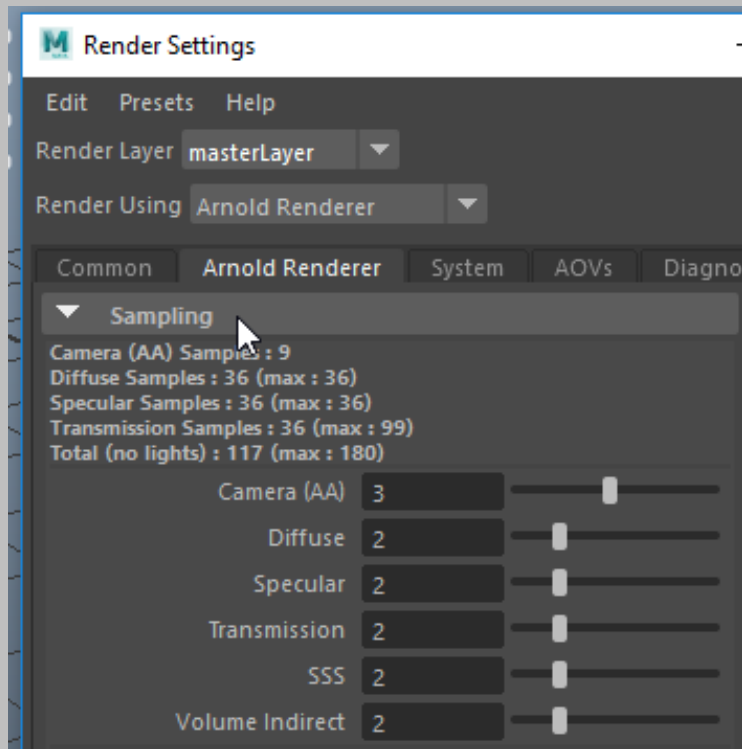


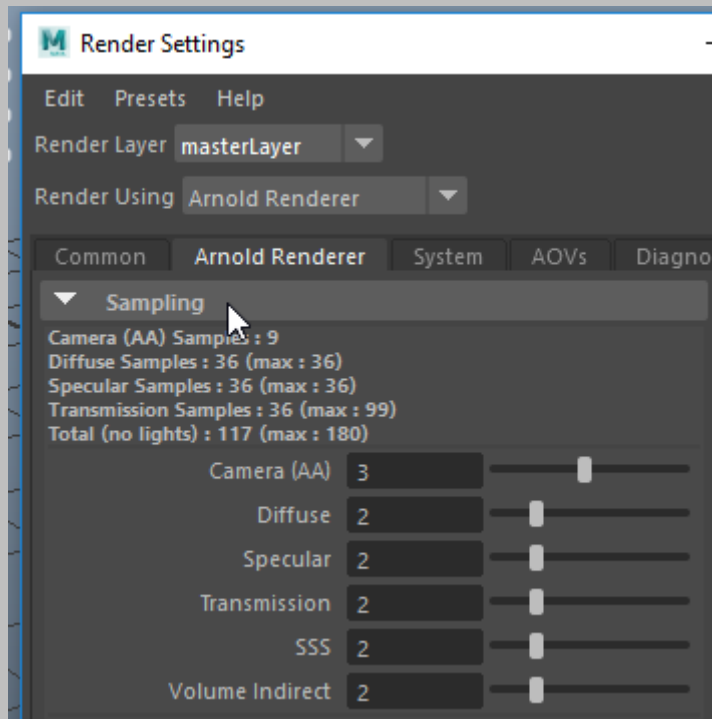
Arnold sends rays from the camera that hits objects, samples are rays to the Power of 2.

AA Camera Samples – this is a multiplier—so if set to 3, actual value is $3 \times 3 = 9$ ALSO, this number is MULTIPLIED by the below values—so for example, diffuse is set to 2, but actual samples are $2 \times 2 = 4$, and $9 \times 4 = 36$, so a grand total of 36

AA Camera samples are for overall quality of the scene and are the only ways to Remove noise in motion blur or depth of field

So what is new in Arnold 5?
Transmission = Refraction
Glossy=Specular





Diffuse samples are indirect light (quality of shadows for example)—this is global illumination

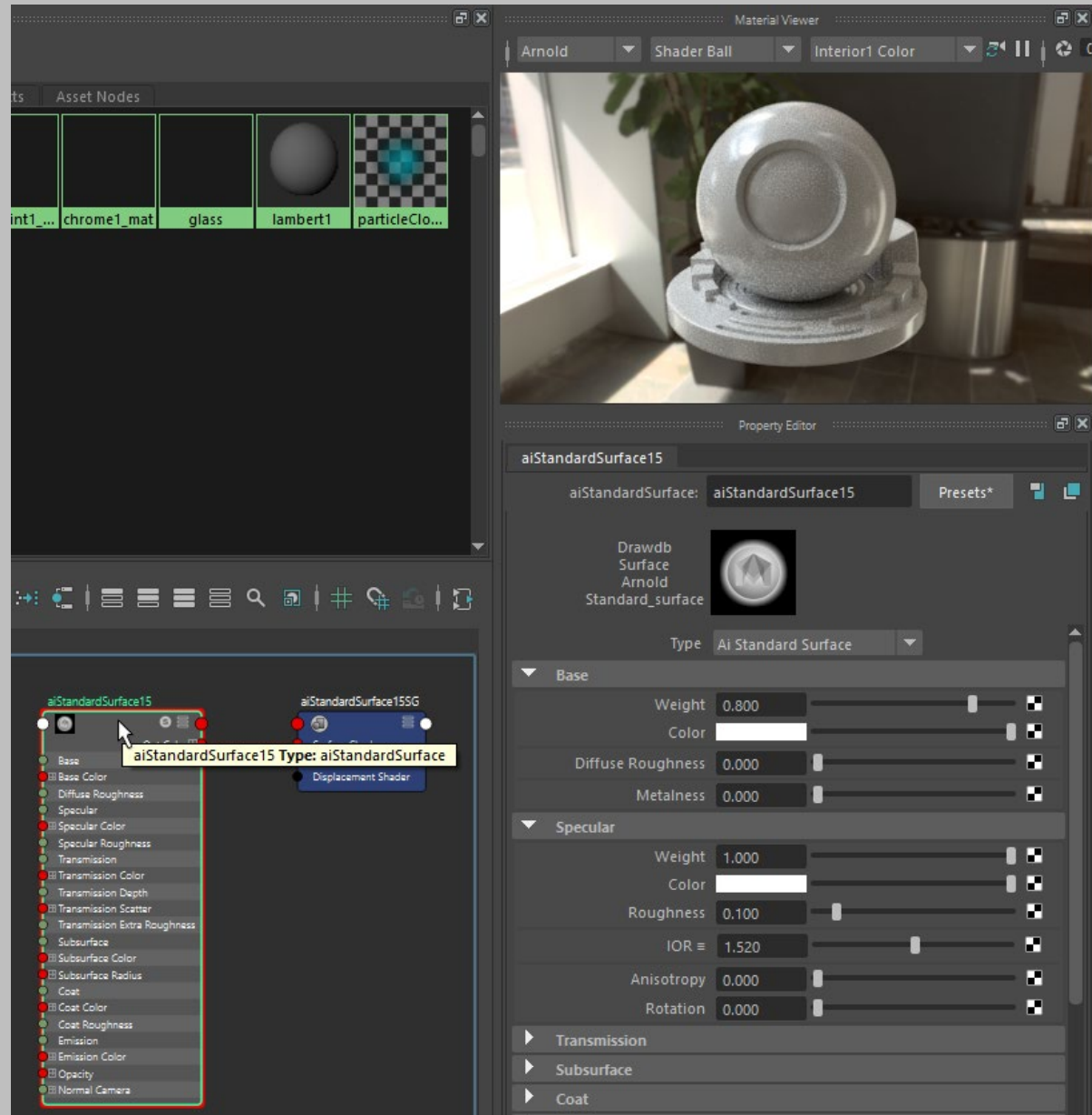
Specular samples control the quality of specular highlights and reflections

Transmission samples control the quality of refractive surfaces such as glass or water

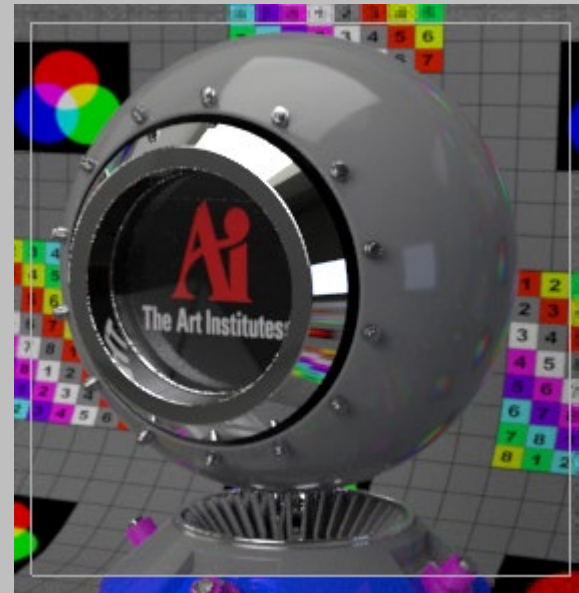
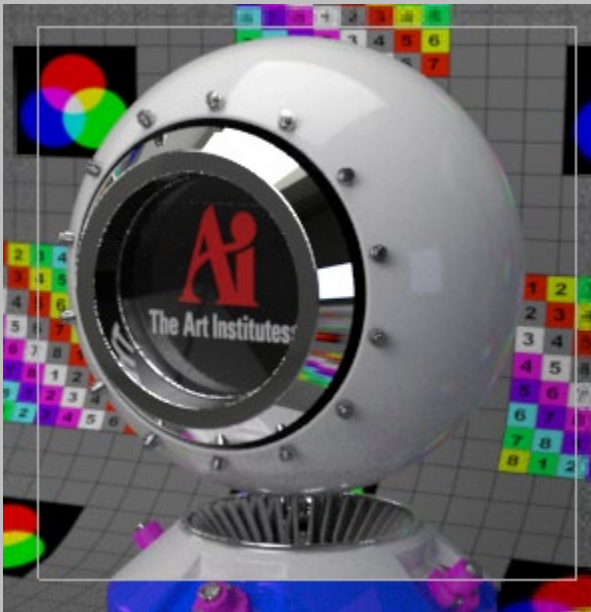
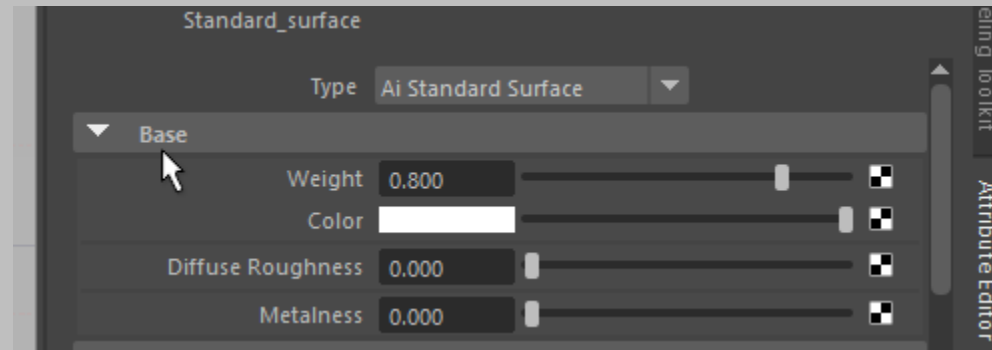
SSS samples control the quality of the sub surface scattering for objects such as skin

Volume Indirect samples control the quality of fog or atmosphere

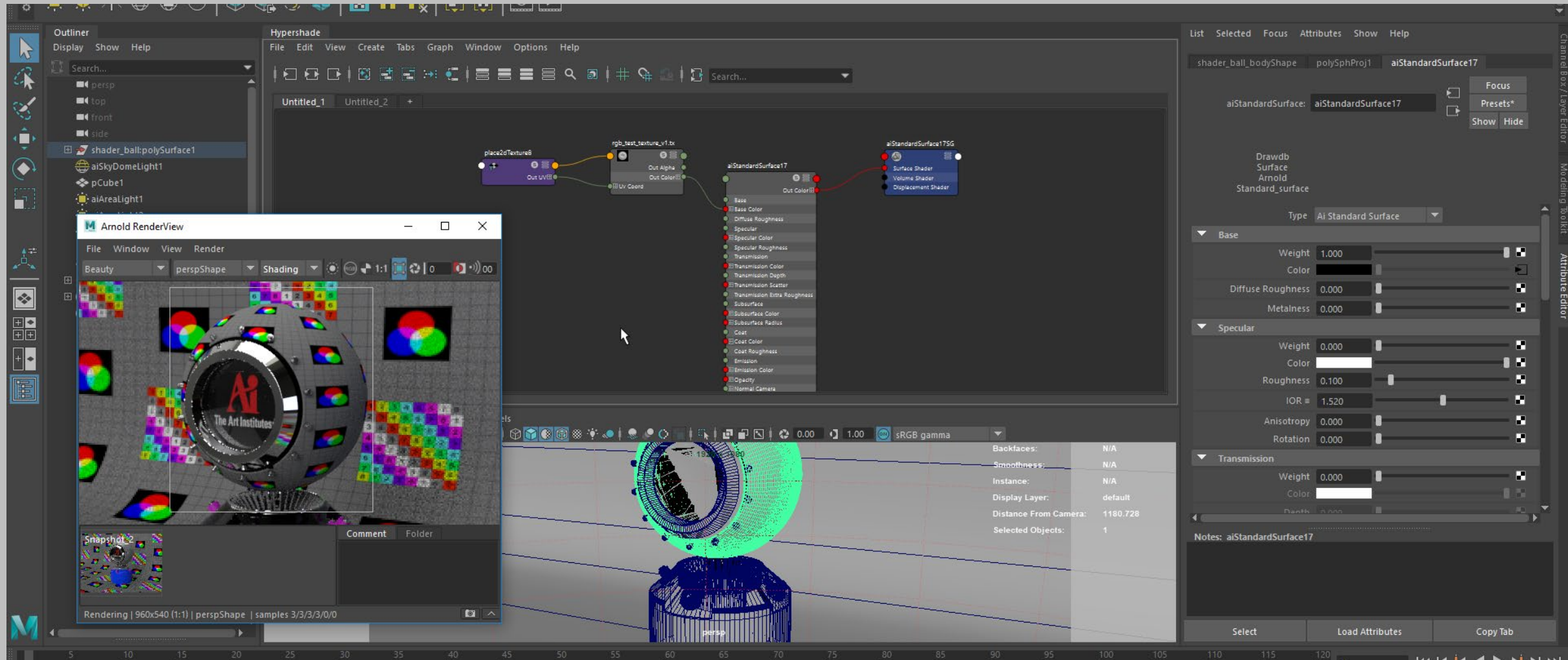
The biggest change in Arnold 5 is to the “uber” material—
The aisd is gone and is now the



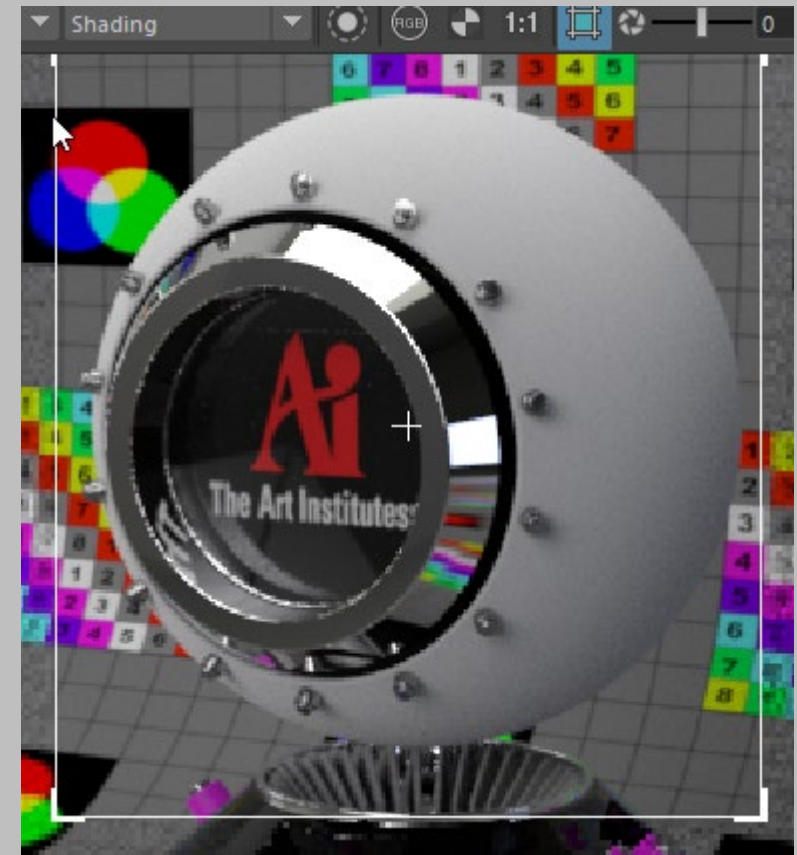
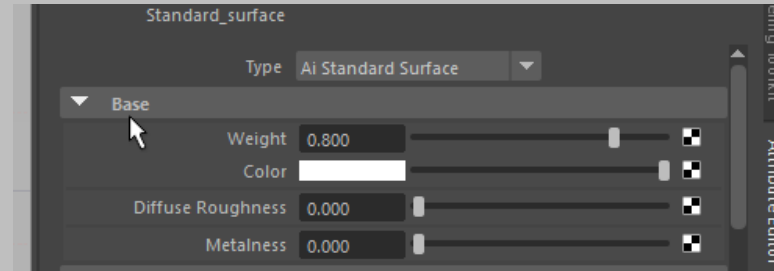
Color is controlled by the Weight, which is basically the brightness of the color



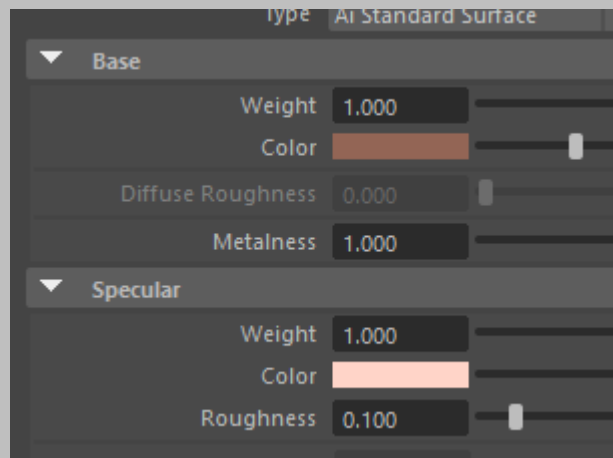
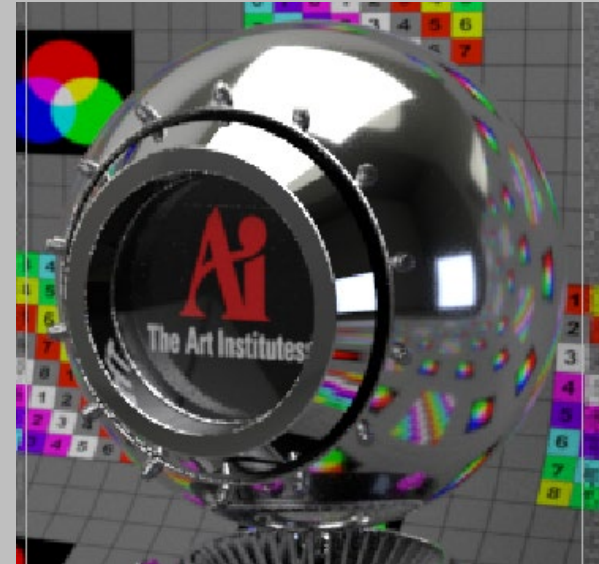
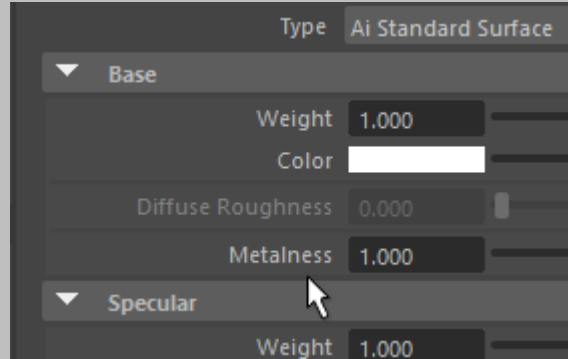
Color maps go in to the color checker—and let's start using the node editor in the hypershade—here is a nice layout using the node editor docked and the Arnold render view as the preview (because both hypershade preview and Arnold render cannot be used at the same time)--



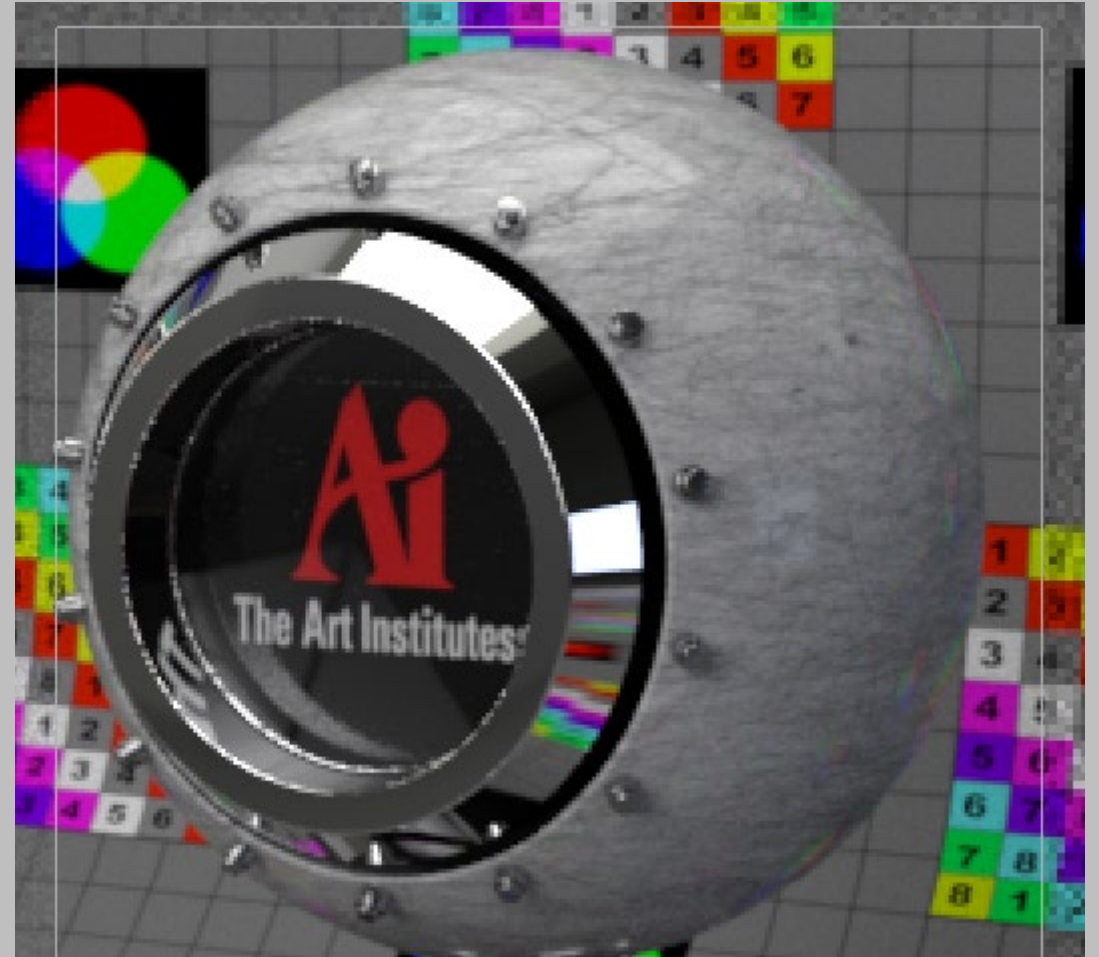
Diffuse roughness determines the graininess/roughness of the surface—you can add a scratches or dirt map
Here to break up the surface shininess...



Metalness is fantastic—set to 1 for a shiny metal—use base and spec color to determine the type of metal,
For example gold or brass...



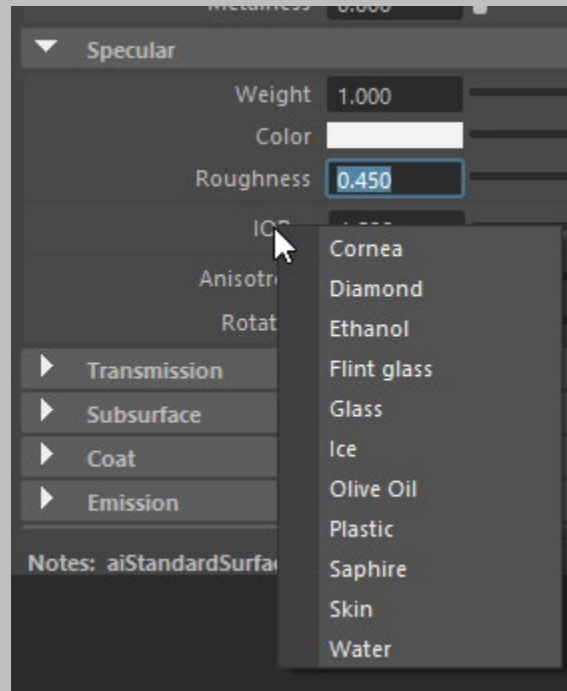
Spec weight and color are obvious—but usually spec looks best when controlled by a map—it is subtle
But works well when paired with a color scratch map for eg -



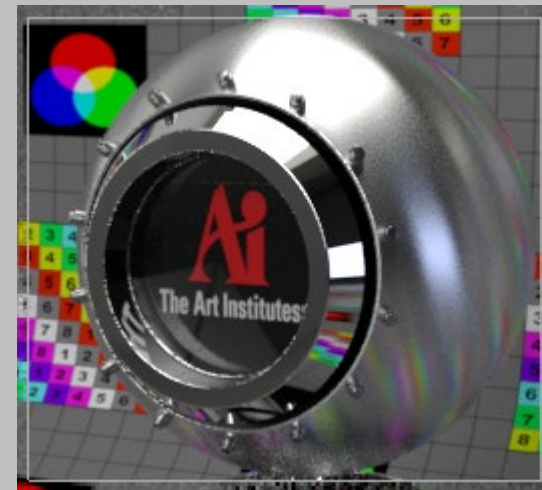
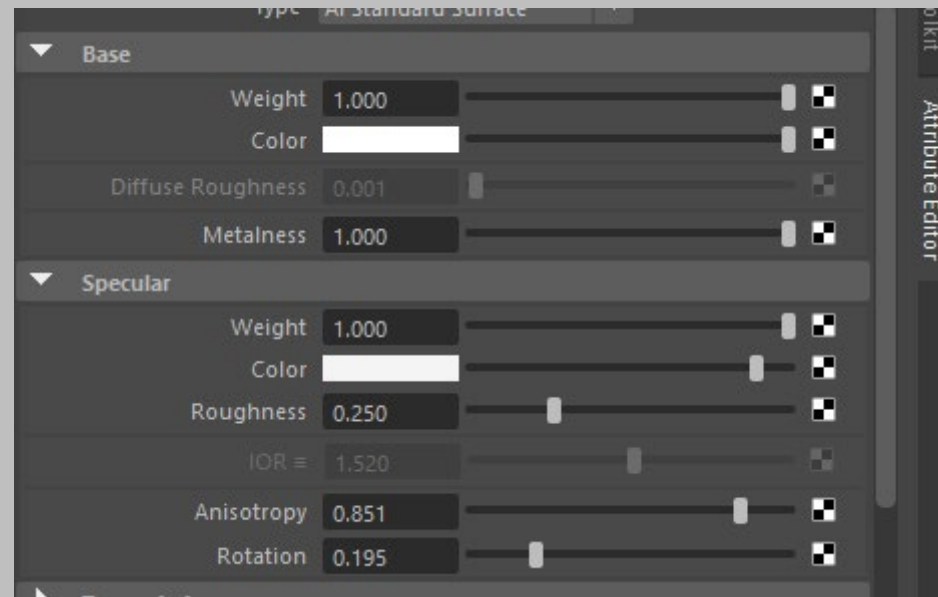
Spec roughness basically blurs your spec highlights--



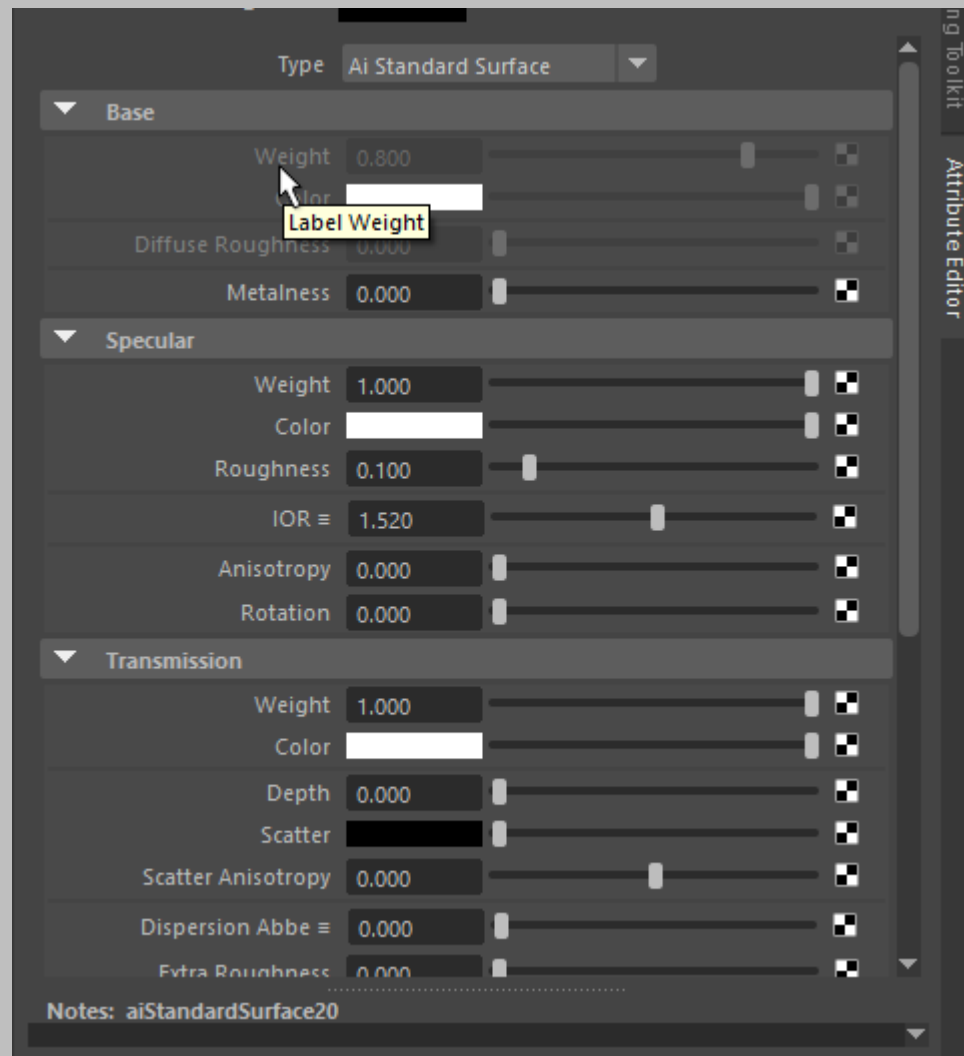
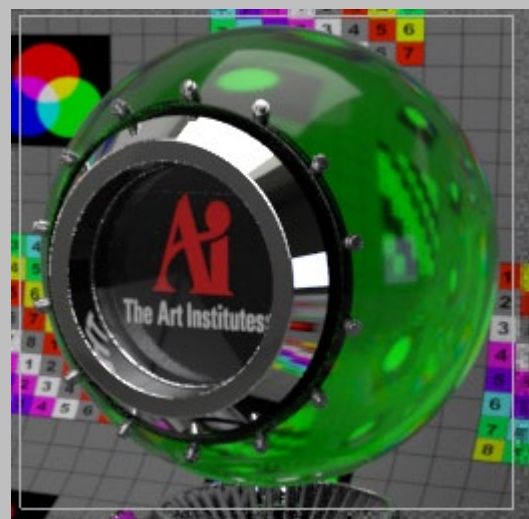
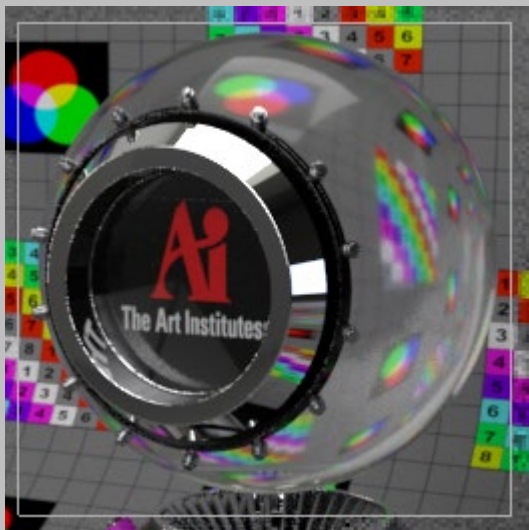
Figuring out the IOR is now much easier—just LMB on the IOR values and suggested numbers will pop up--



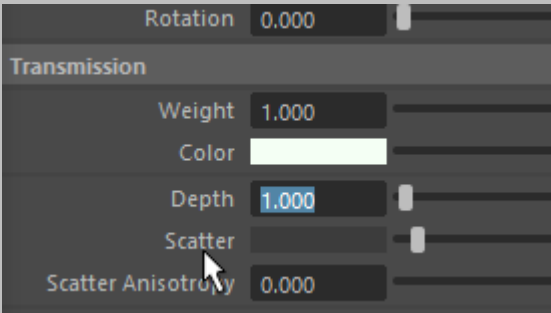
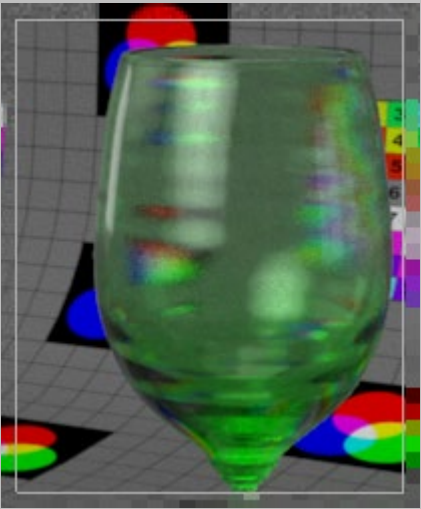
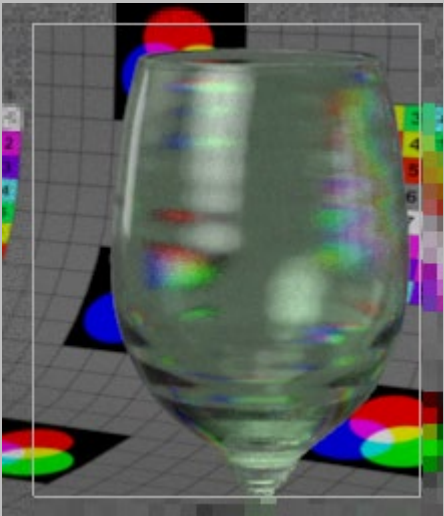
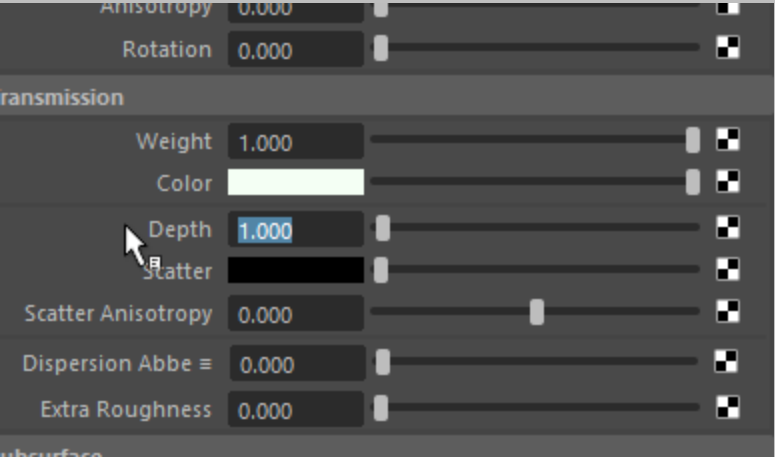
Anisotropy stretches highlights and Rotation rotates highlights--



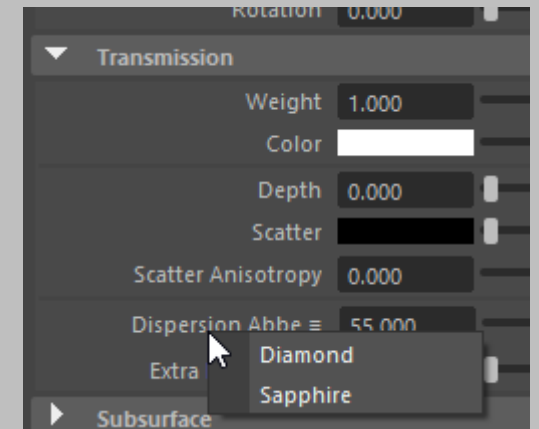
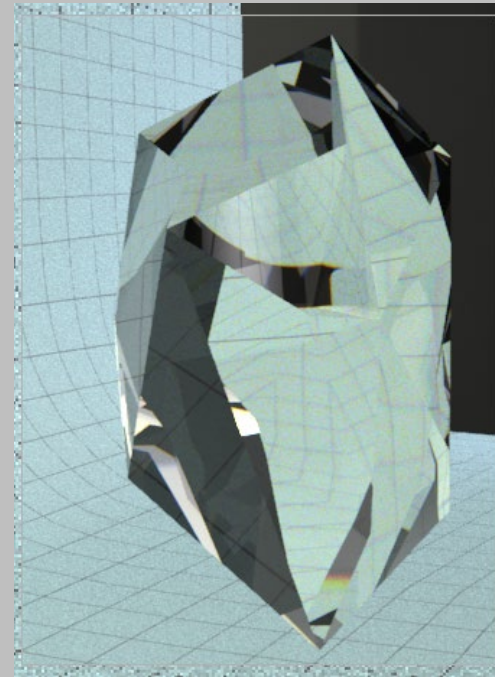
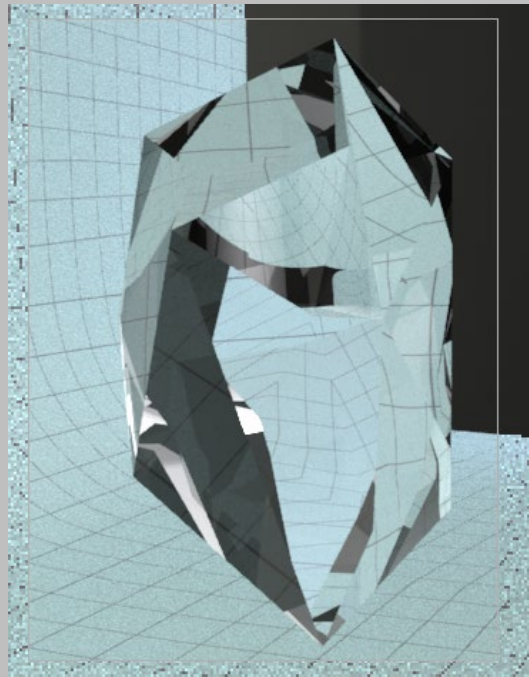
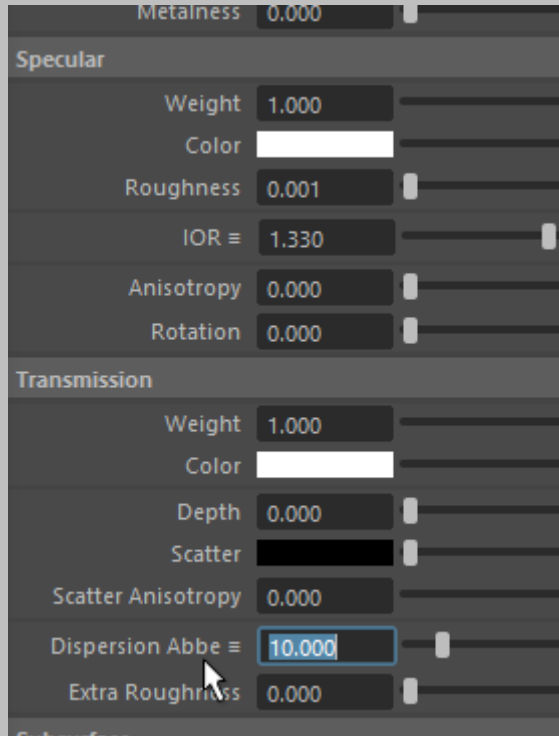
Transmission controls transparency—setting the transmission weight to 1 totally ignores the base color—transmission color will Give you tinted glass--



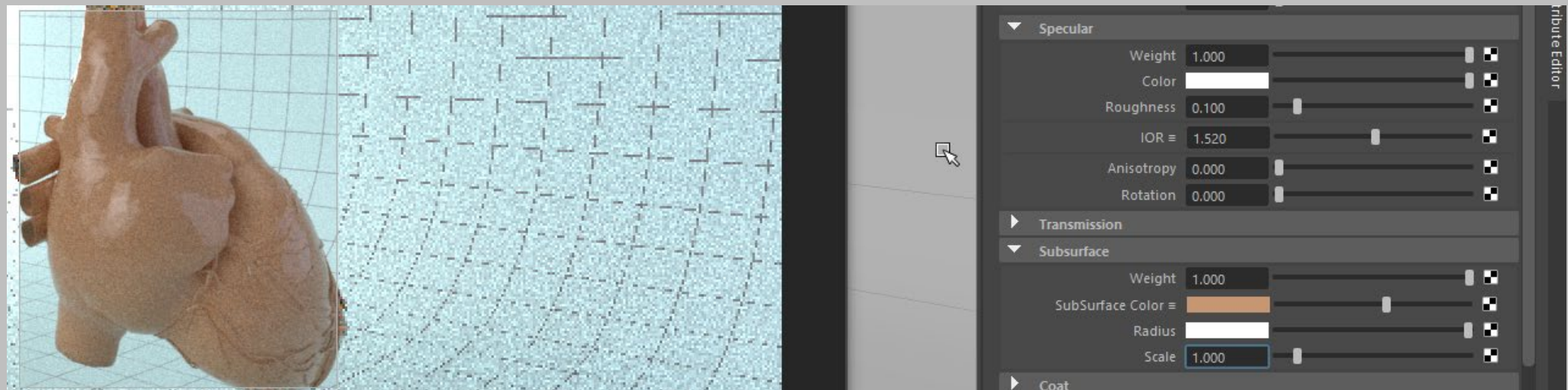
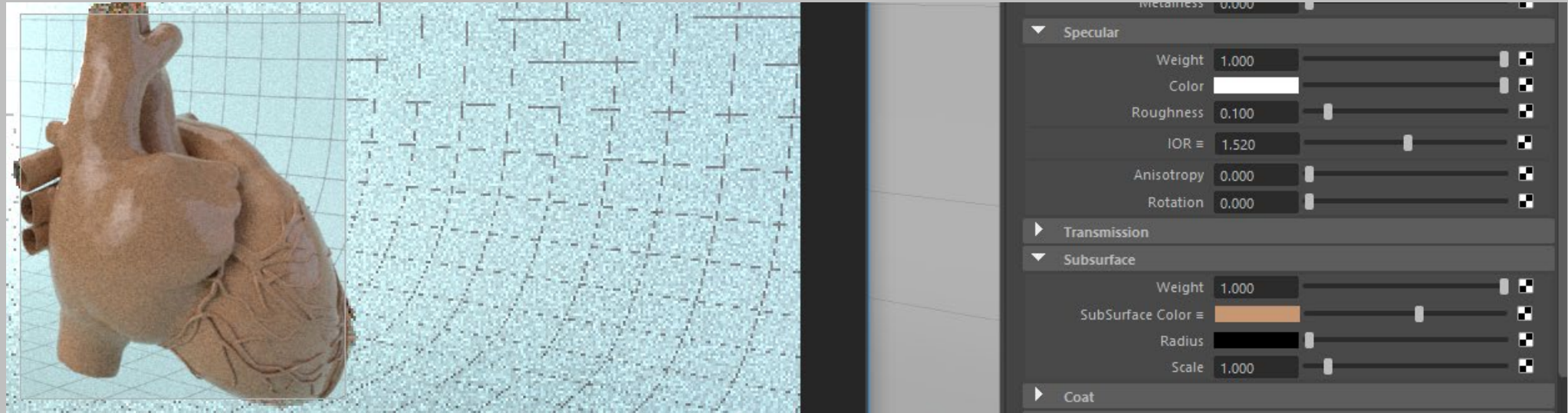
Depth controls the depth or amount of color—scatter softens the light (use for things like chocolate) it is Similar to SSS--



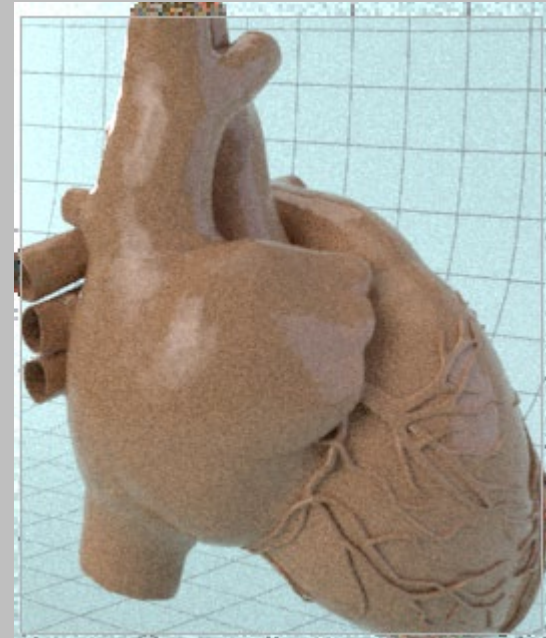
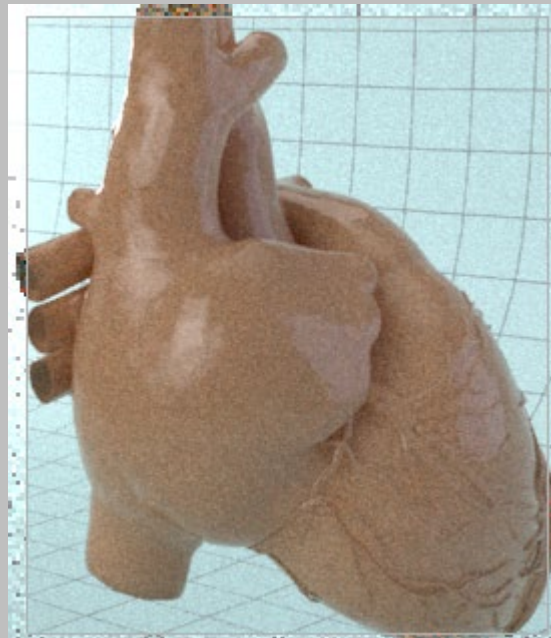
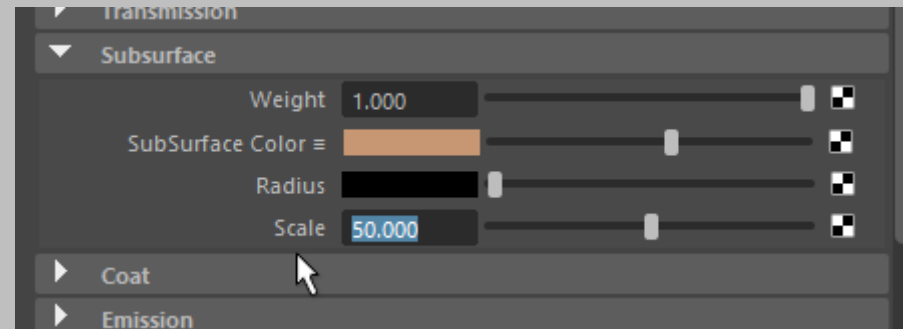
Dispersion Abbe number scatters surface light across the IOR—values should be between 0 and 60—LMB for presets
Increase transmission samples to reduce noise--



SSS is light that is trapped inside transmissive objects and bounces around and some rays escape—radius—increasing the radius makes the SSS stronger—higher values make the object look very SOFT



Scale is kind of like a multiplier—higher values increase the SSS effect--



Getting good SSS depends on the position of the camera and the light—think of ears glowing red in front of a sunrise—
Samples need to be high and render times will be long—I prefer the direct pass below-

