

Practical advice for capturing an HDR "light probe"

Your "light probe" for Image Based Lighting (IBL) needs to be photographed using HDR techniques. The backdrop (the photographic background for your rendering) may be captured in HDR as well, but that's not really necessary. A regular image, correctly exposed, works just as well there.

Use a sturdy tripod mount for the camera. Be very careful when changing the exposure settings so that you don't move the camera. To reduce vibrations, use the self timer so you are not touching the camera as the image is captured. The best option, if your camera supports it, is to control the camera remotely over USB, but a good, professional quality tripod mount and a steady hand is enough.

The mirror sphere should of course be kept still as well throughout the sequence.

Zoom in to make the mirror sphere cover a reasonably large area in the image. The sphere itself needs to be at least a few hundred pixels across. Move the camera closer if you need to, but maintain the same angle.

Disable the auto focus and the automatic white balancing in the camera.

Set the camera to manual exposure, the setting often called M. Set the aperture to the smallest possible opening (the largest number), which should be something around $f/32$. This makes less light enter the camera, greatly reducing the risk of over-exposure and lens flares, and it provides a large depth of field, which is very useful in this case. Set the sensitivity of the camera to its lowest setting, which is usually ISO 100.

Keep the same aperture setting throughout the sequence, and vary only the exposure time. This results in the same depth of field for all images. Start with the shortest time your camera can handle (mostly $1/4000$ second) and move upwards in steps, to $1/2000$, $1/1000$, $1/500$, $1/250$ s, $1/125$, $1/60$, $1/30$, $1/15$, $1/8$, $1/4$, $1/2$, 1, 2, 4 and so on), until the images are obviously too bright. With ISO 100 and the smallest aperture, it might take several seconds to capture the final images in the sequence. In case some images are either completely washed out or all black, you may exclude them from further processing in Photoshop, but you should play safe rather than sorry. There may be single information-carrying pixels also in a picture that looks completely black in the internal viewfinder of the camera.

Consider cropping your images with a recorded "Action" in Photoshop. It's more efficient to crop the images to show just the mirror sphere, or little more than that, before creating the HDR image. The cropped images need to be of the same size, so don't crop them manually.

Last, crop the HDR image to make the periphery of the ball just touch the edges of the image. Save the HDR image to a file, either in the old HDR format or in the more modern OpenEXR format.