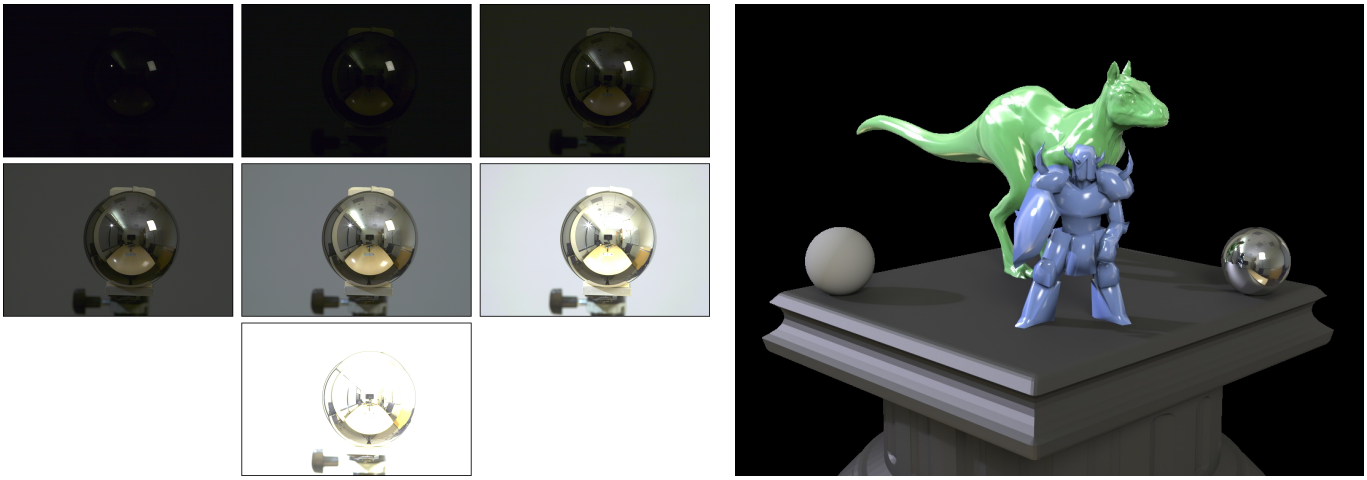

Figure 1: *(Left) Traditional HDR image series. (Right) Scene rendered with this recorded illumination.*

Figure 1 shows a traditional HDR light probe image series consisting of seven images taken two stops apart (1, 1/4th, 1/15th, 1/60th, 1/250th, 1/1000th, 1/4000th sec, all at ISO 100 and aperture f/8). The sphere is an aluminum-coated hemispherical glass lens measured to be 91% reflective. Even at the shortest available exposure, some pixels of the spotlight source in the room clipped and saturated. These pixels were replaced using the reflection of a black plastic sphere in the same illumination, with its reflection scaled to match that of the mirrored hemisphere based on a non-saturated region along a similar reflection angle. The right image of Fig. 1 shows an image-based lighting rendering made using PBRT using lighting calculated from this HDR sequence.

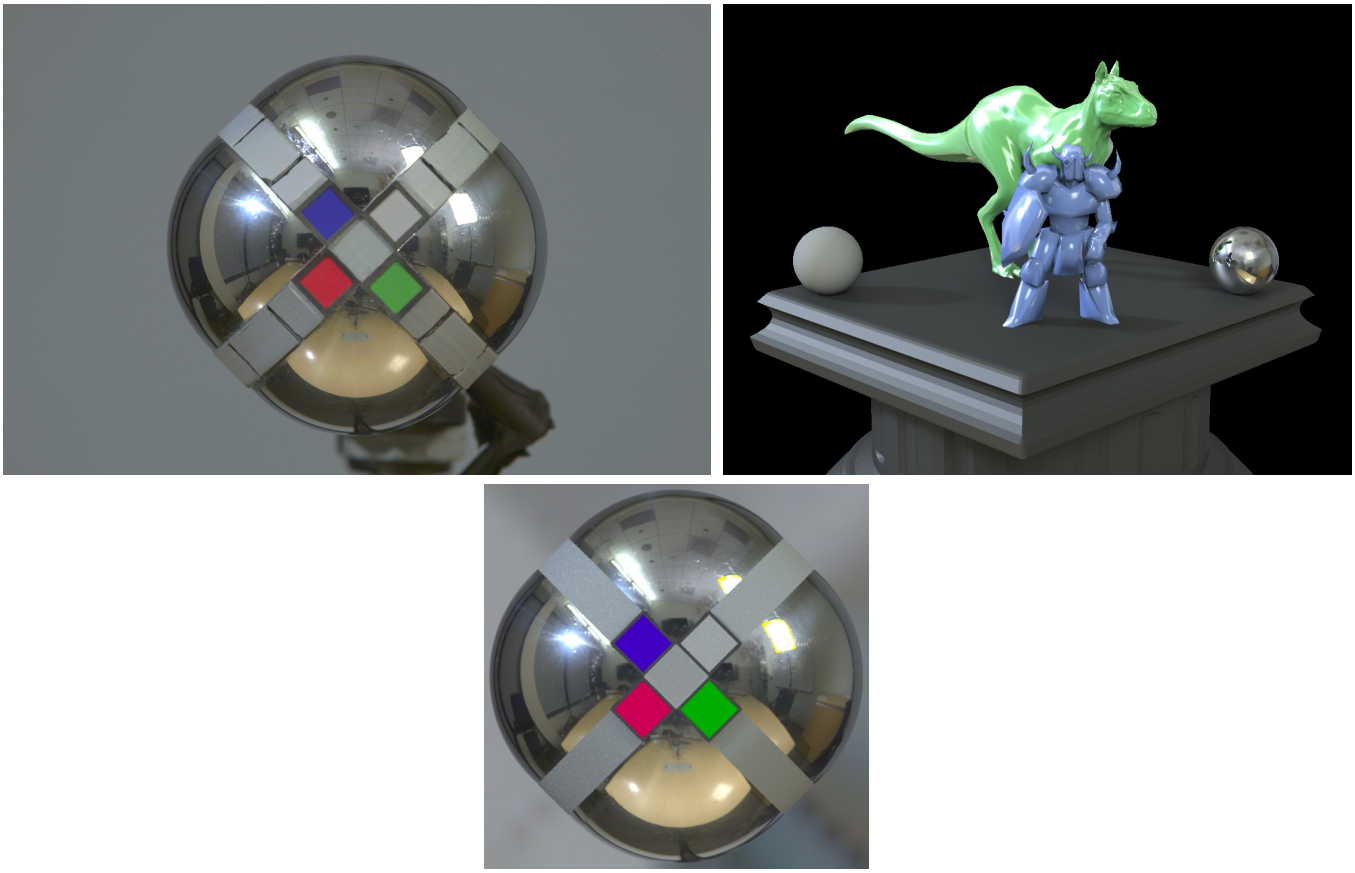

Figure 2: *(Left) Image of the Single-Shot Light Probe in the same environment. (Right) The same scene as in Fig. 1 rendered with the illumination estimated from the Single-Shot Light Probe, showing a close match to the scene illuminated with the traditional HDR image series technique. (Bottom) For validation, a virtually modeled version of the single-shot light probe rendered using the estimated illumination, showing a close match.*

Fig. 2(b) shows the result of rendering the same scene with lighting captured using the single-shot light probe. Although both concentrated light sources saturated in the image, their lighting could be reconstructed from the appearance of the diffuse gray surfaces. The result is both qualitatively and quantitatively similar. For additional validation also seen in the main abstract, we include a rendering of a virtual version of the single-shot probe using measured RGB material reflectance; it closely matches the original image of the probe.

The sunlit scene from the main abstract could not be captured using the traditional HDR image series process due to the extreme concentrated brightness of the sun, which can be up to sixteen stops brighter than the sky, and require an unwieldy number of neutral density filters to bring into range. We believe that since even the indoor scene with a standard spotlight source strained the range of traditional HDR lighting capture, there is a significant indication that the single-shot probe may be more accurate as well as more convenient in practice to the traditional HDR image series light probe technique.