

# Modeling Human Color Perception under Extended Luminance Levels

## Supplemental Material A

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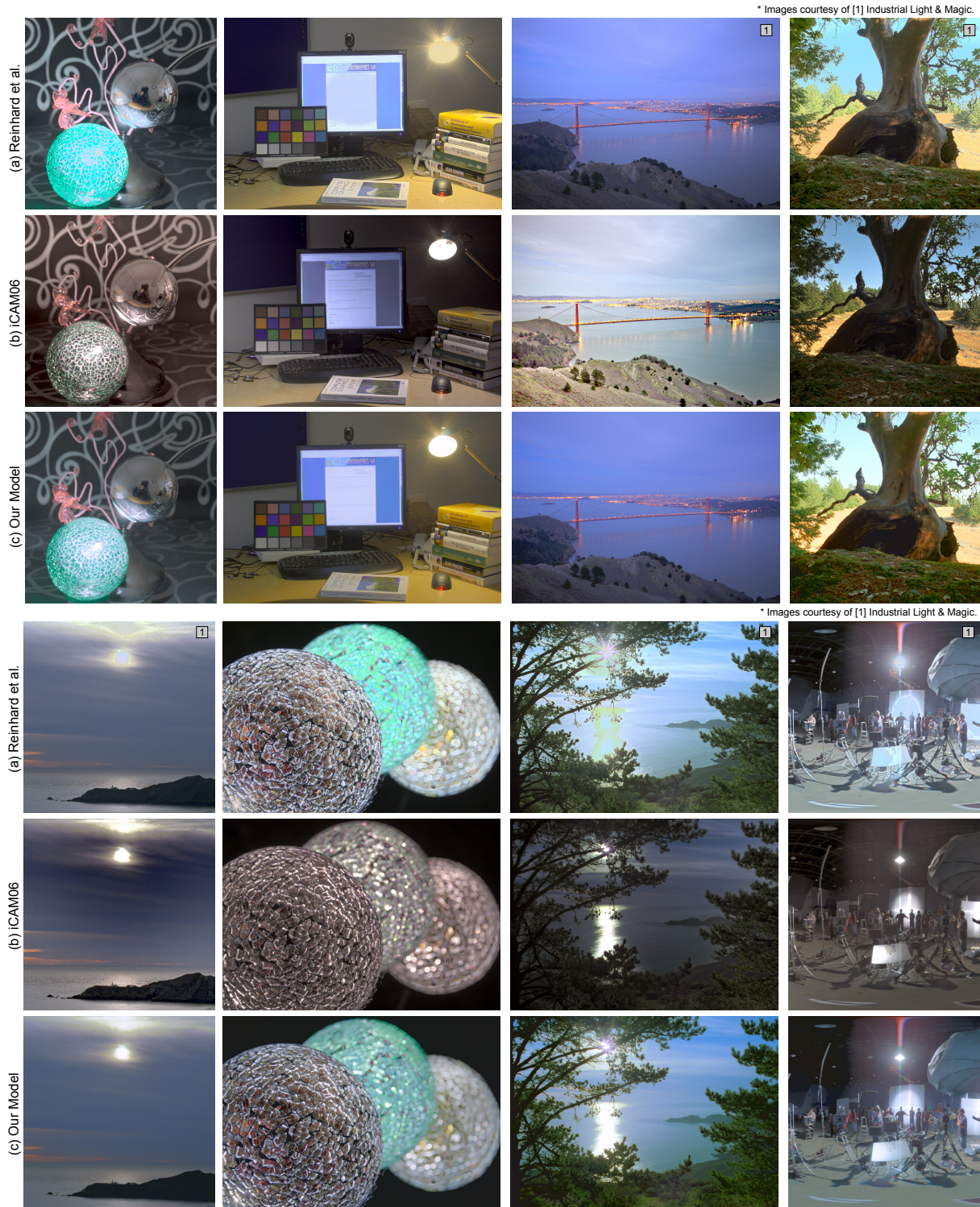
### 1 High-Dynamic-Range Tone-Mapping

In this document, we present additional tone-mapping examples and comparisons. Absolutely calibrated HDR radiance maps are tone-mapped with Reinhard et al.'s tone-mapping algorithm [Reinhard et al., 2002], the iCAM06 image appearance model [Kuang et al., 2007], and our color appearance model (see Fig. 1). For our results, we assume that the adapting luminance level is the geometric mean of all scene luminances, and that the output device is an sRGB display (peak luminance level:  $250 \text{ cd/m}^2$ , gamma 2.2), observed in dim viewing conditions (adapting luminance level is 10% of the peak luminance).

The results appear similar in many cases but there are some distinct differences. Reinhard et al.'s method produces overly saturated results for some images but works well in general. iCAM06 produces dark results for a number of images, which we attribute to the CIECAM02 heritage. Its local chromatic adaption method desaturates colors in some cases (see images with green sphere). In contrast, our method produces consistent results.

### References

- Kuang, J. T., Johnson, G. M., and Fairchild, M. D. 2007. iCAM06: A refined image appearance model for HDR image rendering. *J. Visual Communication and Image Representation*, 18(5):406–414.
- Reinhard, E., Stark, M., Shirley, P., and Ferwerda, J. 2002. Photographic tone reproduction for digital images. *ACM Trans. Graph. (Proc. SIGGRAPH)*, 21(3):267–276.



**Figure 1:** Supplemental HDR reproductions using Reinhard et al.'s tone-mapper [Reinhard et al., 2002], the iCAM06 image appearance model [Kuang et al., 2007], and our color appearance model.