# Efficient Reflectance Capture Using an Autoencoder: Supplemental Material

Kaizhang Kang, Zimin Chen, Jiaping Wang, Kun Zhou, Hongzhi Wu

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## 1 Appendix

The functions involved in the anisotropic GGX model are defined as follows:

$$
\begin{aligned}
D_{\mathrm{GGX}}(\omega_{\mathbf{h}};\alpha_x,\alpha_y) &= \frac{1}{\pi\alpha_x\alpha_y[(\frac{\omega_{\mathbf{h}}\cdot\mathbf{t}}{\alpha_x})^2+(\frac{\omega_{\mathbf{h}}\cdot\mathbf{b}}{\alpha_y})^2+(\omega_{\mathbf{h}}\cdot\mathbf{n})^2]^2},\\
F(\omega_{\mathbf{i}},\omega_{\mathbf{h}}) &= F_0+(1-F_0)(1-\omega_{\mathbf{i}}\cdot\omega_{\mathbf{h}})^5,\\
G_{\mathrm{GGX}}(\omega_{\mathbf{i}},\omega_{\mathbf{o}};\alpha_x,\alpha_y) &= G(\omega_{\mathbf{i}};\alpha_{\mathbf{x}},\alpha_{\mathbf{y}})G(\omega_{\mathbf{o}};\alpha_x,\alpha_y),
\end{aligned}
$$

where

$$
G(\omega;\alpha_x,\alpha_y)=\frac{2(\omega\cdot\mathbf{n})}{(\omega\cdot\mathbf{n})+\sqrt{[(\omega_{\mathbf{o}}\cdot\mathbf{t})\alpha_x]^2+[(\omega_{\mathbf{o}}\cdot\mathbf{b})\alpha_y]^2+(\omega\cdot\mathbf{n})^2}}.
$$

Here $\mathbf{t}/\mathbf{b}$ represent the tangent / binormal. For the Fresnel term $F$, we use an index of refraction of 1.5 in all experiments.