













$$BTF_{rgb}(\mathbf{x}, \mathbf{v}, \mathbf{l}) = \int_{S} RF_{rgb}(\mathbf{x}_{i}, \mathbf{x}, \mathbf{v}, \mathbf{l}) d\mathbf{x}_{i}$$

- Integrates:
 - Occlusions (shadowing, masking)
 - Interreflections and subsurface scattering from neighboring positions





























































































- Radiance Transfer Texture (RTT) [Sloan et al. 2003]
 - Extend per-vertex Precomputed Radiance Transfer to handle BTFs
 - -Encode every texel in SH-Basis
 - -Lighting dot-products in pixel shader
 - -SH-encoded BTF requires about 300 MB per 2562 pixel BTF

Image-Based Lighting of BTFs • Clustered Precomputed RTT [Müller et al. 2004]

 Compress both SH-encoded BTF and precomputed transfer using clustered factorization

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- Storage size independent of BTF size and geometry size
- High quality setting:
 - 16.9 MB
- Good quality:
 - 4.2 MB
 - alistic Materials in Computer Grap







Conclusions



• BTFs capture 6D-slice of the reflectance field and are able to represent "look-and-feel" of an opaque material



Course 10: Realistic Materials in Computer Graphics - BTFs







