Supplemental Materials – SpongeCake: A Layered Microflake Surface Appearance Model

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Fig. 1. Multiple scattering validation for a set of single-layer materials, over varying thickness and roughness. Monte Carlo simulation of multiple scattering is used as the ground truth. We find small differences from the ground truth.

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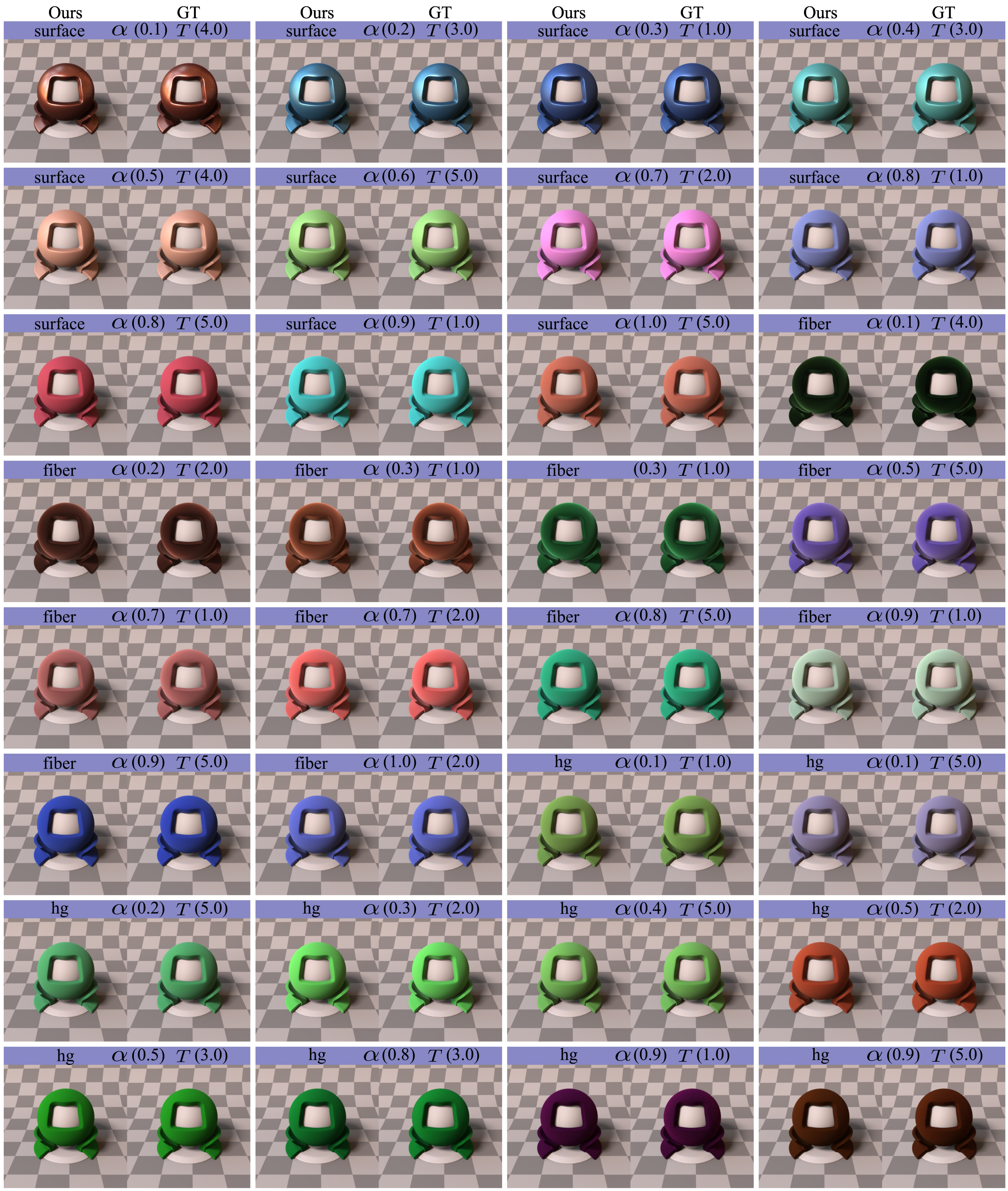

Fig. 2. Single + multiple scattering validation for a set of single-layer materials. For each example, we list the microflake type, roughness α and thickness T. We find small differences from the ground truth. The corresponding lobe visualizations are shown in Fig. 3, 4 and 5.

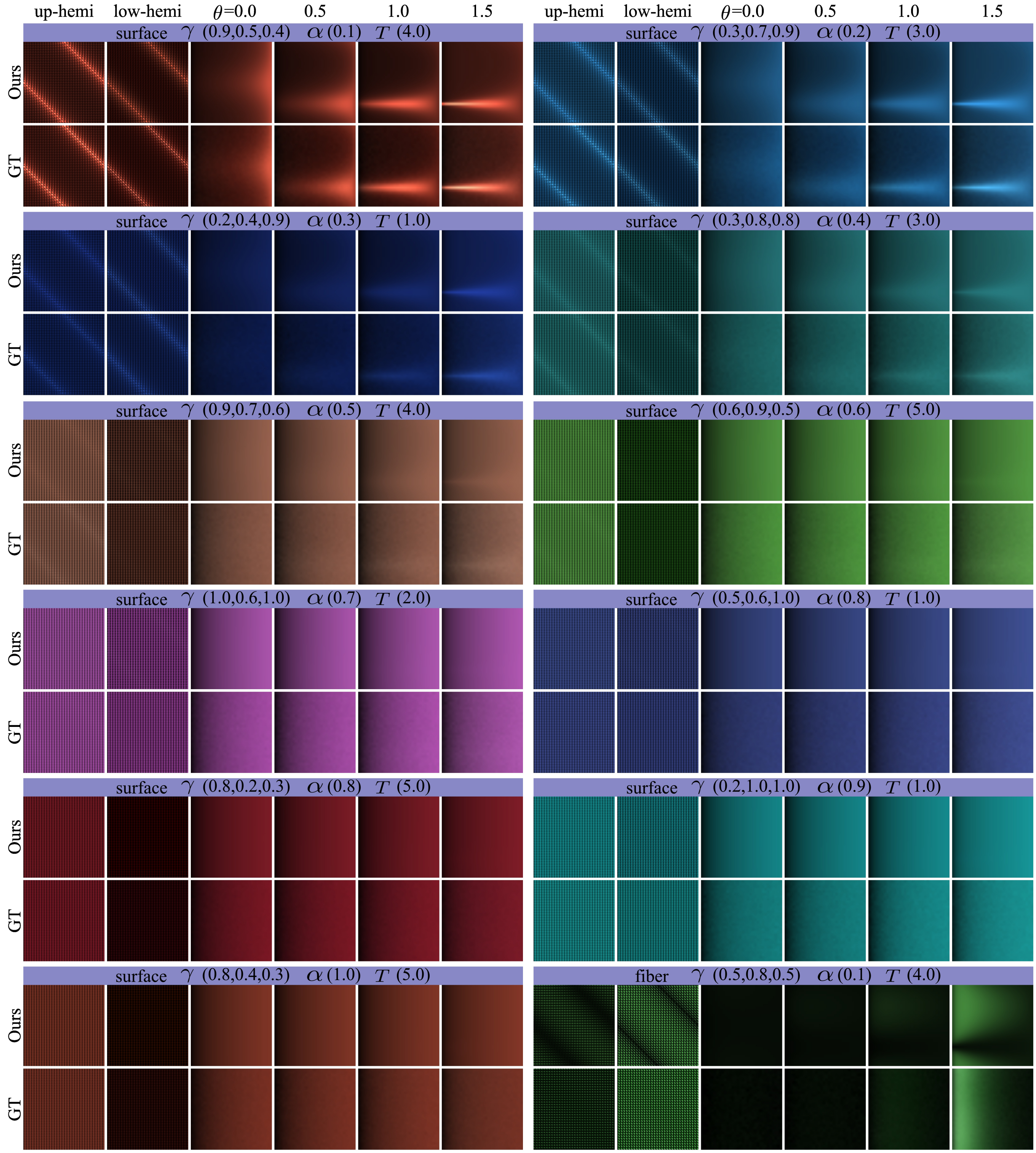

Fig. 3. Lobe visualizations for multiple scattering for a set of single-layer materials. For each example, we list the microflake type, reflectance γ, roughness α and thickness T. The first two columns represent the entire BSDF (top and bottom hemispheres), with pixel rows corresponding to a discretization of incoming directions, and pixel columns corresponding to outgoing directions. The latter four columns visualize the outgoing lobe given a fixed incoming direction at the specified angle θ with pixel rows corresponding to the elevation angle of the outgoing direction, and pixel columns corresponding to the azimuth angle of the outgoing directions.

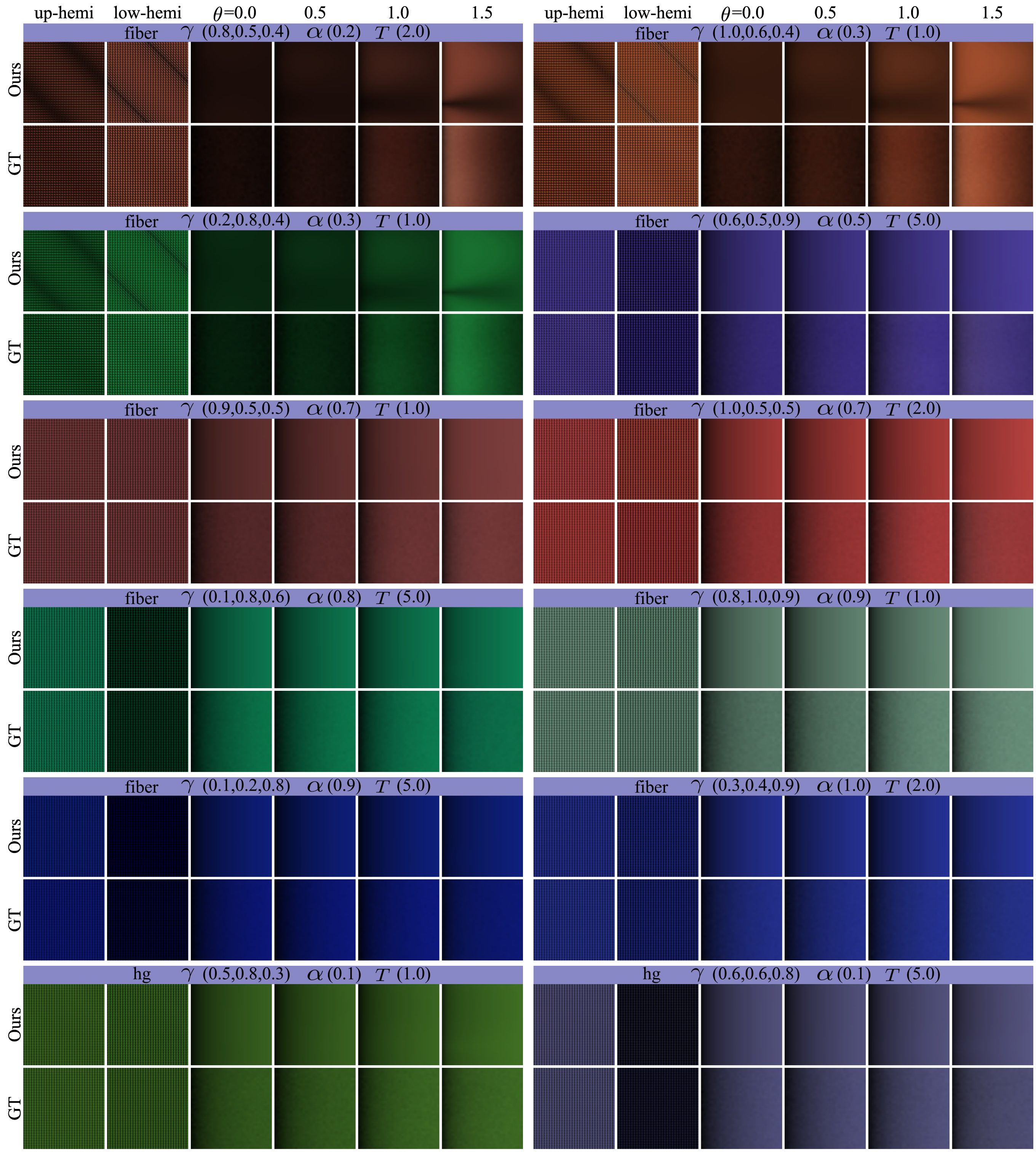

Fig. 4. More examples: Lobe visualizations for multiple scattering for a set of single-layer materials.

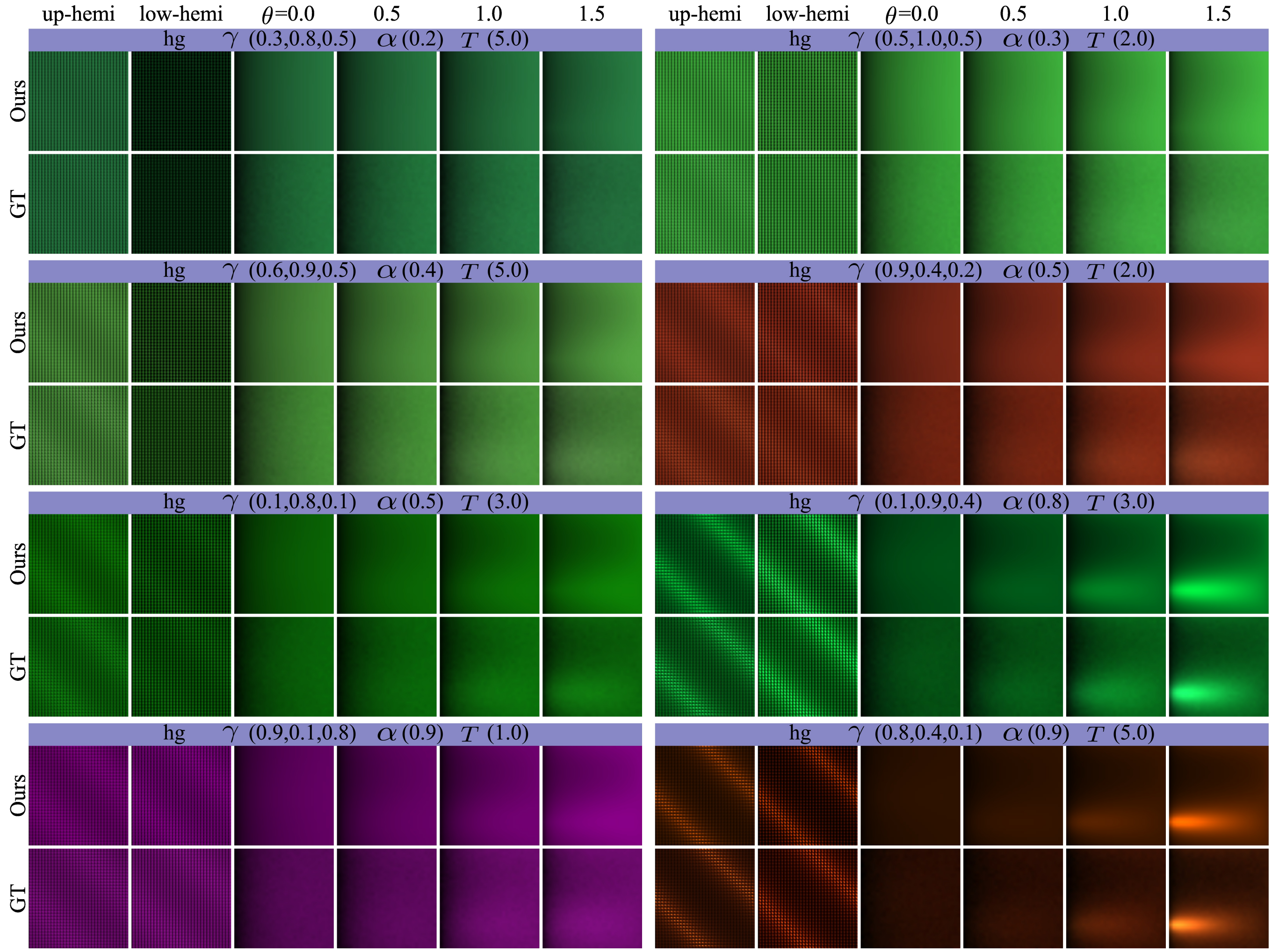

Fig. 5. More examples: Lobe visualizations for multiple scattering for a set of single-layer materials.

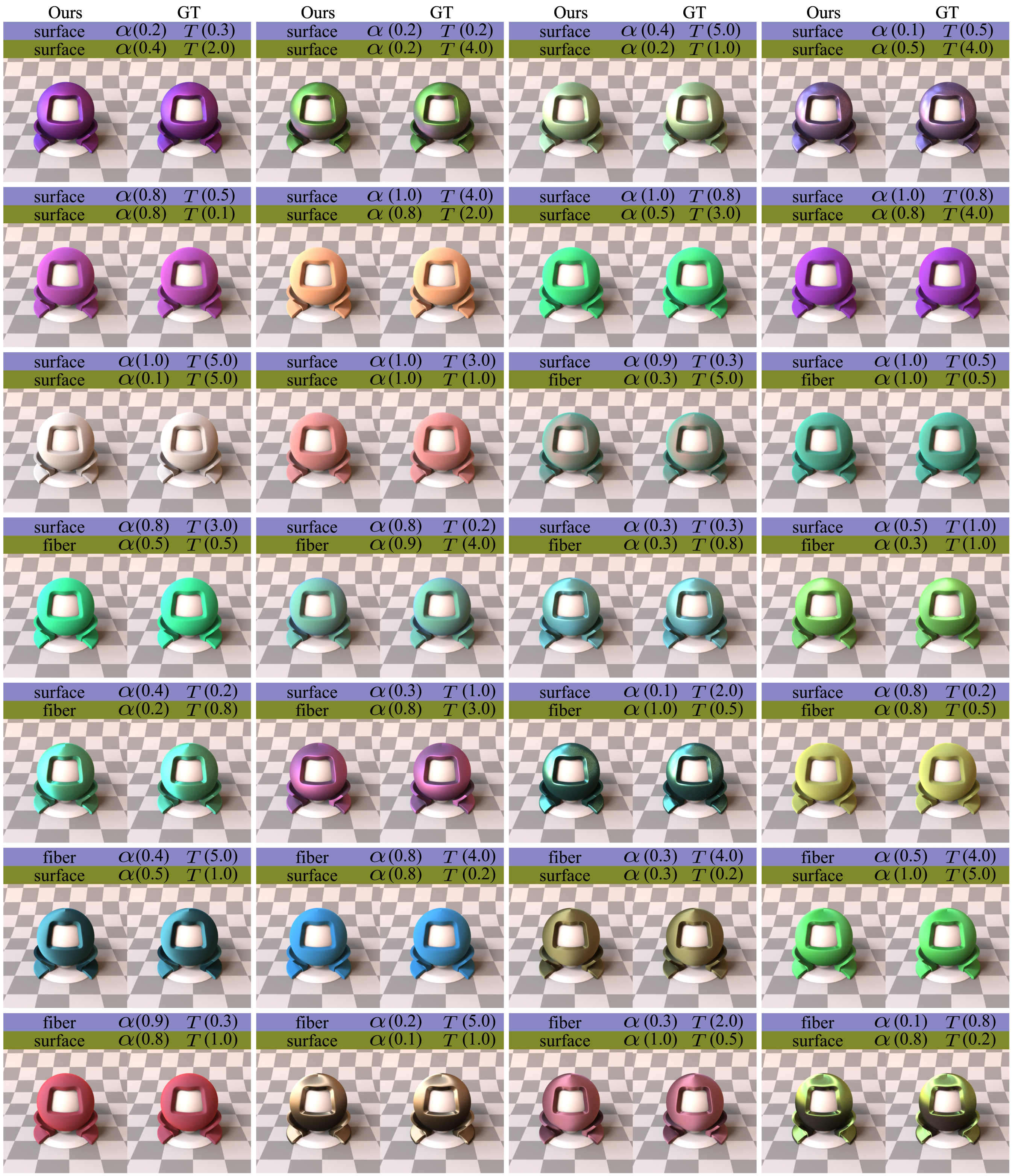

Fig. 6. Single + multiple scattering validation for a set of two-layer materials. For each example, we list the microflake type, roughness α and thickness T. We find small differences from the ground truth. The corresponding lobe visualizations are shown in Fig. 10, 11, 12 and 13.

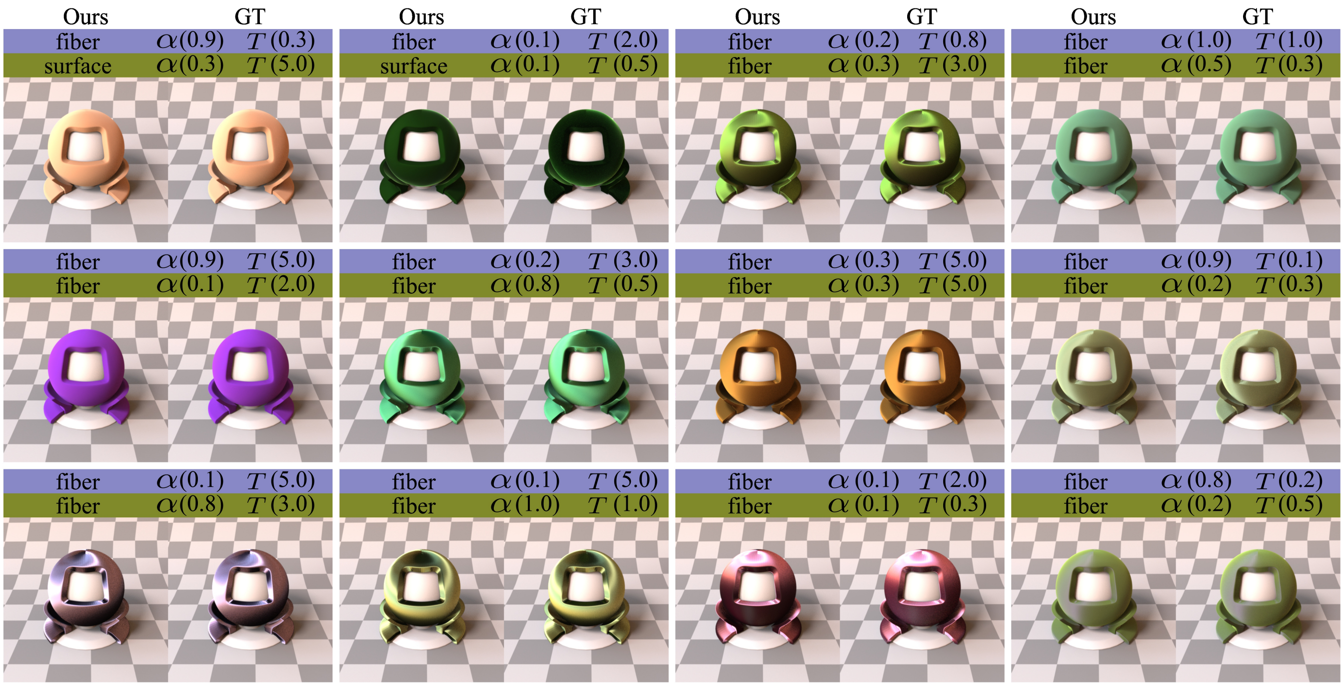

Fig. 7. More examples: multiple scattering validation for a set of two-layer materials.

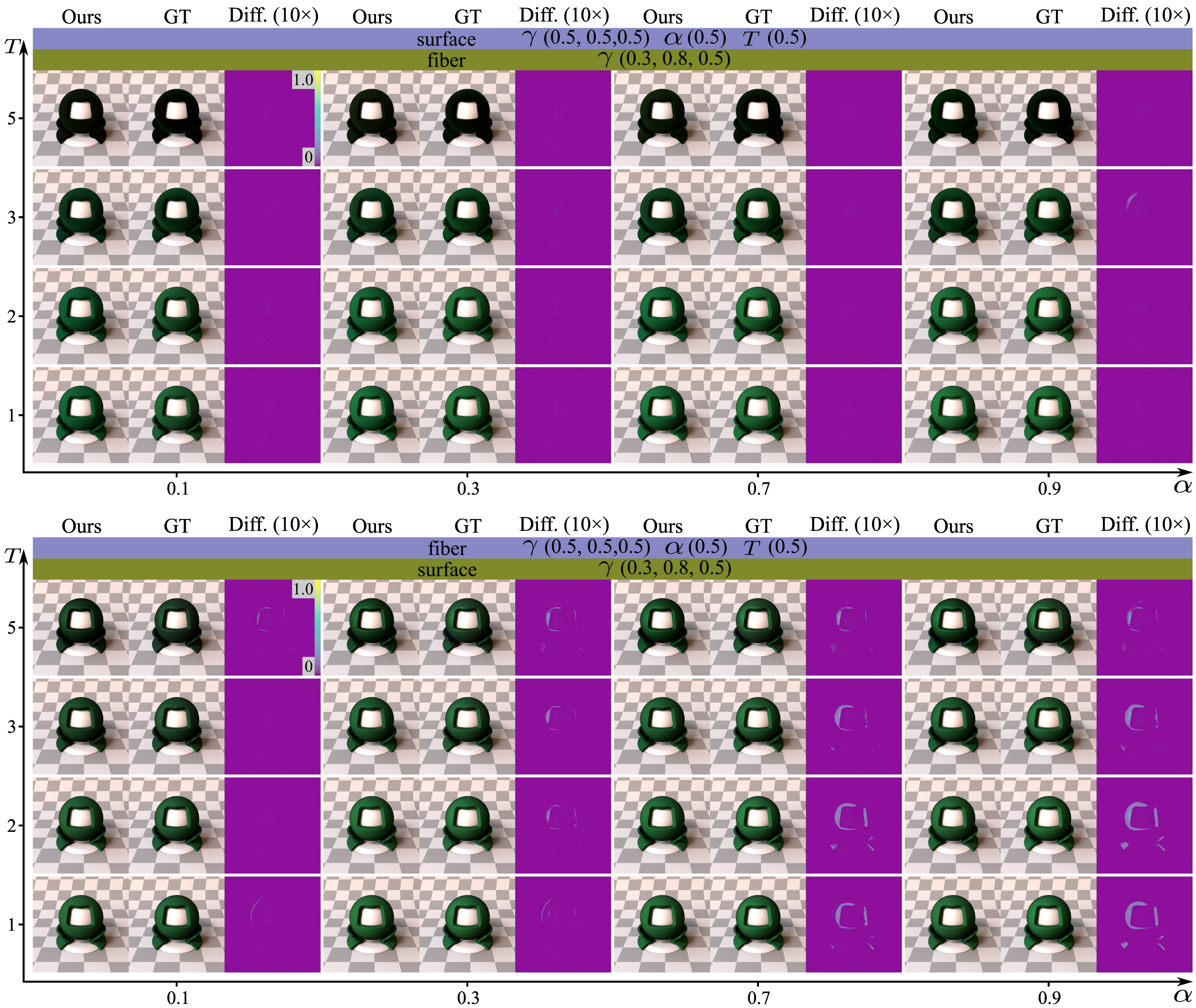

Fig. 8. Multiple scattering validation for a set of two-layer materials, over varying thickness and roughness. Monte Carlo simulation of multiple scattering is used as the ground truth. We find small differences from the ground truth.

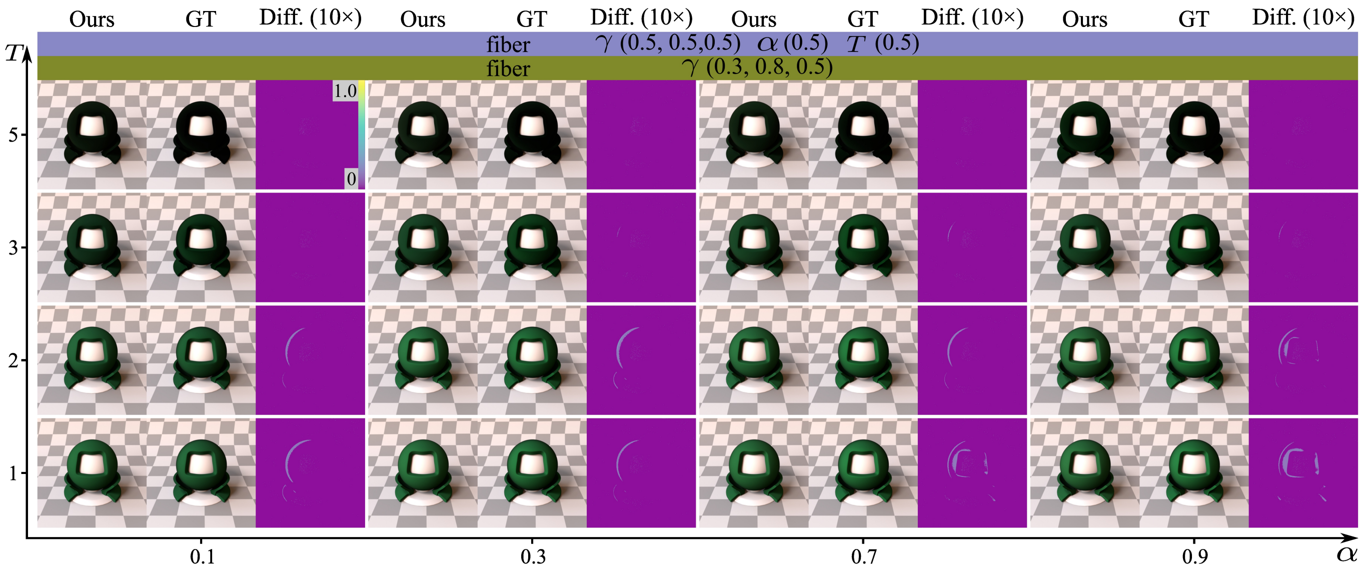

Fig. 9. Multiple scattering validation for a set of two-layer materials, over varying thickness and roughness. Monte Carlo simulation of multiple scattering is used as the ground truth. We find small differences from the ground truth.

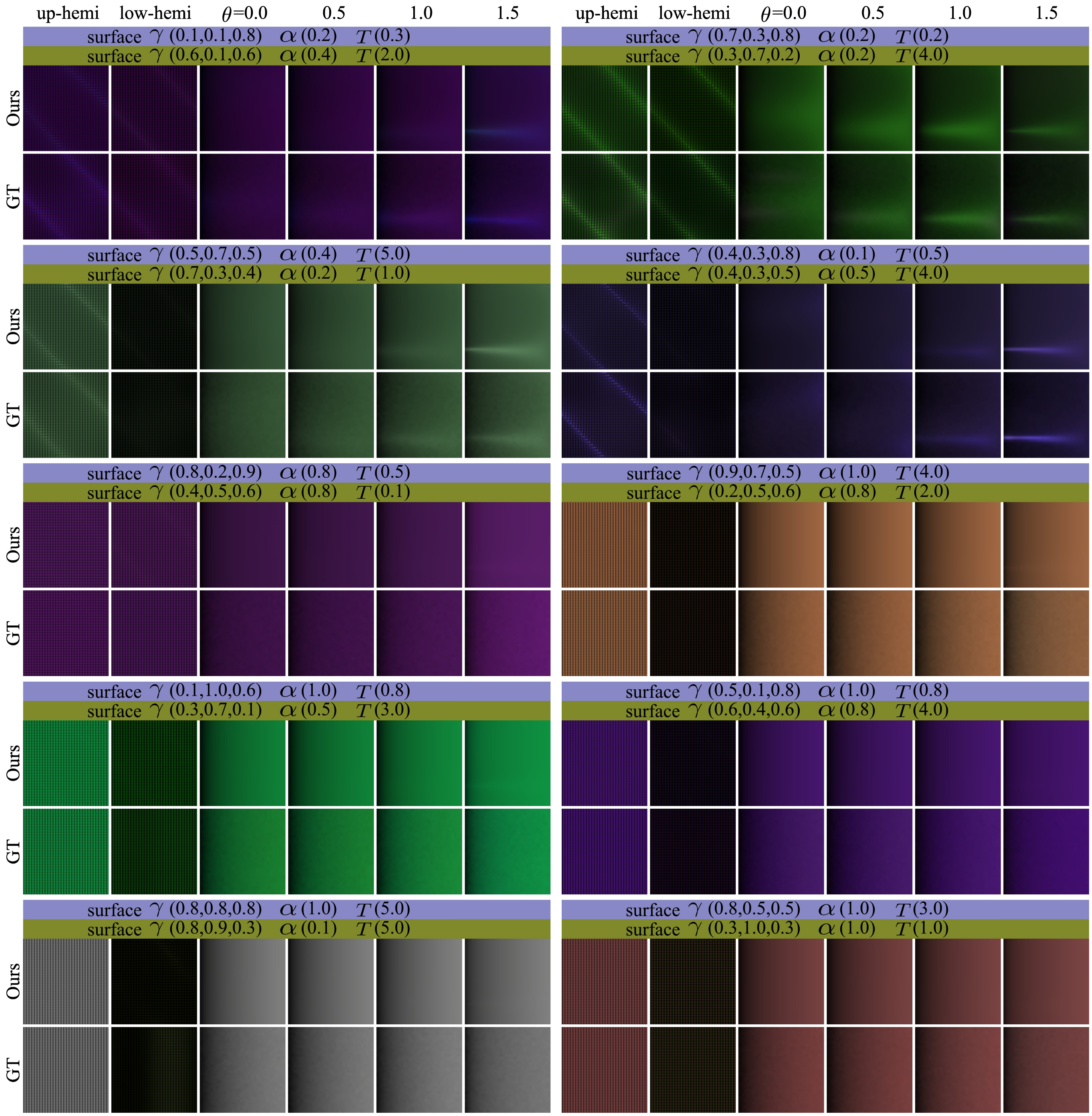

Fig. 10. Lobe visualizations for multiple scattering for a set of two-layer materials. For each example, we list the microflake type, reflectance γ, roughness α and thickness T. The first two columns represent the entire BSDF (top and bottom hemispheres), with pixel rows corresponding to a discretization of incoming directions, and pixel columns corresponding to outgoing directions. The latter four columns visualize the outgoing lobe given a fixed incoming direction at the specified angle θ with pixel rows corresponding to the elevation angle of the outgoing direction, and pixel columns corresponding to the azimuth angle of the outgoing directions.

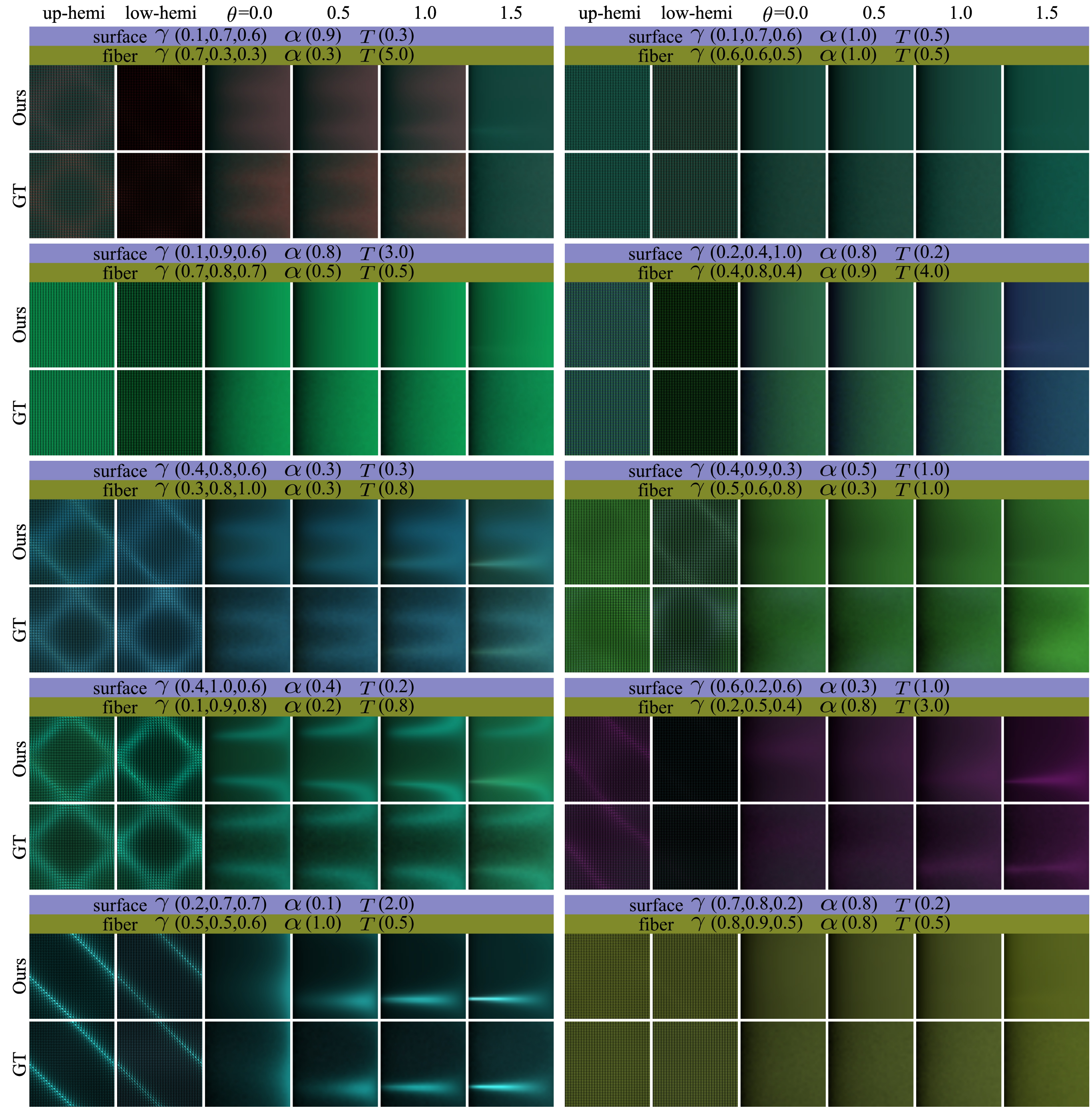

Fig. 11. More examples: Lobe visualizations for multiple scattering for a set of two-layer materials.

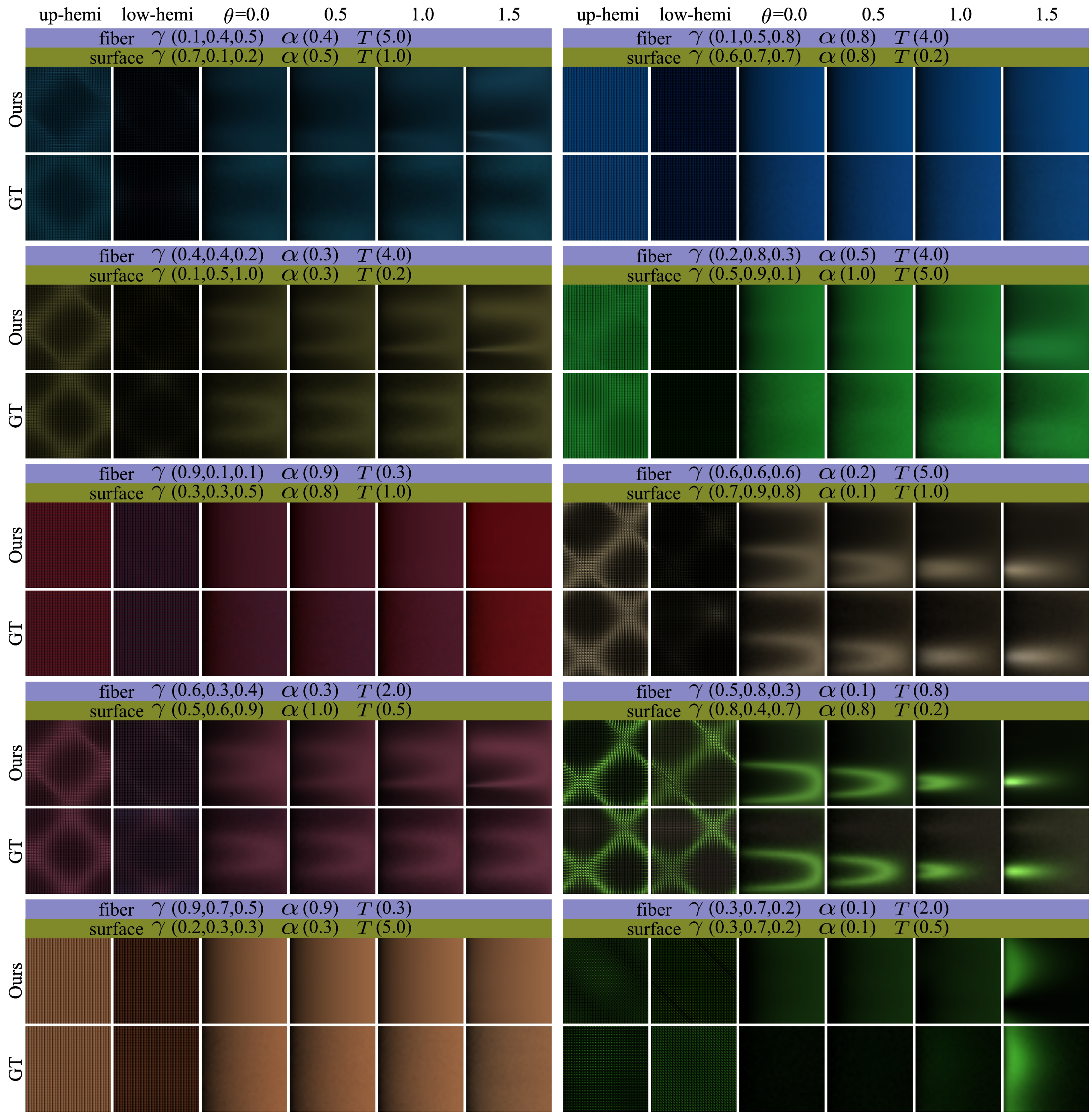

Fig. 12. More examples: Lobe visualizations for multiple scattering for a set of two-layer materials.

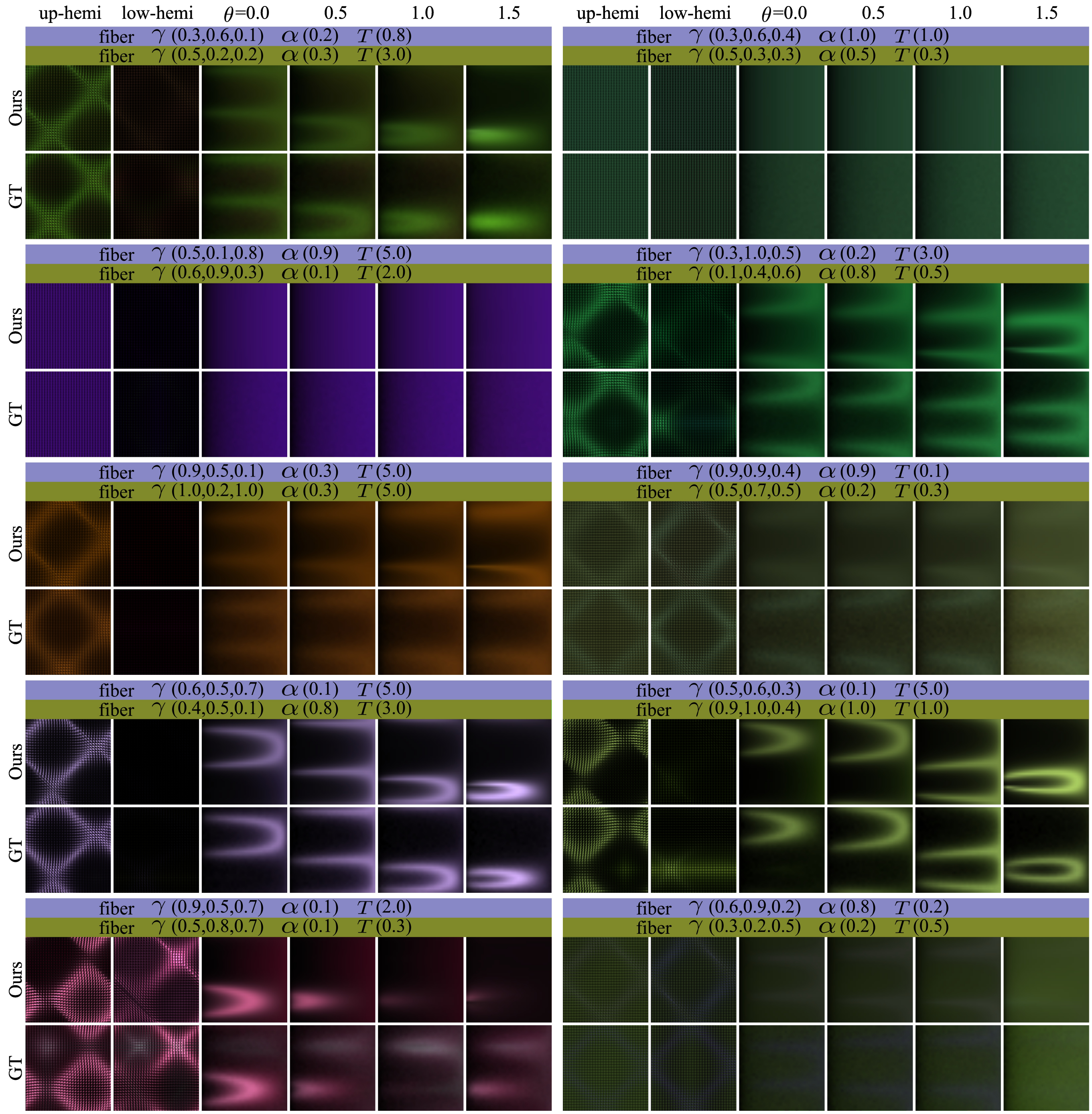

Fig. 13. More examples: Lobe visualizations for multiple scattering for a set of two-layer materials.