Supplementary Materials

Multi-Angular Colorimetric Responses of Uni- and Omni-Directional Femtosecond Laser-Induced Periodic Surface Structures on Metals

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It is worth mentioning that the distinct change in b^* with φ observed at $\theta = -30°$ in Figure 4b also relates both to diffraction and Rayleigh anomalies. In addition to the wavelength ranges of diffracted light for $\theta = -30°$ described in Figure 5a, the −1st order diffracted light with the wavelengths longer than the cutoff wavelength for $m = -2$ can be effectively diffused into our spectrometer due to the surface roughness and quasi-periodicity of UD-LSFLs, since the angle of −1st order diffraction at these wavelengths is the closest to our detection angle of -30° among those of all available diffraction orders. As discussed in the cases of $\theta = 20°$ and 30° on UD-LSFLs, the power redistribution due to Rayleigh anomalies consistently increases b^* with φ. Similarly, as φ changes from 0° to 25°, b^* continuously increases through more power redistribution to the diffused light. However, with a further increase in φ until 50°, the total amount of diffused light toward our detection angle shrinks much faster than the increasing redistributed power originating from Rayleigh anomalies due to our restricted color measurement in the *ik* plane, and b^* eventually reduces to near zero at this detection angle.