NFPLight: Deep SVBRDF Estimation via the Combination of Near and Far Field Point lighting -Supplemental Material-

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Fig. 1. The rendering of our estimated real-world material under the environment lighting.

CCS Concepts: • **Computing methodologies** → **Reflectance modeling**.

Additional Key Words and Phrases: Material Reflectance Modeling, SVBRDF, Deep Learning, Rendering

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1 DETAILS OF REGISTRATION MODULE

The registration module aims to align the captured contents of near-field and far-field images to the same material region, which can be achieved through homography transformation. The key to this transformation lies in finding correspondences, for which we provide two detection methods. For materials with rich textures, we employ LoFTR [Sun et al. 2021], a computer vision method for vision-based detection. In practice, we choose the whole *Near-field Image* as the concerned material region, and transfer *Far-field Image* into the same area by homography. For materials with less texture, we place a square bounding box on the material, thereby finding the correspondences by identifying corner points. The results are shown in Fig. 2.

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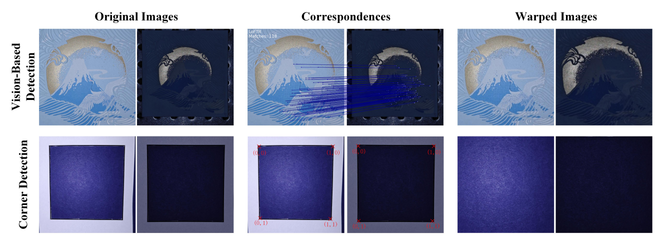

Fig. 2. Correspondences Detection. The first row shows the result of vision-baseed detection, and the second row shows the result of corner detection.

2 COMPARISON RESULTS ON SYNTHETIC SCENES

In figure 3, we show more fair comparison results on synthetic scenes against FSC of [Deschaintre et al. 2019], DIR of [Gao et al. 2019], MGAN of [Guo et al. 2020] and DeepBasis of [Wang et al. 2023]. In figure 4, we show more enhanced comparison results. In this refined comparison, we replace the inputs of the multi-image methods FSC+, DIR+, and MGAN+ with our novel combination of near and far images. Additionally,in Fig. 5 we also show more results of challenging comparison against multi-images methods with 20 input images (FSC-20, DIR-20, MGAN-20) and planar lighting methods LPL [Zhang et al. 2023].

3 COMPARISON RESULTS ON REAL-WORLD SCENES

We offer more real-data results on fair comparison (Fig. 6-7), enhanced comparison (Fig. 8-9) and challenging comparison (Fig. 10-11), respectively.

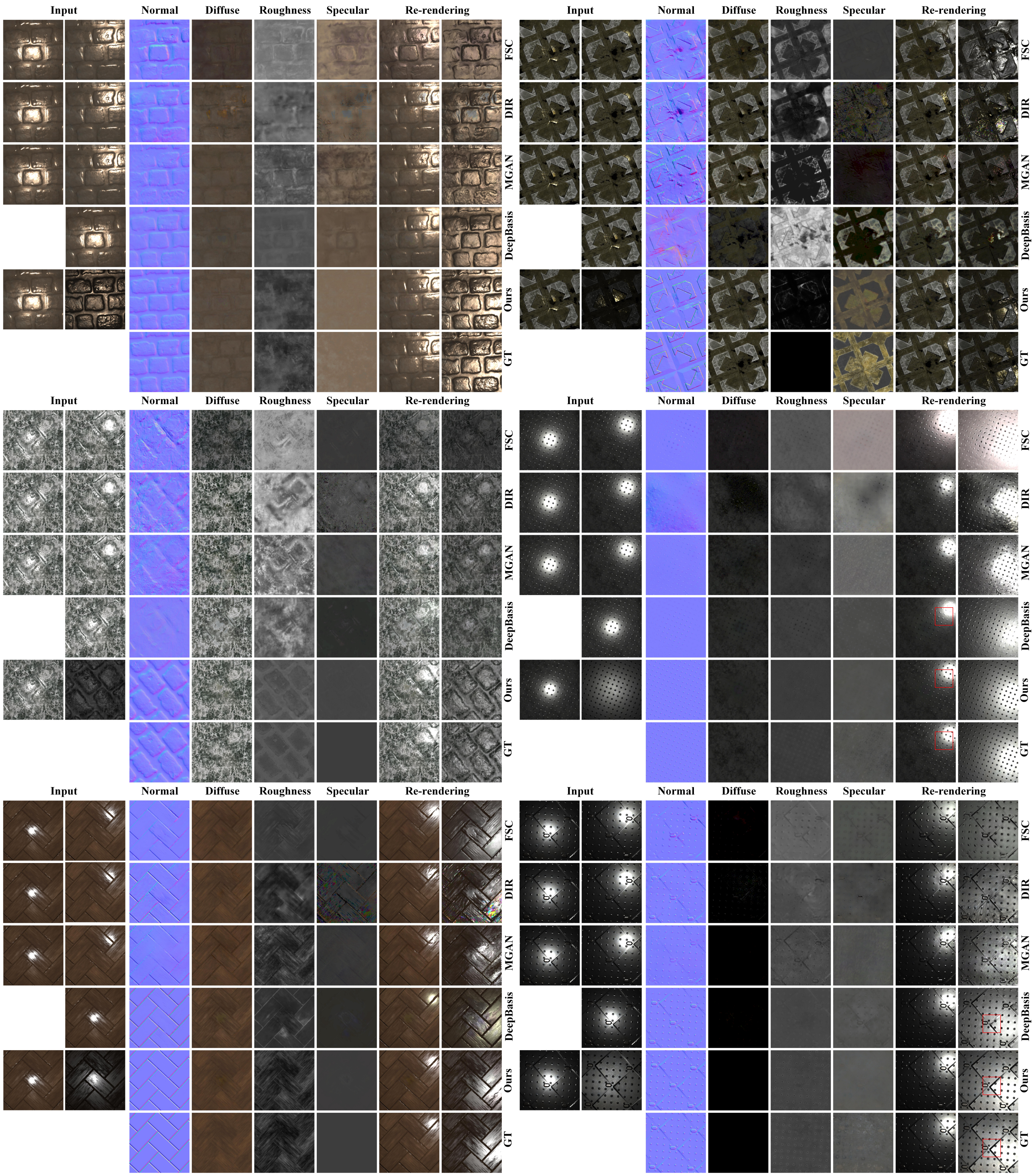

Fig. 3. The fair comparison results on synthetic scenes against FSC of [Deschaintre et al. 2019], DIR of [Gao et al. 2019], MGAN of [Guo et al. 2020] and DeepBasis of [Wang et al. 2023].

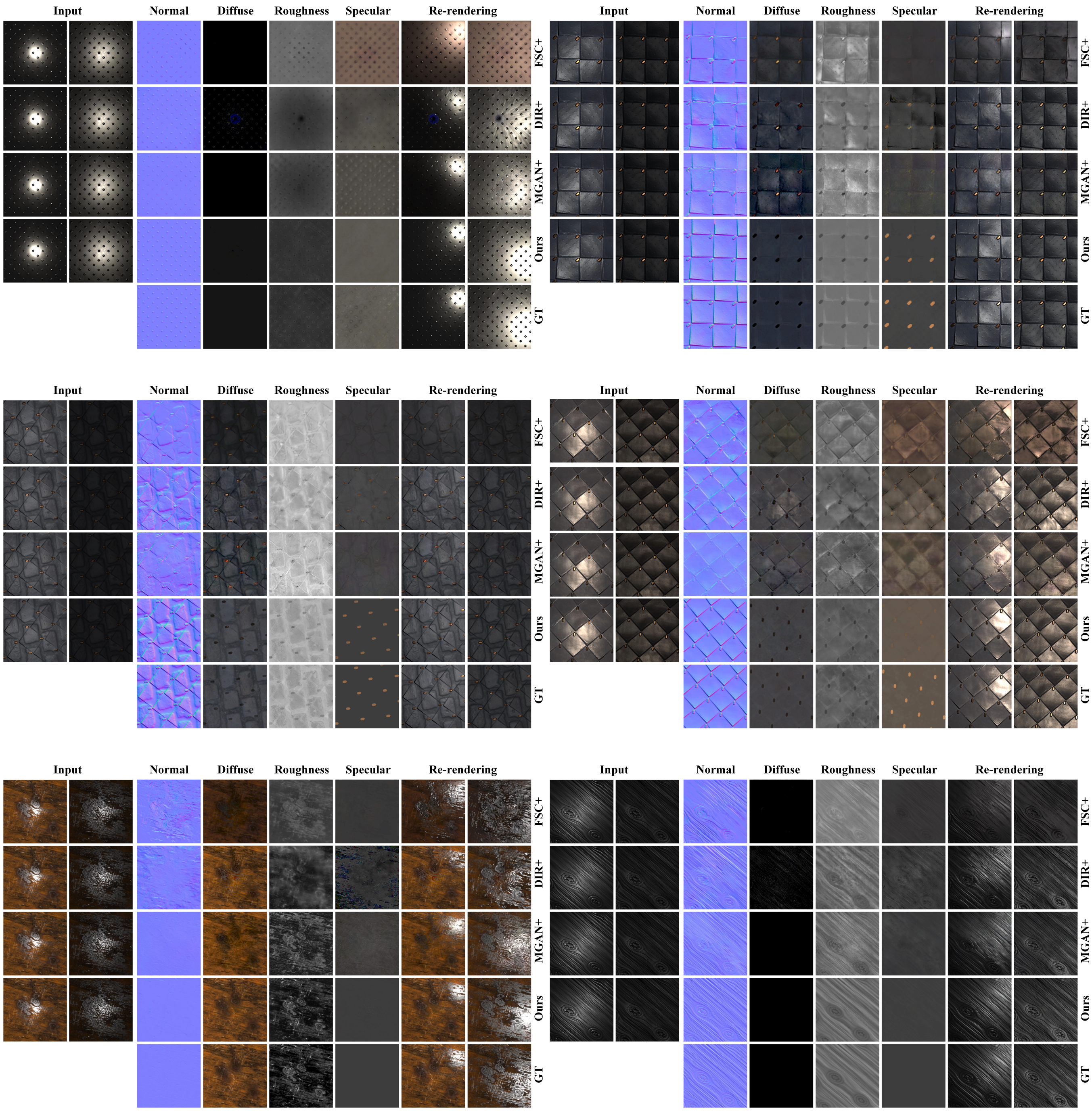

Fig. 4. The enhanced comparison results on synthetic scenes against FSC+ of [Deschaintre et al. 2019], DIR+ of [Gao et al. 2019] and MGAN+ of [Guo et al. 2020]. In this comparison, the inputs of these methods are replaced by our novel combination of near-field and far-field images.

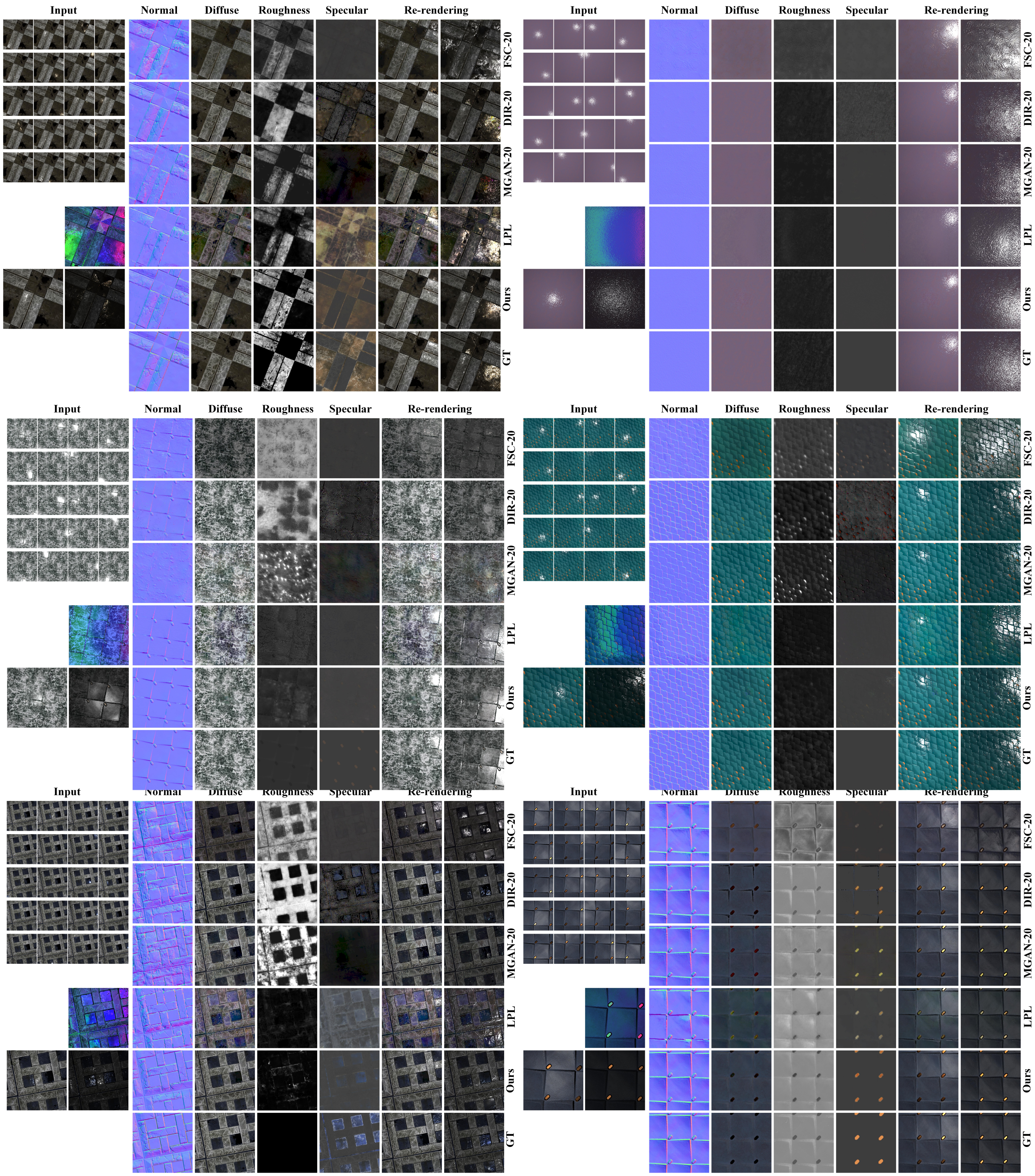

Fig. 5. The challenging comparison results on synthetic scenes against FSC-20 of [Deschaintre et al. 2019], DIR-20 of [Gao et al. 2019], MGAN-20 of [Guo et al. 2020] and LPL of [Zhang et al. 2023]. In this comparison, we offer 20 input images for multi-image methods.

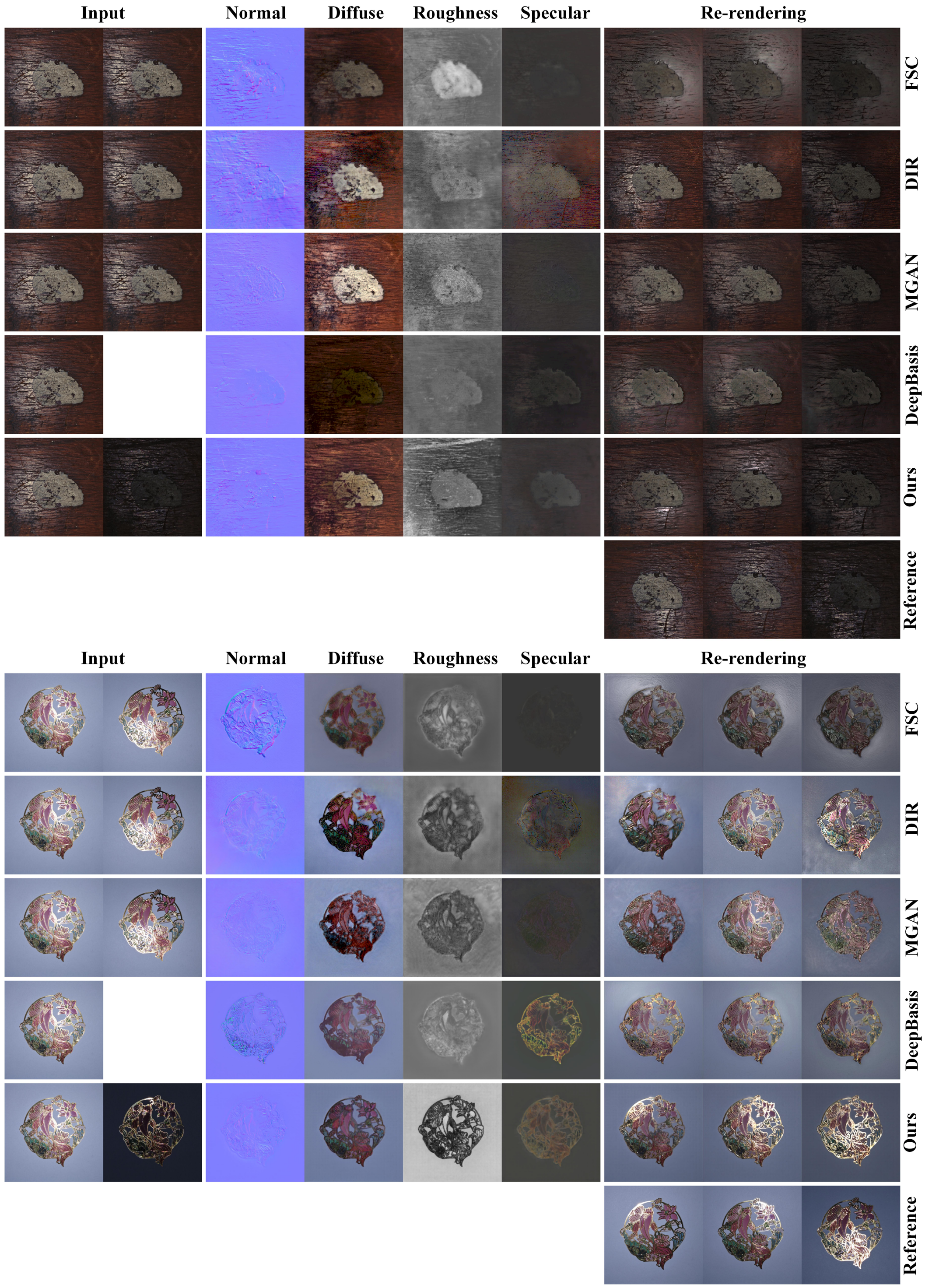

Fig. 6. The fair comparison results on real-world data against FSC of [Deschaintre et al. 2019], DIR of [Gao et al. 2019], MGAN of [Guo et al. 2020] and DeepBasis of [Wang et al. 2023].

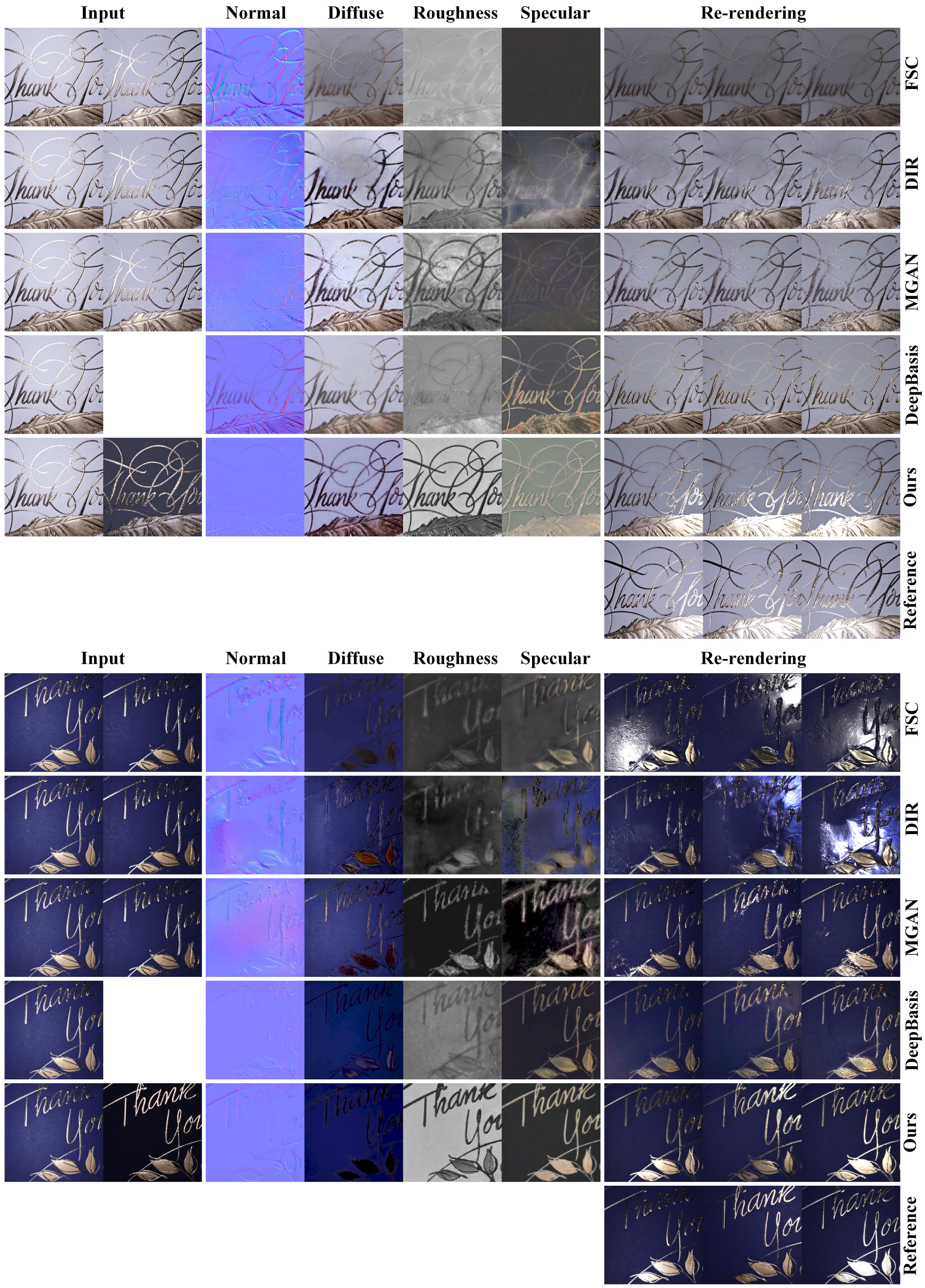

Fig. 7. The fair comparison results on real-world data against FSC of [Deschaintre et al. 2019], DIR of [Gao et al. 2019], MGAN of [Guo et al. 2020] and DeepBasis of [Wang et al. 2023].

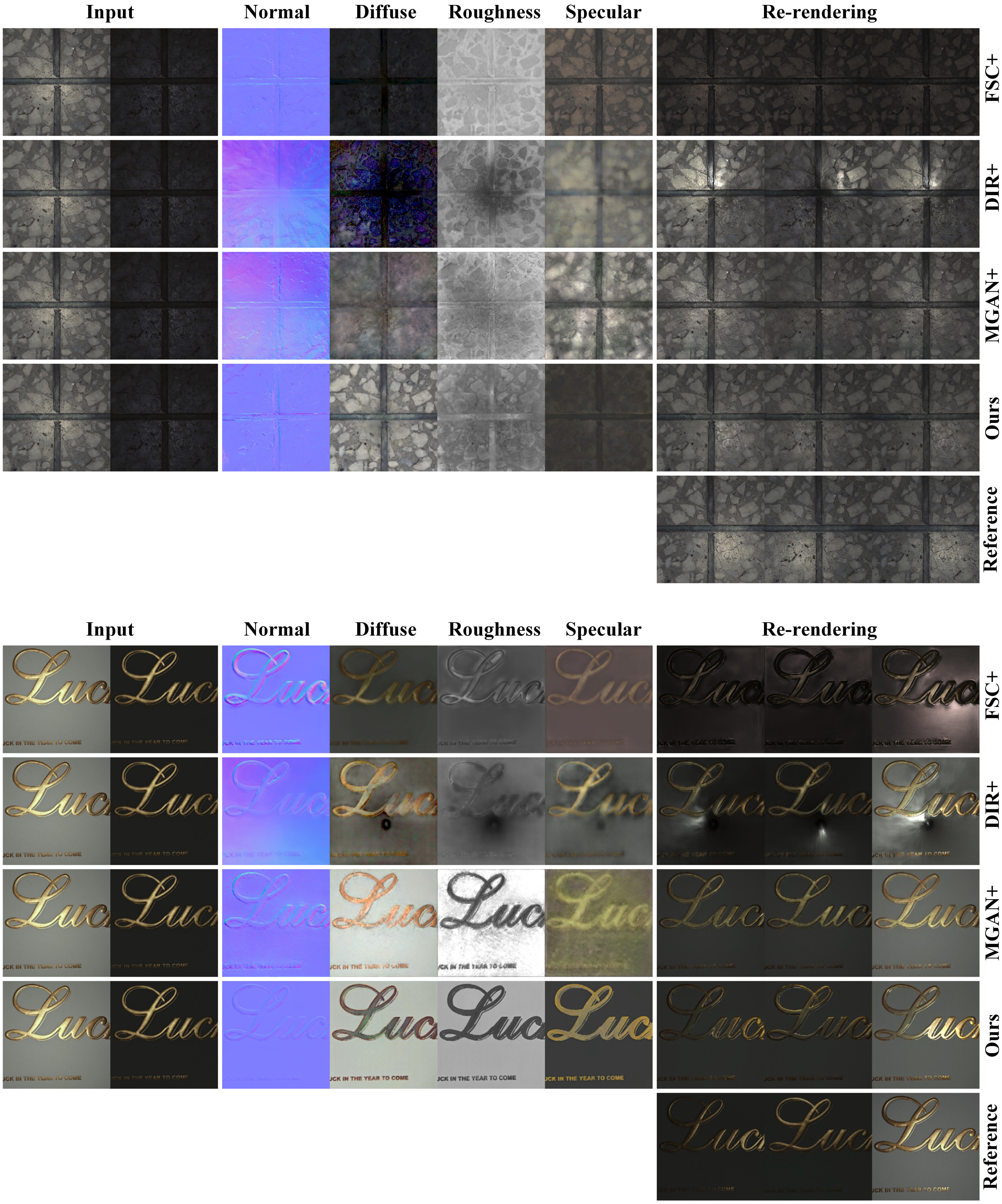

Fig. 8. The enhanced comparison results on real-world data against FSC+ of [Deschaintre et al. 2019], DIR+ of [Gao et al. 2019] and MGAN+ of [Guo et al. 2020]. In this comparison, the inputs of these methods are replaced by our novel combination of near-field and far-field images.

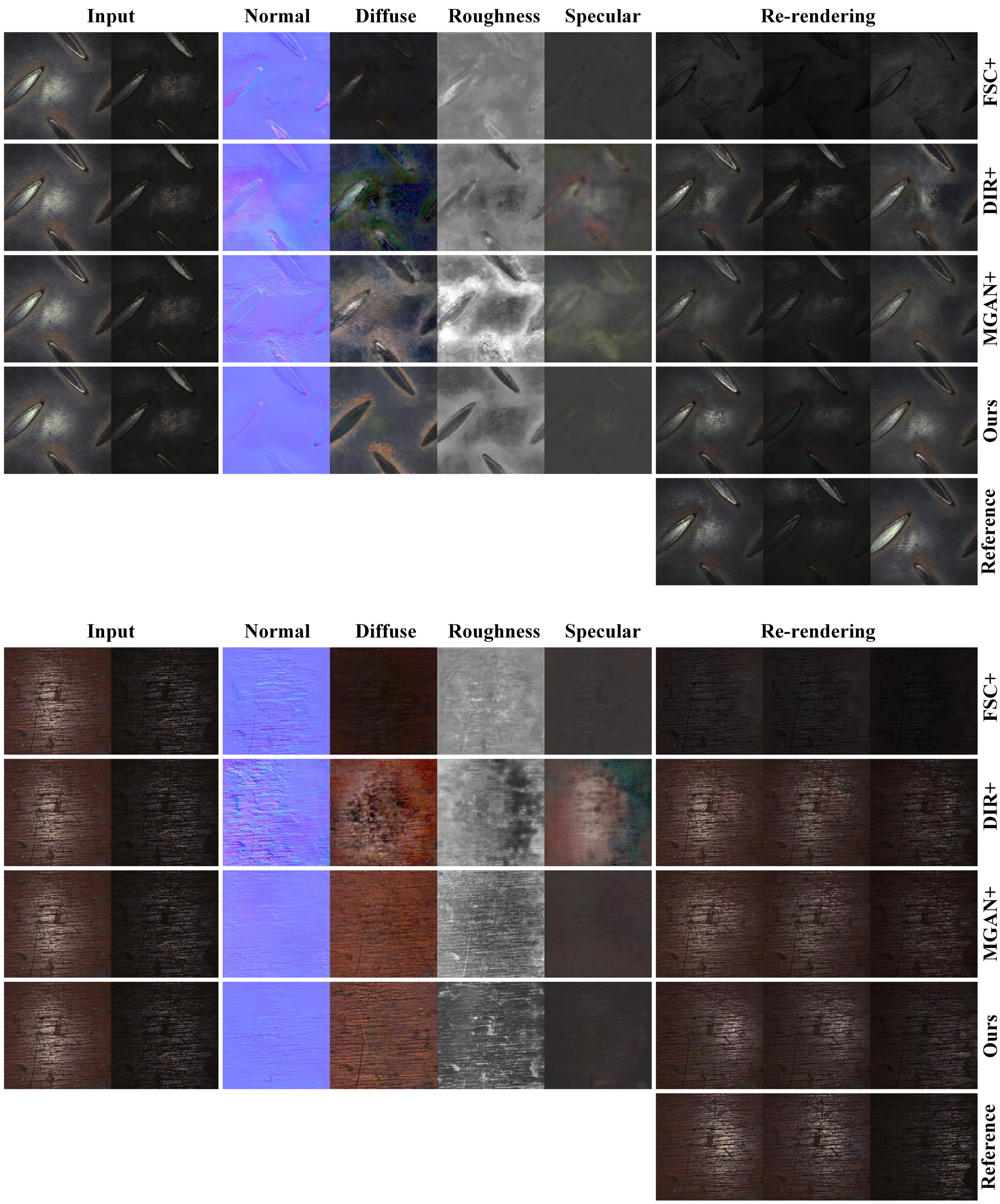

Fig. 9. The enhanced comparison results on real-world data against FSC+ of [Deschaintre et al. 2019], DIR+ of [Gao et al. 2019] and MGAN+ of [Guo et al. 2020]. In this comparison, the inputs of these methods are replaced by our novel combination of near-field and far-field images.

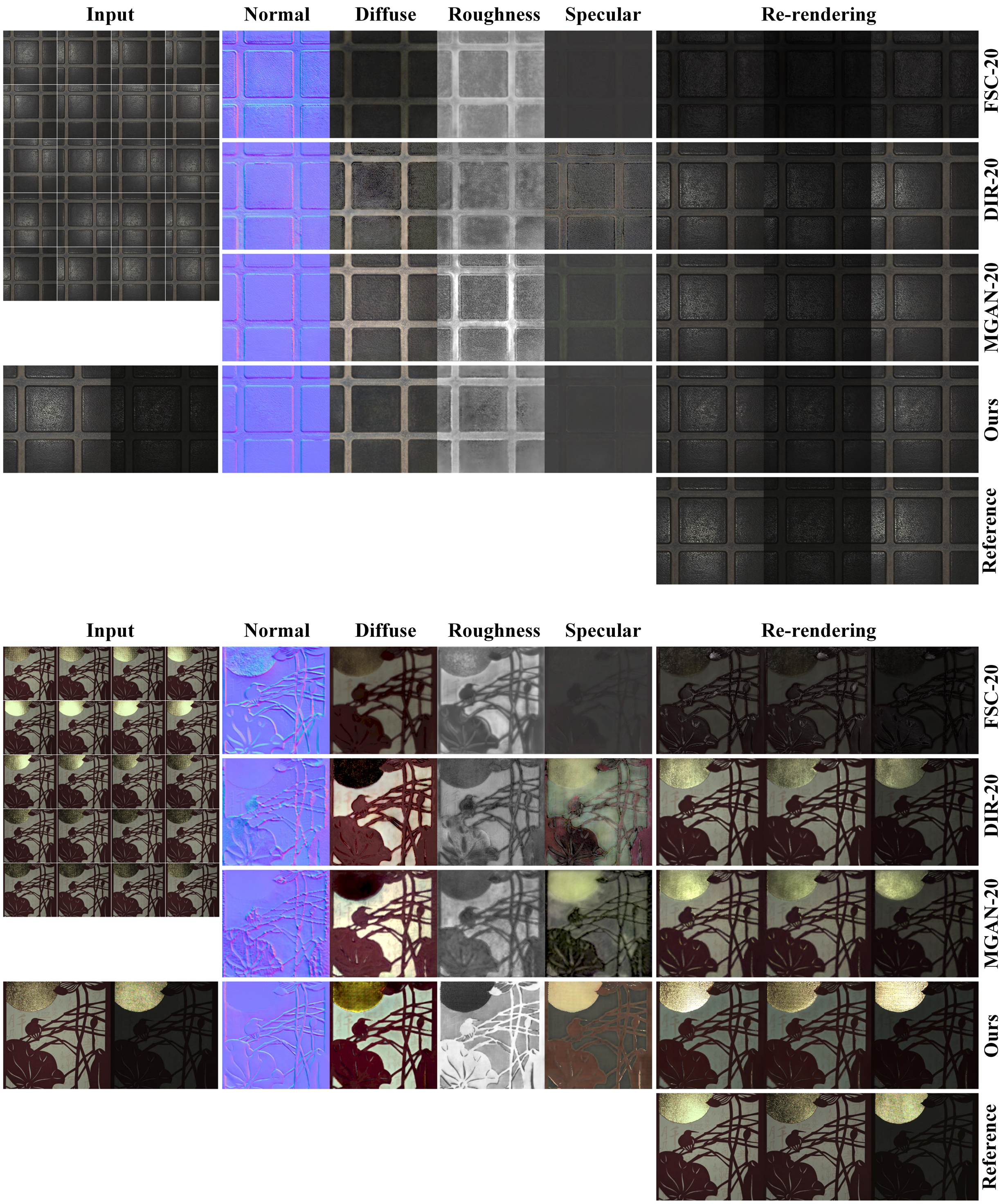

Fig. 10. The challenging comparison results on real-world data against FSC-20 of [Deschaintre et al. 2019], DIR-20 of [Gao et al. 2019] and MGAN-20 of [Guo et al. 2020]. In this comparison, we offer 20 input images for multi-image methods.

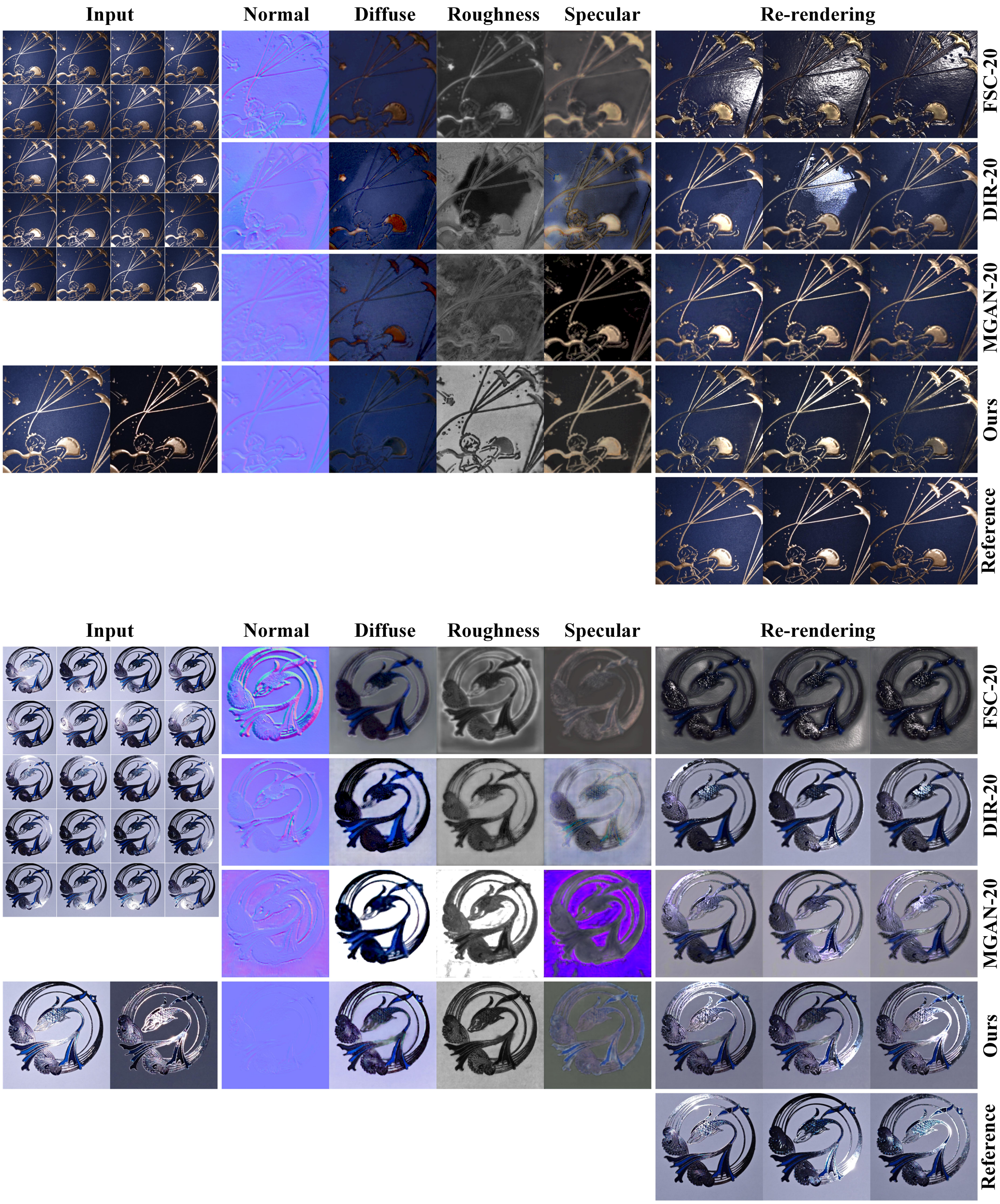

Fig. 11. The challenging comparison results on real-world data against FSC-20 of [Deschaintre et al. 2019], DIR-20 of [Gao et al. 2019] and MGAN-20 of [Guo et al. 2020]. In this comparison, we offer 20 input images for multi-image methods.

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