



Supporting information

Quasi-freeform metasurfaces for wide-angle beam deflecting and splitting

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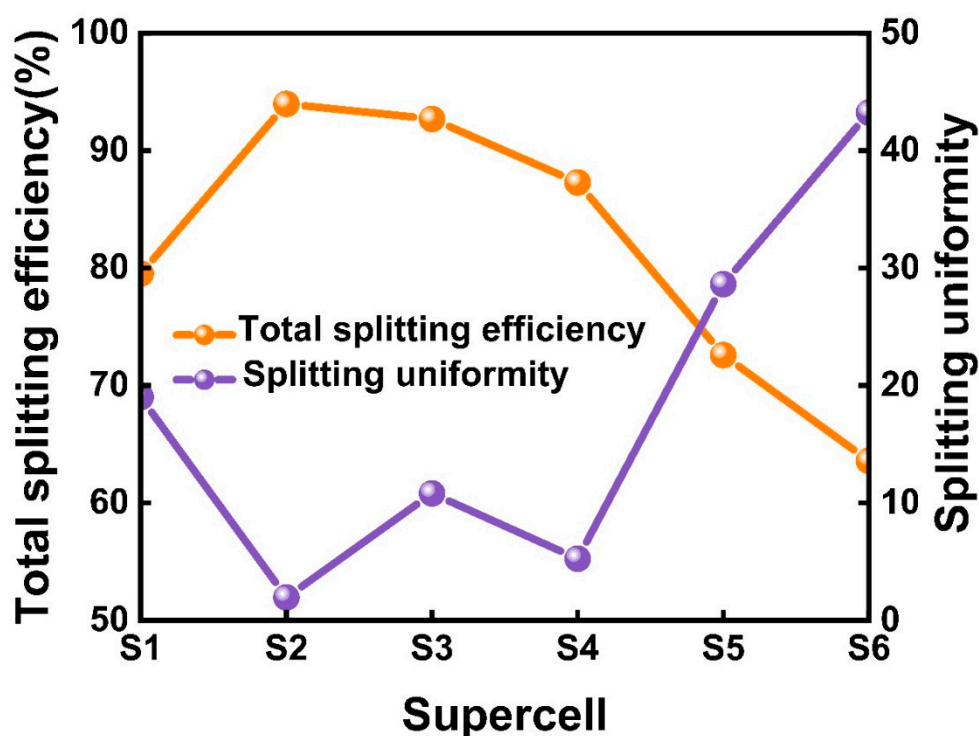
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1. Polarization dependence discussion

Calculated total splitting efficiency and splitting uniformity of optimized supercells for three-port splitting output under y polarized light are depicted in Figure S1. Clearly, the results are not good as the simulation values in Figure 4b, illustrating that the proposed metasurfaces are polarization dependent.



Supplementary Figure S1. Splitting efficiency and splitting uniformity of the optimized supercells under y polarized light.

2. Structure parameters for optimized supercells

We have summarized the structure parameters of optimized supercells in Table S1. The radius and location of the nanocylinders in supercell are represented by a one-dimensional matrix.

Supplementary Table S1. The structure parameters for optimized supercells

Supercell	Radius(nm)	Location(nm)	Height(nm)
D1	[153, 176, 190, 208]	[-866, -229, 387, 881]	759
D2	[159, 180, 203]	[-512, 124, 677]	764
D3	[163, 185, 222]	[-393, 63, 550]	700
D4	[187, 163]	[-751, 576]	821
D5	[204, 162]	[-714, 503]	819
D6	[159, 198]	[-216, 222]	787
S1	[63, 163, 164, 66]	[-865, -162, 372, 847]	738
S2	[110, 161, 164]	[-1076, 200, 733]	800
S3	[117, 160, 158]	[-391, 267, 691]	783
S4	[165, 61]	[-24, 769]	755
S5	[179, 143]	[-442, 404]	713
S6	[181, 148]	[-437, 362]	713
S7	[184, 138, 94, 142]	[-1097, -255, 338, 1114]	743
S8	[242, 125, 124, 125, 242]	[-1336, -858, 0, -858, -1336]	552
S9	[195, 141, 185, 141, 195]	[-1960, -743, 0, -743, -1960]	762