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Supporting Information

Effect of Electrochemical Etching parameters on the morphology and photocatalytic activity of porous 4H-SiC flakes

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1. Cross-section SEM images of Si-face flakes of all the Batches

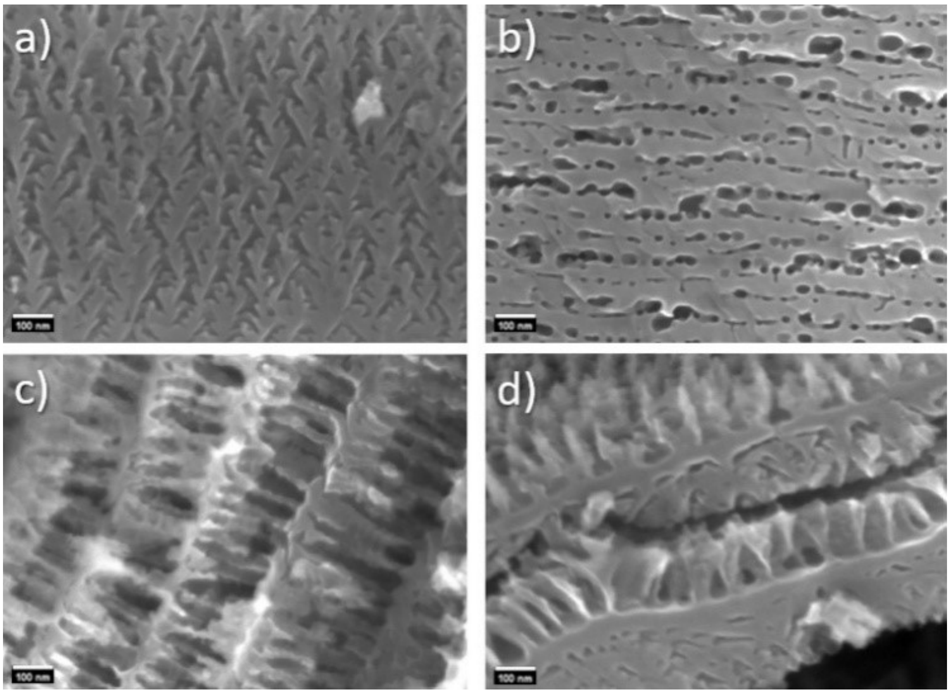

Fig. S1 *Comparison of all 4H-SiC porous flakes in cross-section-view SEM images of Si-face at the same magnification (150.000 x- scale bar 100 nm), in alphabetic order from Batch I to IV. The flakes are randomly dispersed on the SEM sample holder, so the orientation of the pores in the image is not representative of their direction of growth during ECE.*

2. Cross-section SEM images of C-face flakes of all the Batches

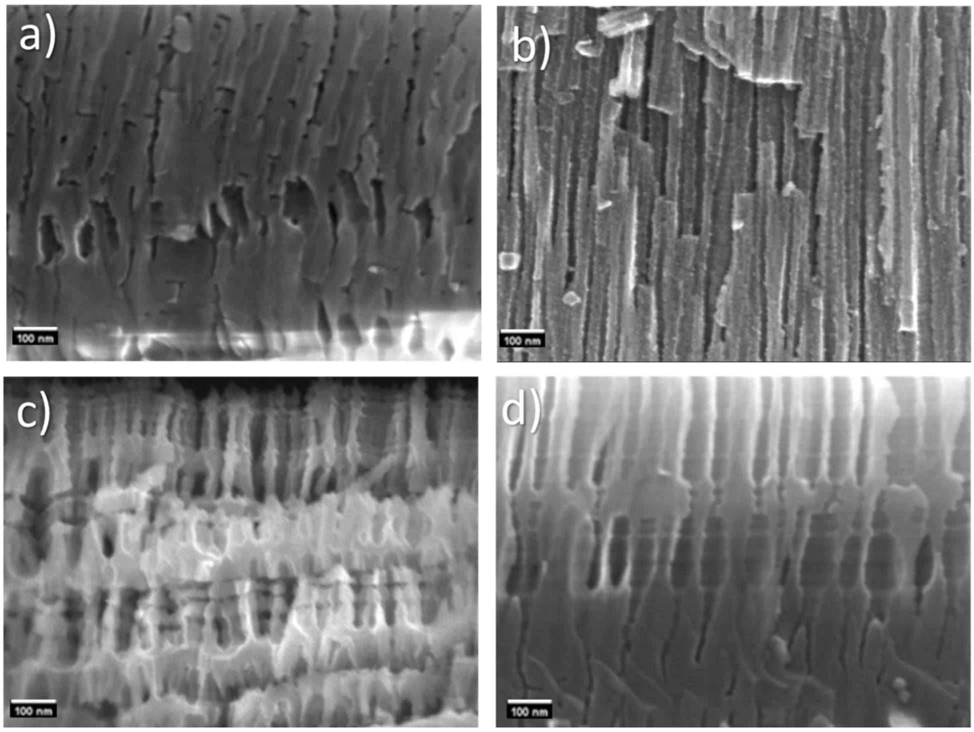

Fig. S2 *Comparison of all 4H-SiC porous flakes in cross-section-view SEM analyses of C-face at the same magnification (150.000 x -scale bar 100 nm), in alphabetic order from Batch I to IV.*

3. BJH pore size distribution curves of porous 4H-SiC Si-face and C-face flakes of Batch II

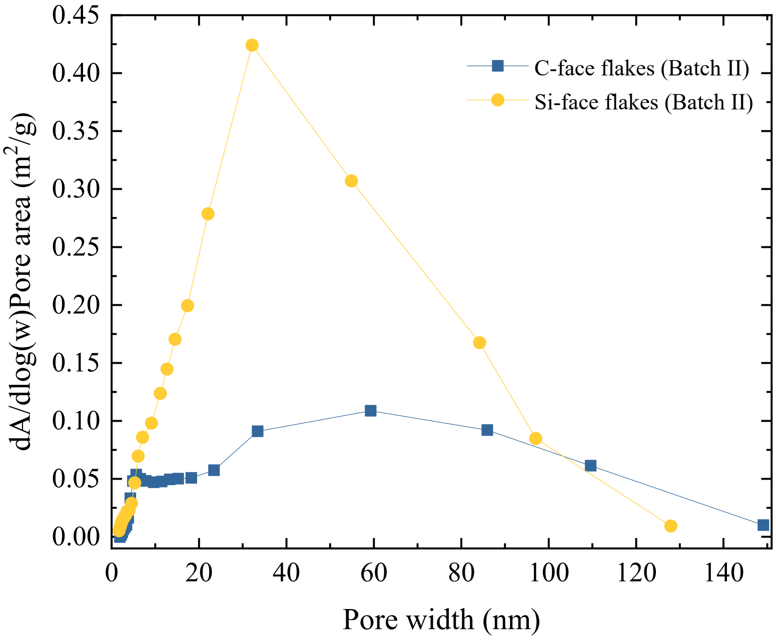

Fig. S3 BJH (desorption curve) pore size distribution of porous 4H-SiC flakes from the Si-face (yellow plot) and C-face (blue plot) of Batch II.

4. BJH pore size distribution curves of porous 4H-SiC Si-face and C-face flakes of Batch III

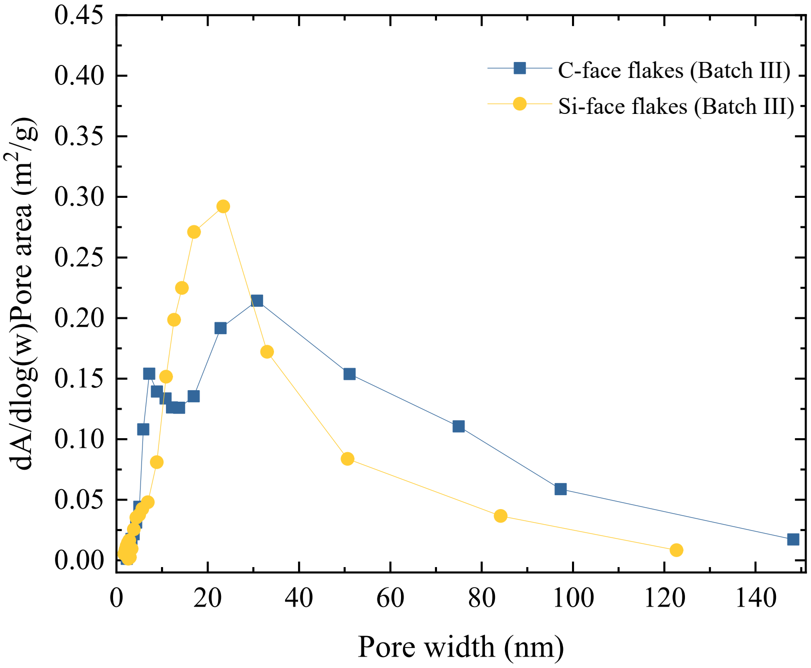

Fig. S4 BJH (desorption curve) pore size distribution of porous 4H-SiC flakes from the Si-face (yellow plot) and C-face (blue plot) of Batch III.

5. BJH pore size distribution curves of porous 4H-SiC Si-face and C-face flakes of Batch IV

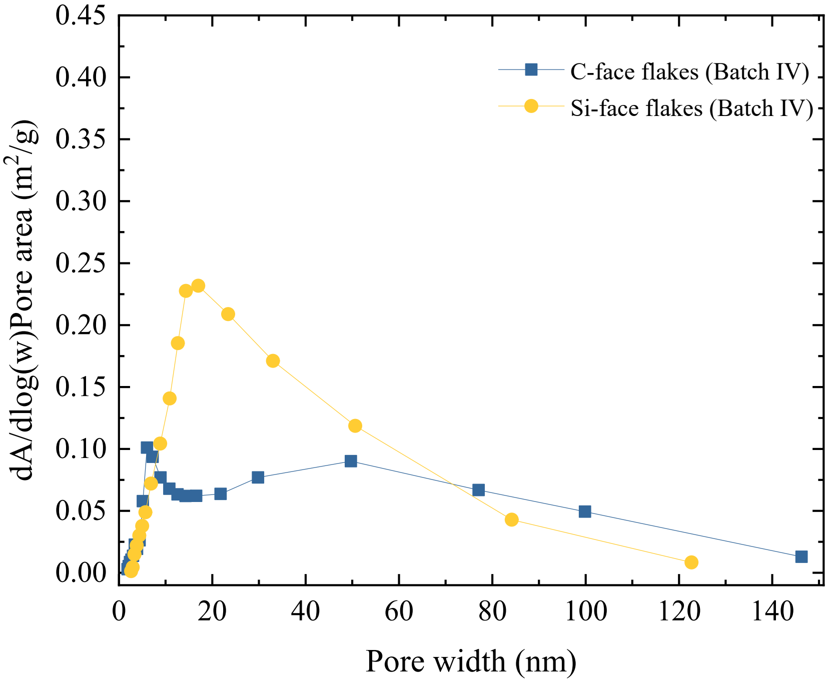

Fig. S5 BJH (desorption curve) pore size distribution of porous 4H-SiC flakes from the Si-face (yellow plot) and C-face (blue plot) of Batch IV.

6. Tauc plot of the Kubelka-Munk of all the Si- and C-face samples of all the batches

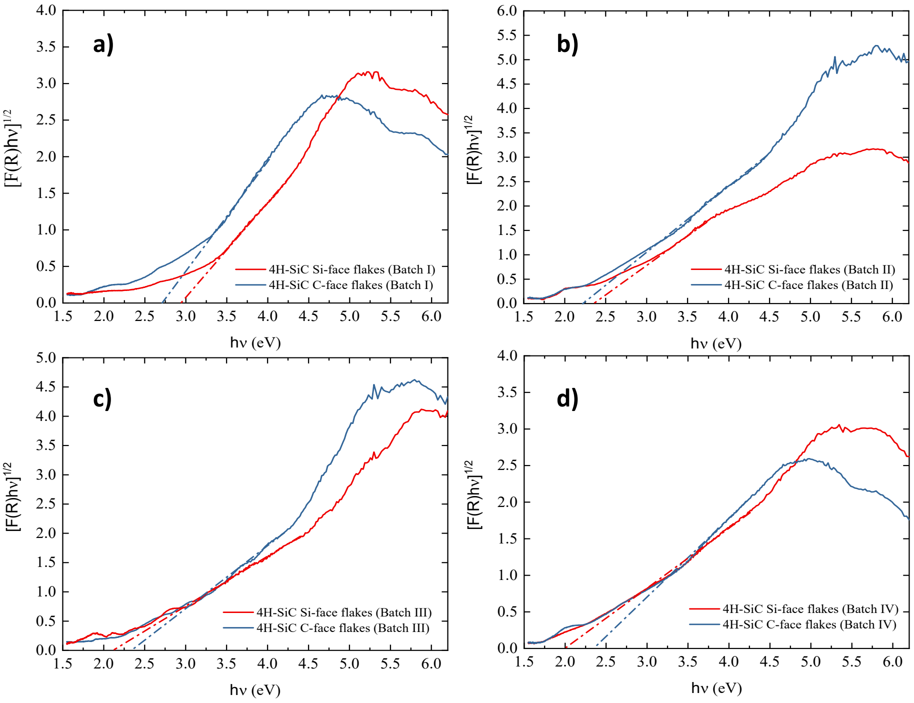

Fig. S6 *Tauc plot of the Kubelka-Munk function of the Si-face flakes (blue line) and the C-face flakes (red line) of all the flakes batches used to extrapolate bandgap value from linear-fitting.*

7. XPS surface atomic composition percentages and C/Si-O/Si ratios

Tab. S1 Surface atomic composition obtained from XPS analysis in the C 1s, Si 2p and O 1s regions for the C-face flakes of Batch I, II, and IV. The C/Si and O/Si ratios were calculated from the corresponding atomic percentages.

Sample	C 1s (%)	Si 2p (%)	O 1s (%)	C/Si	O/Si
C-face (I batch)	48.2	38.5	13.3	1.25	0.35
C-face (II batch)	47.6	39.2	13.2	1.21	0.34
C-face (IV batch)	50.2	33.9	15.9	1.48	0.47