

Atomically thin SiC nanoparticles by ultrasonic realizing enhanced catalytic activity for oxygen reduction reaction in both alkaline and acidic solution

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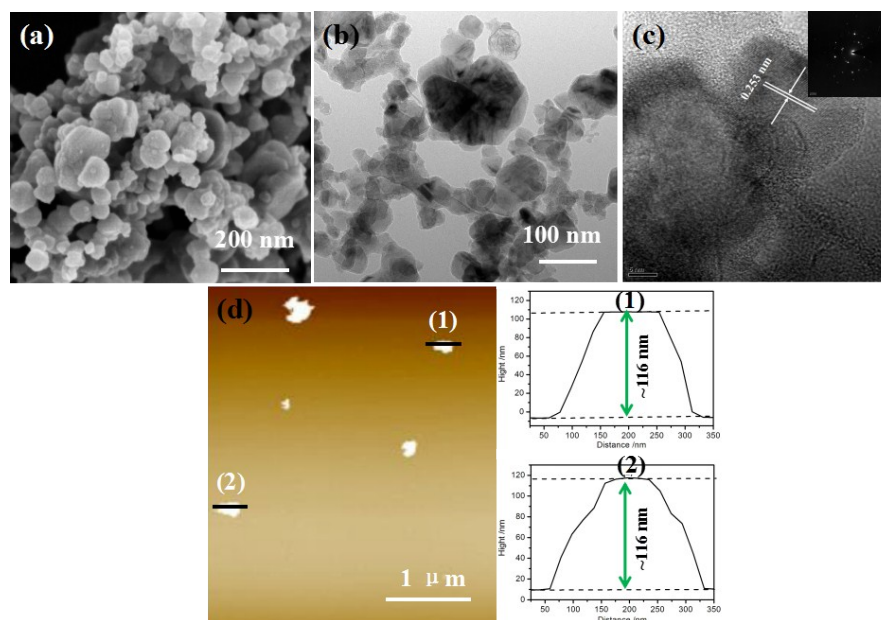


Figure S1 (a)SEM, (b)TEM, (c) HRTEM, and (d) AFM image and height profiles from sections as indicated by the gray lines of commercial SiC. The inset in (c) shows the corresponding SAED pattern.

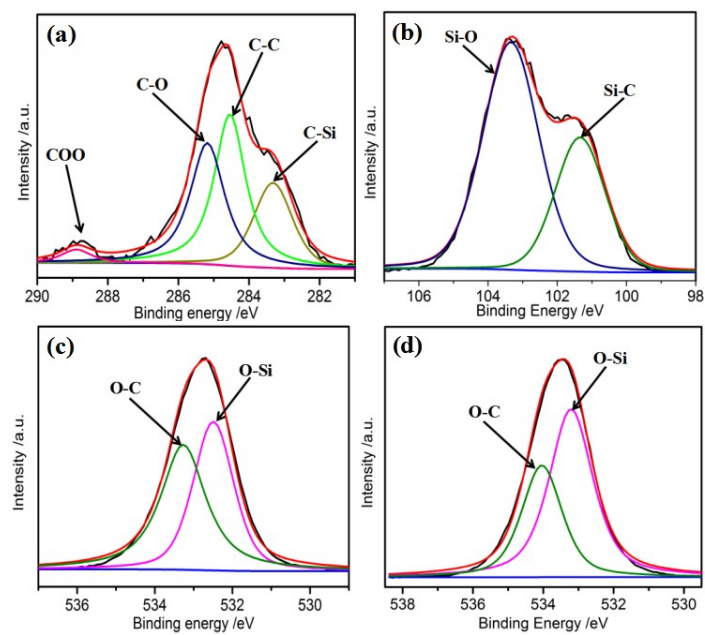


Figure S2 (a) C1s core-level and corresponding deconvoluted spectra; (b) Si2p core-level and corresponding deconvoluted spectra; (c) O1s core-level and corresponding deconvoluted spectra for commercial SiC. (d) O 1s core-level and corresponding deconvoluted spectra for atomically thin SiC.

Table S1 Binding energy and percentages of different bindings calculated from the deconvoluted XPS spectra of C 1s, Si2p, and O1s peak

Binding	Commercial SiC		Atomically thin SiC	
	Binding energy	percentage	Binding energy	percentage
C-Si	283.3	23.0%	283.7	22.2%
C-C	284.5	39.6%	284.6	30.4%
C-O	285.2	34.2%	285.3	42.2%
C-N	-	-	286.2	5.2%
COO	288.9	3.2%	-	-
Si-C	101.3	34.1%	102.0	34.1%
Si-N	-	-	102.9	6.0%
Si-O	103.3	65.9%	104.0	59.9%
N-Si	-	-	398.2	5.6%

Pyridinic N	-	-	398.9	80.9%
Pyrrolic N	-	-	400.1	13.5%
O-Si	532.5	47.4%	533.2	63.0%
O-C	533.3	52.6%	534.0	37.0%

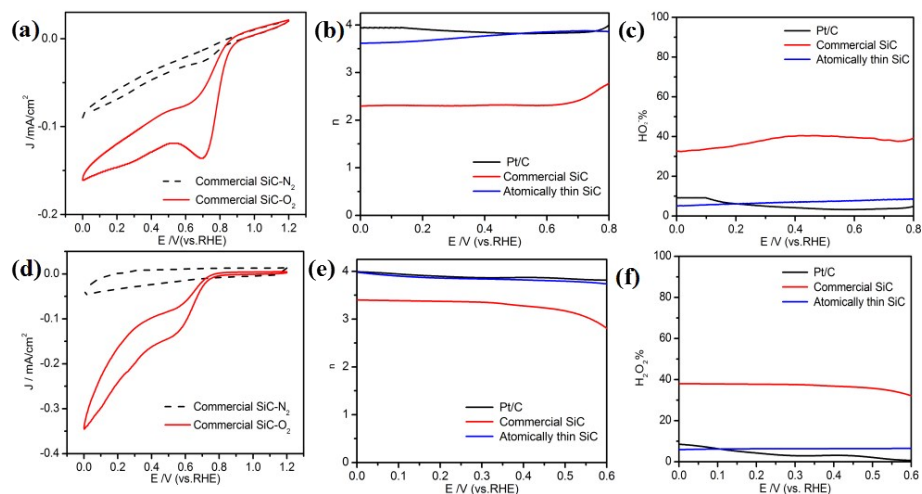


Figure S3 (a) CVs of commercial SiC in N₂- and O₂-saturated 0.1 M KOH. (b) The number of electron transfer and (c) percentage of peroxide of commercial SiC obtained from the rotating ring-disk electrode measurements in O₂-saturated 0.1 M KOH. (d) CVs of commercial SiC in N₂- and O₂-saturated 0.1 M HClO₄. (e) The number of electron transfer and (f) percentage of peroxide of commercial SiC obtained from the rotating ring-disk electrode measurements in O₂-saturated 0.1 M HClO₄.