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**Fabrication of Highly Oriented 4H-SiC Gourd-shaped Nanowire Arrays and
Their Field Emission Properties**

*Chunmei Chen^{1,2}, Shanliang Chen², Minghui Shang², Fengmeigao², Zuobao Yang², Qiao
Liu², Zhiyong He^{1,*} and Weiyong Yang^{2,*}*

¹ Research Institute of Surface Engineering, Taiyuan University of Technology, Taiyuan City, 030024,
P.R. China.

² Institute of Materials, Ningbo University of Technology, Ningbo City, 315016, P.R. China.

Corresponding authors. E-mails: hezhiyong@tyut.edu.cn (Z. He) and weiyouyang@tsinghua.org.cn (W.
Yang)

Table S1. Turn-on fields (E_{t0})^a of various SiC and typical inorganic semiconductor nanostructured emitters.

	Emitters	Preparation Methods	E_{t0} (V/ μ m)	Ref.
Typical SiC nanostructured field emitters that fabricated by the anodic oxidation	4H-SiC gourd-like nanowires arrays	Electrochemical anodic oxidation	0.95	This work
	SiC nanoporous	Electrochemical anodic oxidation	Current density reached 6 A/ cm ² at 7.5 V/ μ m	1
Typical SiC nanostructured field emitters that having the degree of sharp features	Au-decorated SiC nanowires	Pyrolysis of polysilazane	1.14	2
	P-doped SiC nanoparticles	Pyrolysis of polysilazane	0.73-1.03	3
	Carbon decorated SiC nanowires	Chemical vapor reaction	0.5	4
	Aligned SiC tower-like nanowires	Pyrolysis of polysilazane	1.5	5
	B-doped 3C-SiC nanowires	Pyrolysis of polysilazane	1.35	6
	Al ₂ O ₃ -decorated tubular SiC	Heating evaporation	2.4	7
	Al-doped β -SiC nanowires	Pyrolysis of polysilazane	0.55-1.54	8
	β -SiC nanoarchitectures	Thermochemical process	12	9
	Bamboo-like β -SiC nanowires	Thermal evaporation	10.1	10
	<i>n</i> -type SiC nanoneedles emitters	Pyrolysis of polysilazane	1.11-1.38	11
	<i>n</i> -type β -SiC nanoarrays	Pyrolysis of polysilazane	1.57-1.95	12
	B-doped SiC nanoneedles arrays	Pyrolysis of polysilazane	0.98	13
	N-doped 3C-SiC nanoneedles	Pyrolysis of polysilazane	0.67	14
	N-doped 3C-SiC nanoneedles	Pyrolysis of polysilazane	~1.1	15
	Typical SiC nanostructured field emitters that not having the degree of sharp features	N-doped β -SiC nanowires	Pyrolysis of polysilazane	1.90-2.65
Tapered SiC Nanowires		Chemical vapor deposition	~1.2	17
β -SiC nanowires		Pyrolysis of polysilazane	0.66-1.3	18
β -SiC nanowires		Chemical vapor reaction	1.0-2.0	19
β -SiC nanowires		Thermal heating process	--	20
Tubular β -SiC		Template- and catalyst-free	5	21
β -SiC nanowires		Chemical vapor deposition	--	22
Aligned SiC porous nanowires		In situ carbonizing	2.3-2.9	23
Nonaligned SiC nanowires		Thermal evaporation	3.1-3.5	24
SiC nanowires/nanorods		Thermal heating process	3.33	25
Typical inorganic semiconductor nanostructured emitters	WO ₃ nanowires	Chemical vapor deposition	1.8	26
	Tungsten oxide nanowires	Thermal evaporation	--	27
	Highly wrinkled graphene	Wet chemical route	1.18	28
	SnO ₂ nanowires arrays	Deposition and vapor	3.3	29
	SnO ₂ nanowires	Thermal evaporation	3.5	30
	Patterned carbon nanotube arrays	Carbothermal reduction	0.4	31
	Ultrathin BN nanosheets	Chemical vapor deposition	1.9	32
	Ultrafine ZnS nanobelts	Thermal evaporation	3.47	33
	Single-crystalline CdS nanobelts	Chemical vapor deposition	3.7	34

Ordered CdS nanostructure arrays	Chemical vapor deposition	12.2	35
Single-crystalline PrB ₆ nanorods	Gas-solid reaction	0.95-2.80	36
Aligned LaB ₆ nanowires arrays	Chemical vapor deposition	1.82	37
Aligned untralong ZnO nanobelts	Thermal evaporation	1.3	38
ZnS nanobelts quasi-arrays	Thermal evaporation	3.55	39
TaSi ₂ nanowires	Thermal evaporation	4-4.5	40
Si-doped AlN nanoneedle array	Thermal evaporation	1.8	41
Co ₅ Ge ₇ nanowire/nanobelt arrays	Chemical vapor transport	1.6	42
Carbon nanoparticles	Low-cost flame synthesis	1.33	43

^a The turn-on fields required to generate an emission current density of 10 $\mu\text{A}/\text{cm}^2$. If other values are used, it will be mentioned separately.

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