Electronic Supplementary Material

2D cubic phase vanadium nitride film synthesis and investigation of the electrical transport properties

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Table S1. Electrical conductivities comparison of VN and other 2D TMN materials.

Materials	Ref.	Thickness [nm]	Lateral dimension [μm]	Room temperature Conductivity [S cm^{-1}]
Mo5N6	[18]	2~40	~20	229.6
δ-MoN	[18]	65.62	~20	3126
Mo2N	[34]	87.48	~0.2	2100
V2N	[34]	39.16	~0.2	6800
VN	This work	3.2~ 84.3 nm	5~61	4.25×10^{3} ~1.30×10^{4}
TiN	[35]	~300 nm	film	6.7~8.3
W5N6	[19]	2.9	~20	161.1
Mo5N6	[36]	15	film	$6.4*10^{4}$

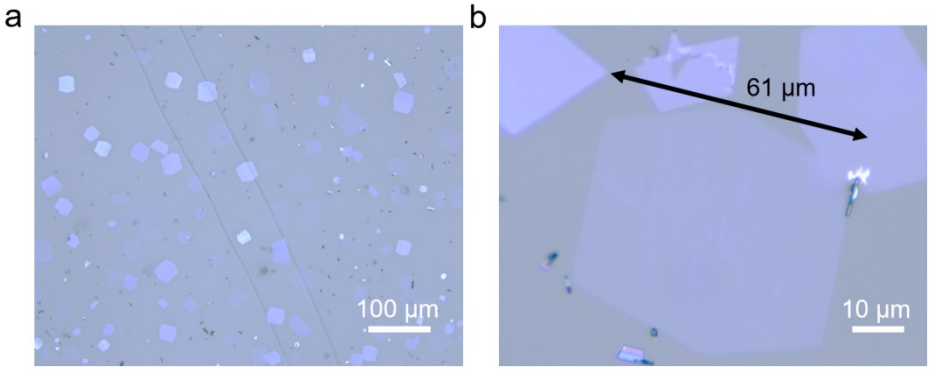

Figure S1 Optical images of VO_2 crystals grown uniformly on mica substrates (a) with size up to 61 μm (b).

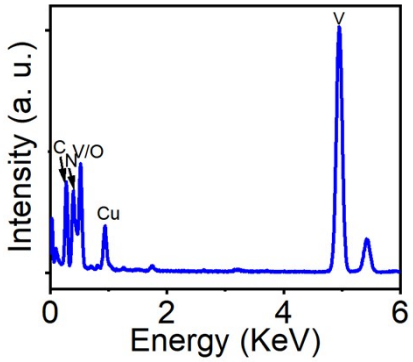

Figure S2 EDS spectrum of Vanadium nitride crystals transferred to a copper TEM grid.

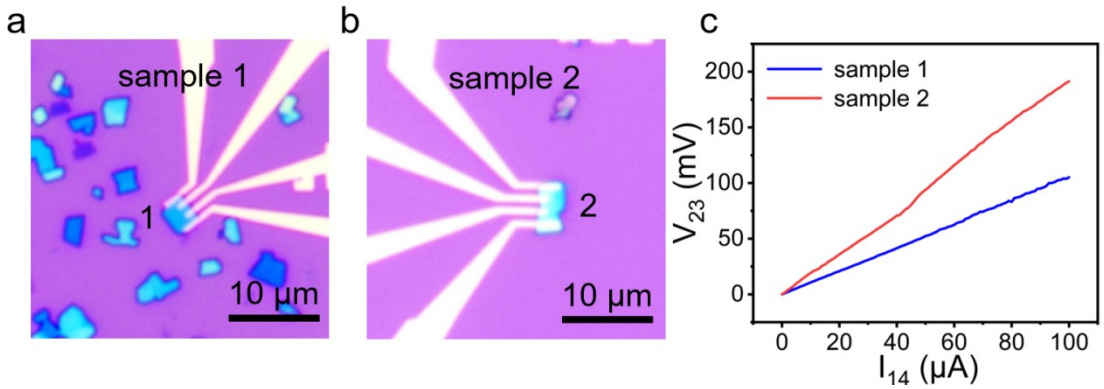

Figure S3 Electrical transport measurements of VO_2 films on SiO_2/Si substrate. (a)and (b) are two VO_2 four-electrode devices. (c) Room-temperature I−V curves of the samples with different thickness.