

Supporting Information

Large-area nanoscale farmland-like surfaces of one-dimensional NbO₂ nanorods with multi-growth directions: Studies on the purple-blue photoluminescence and low-field electron emissions

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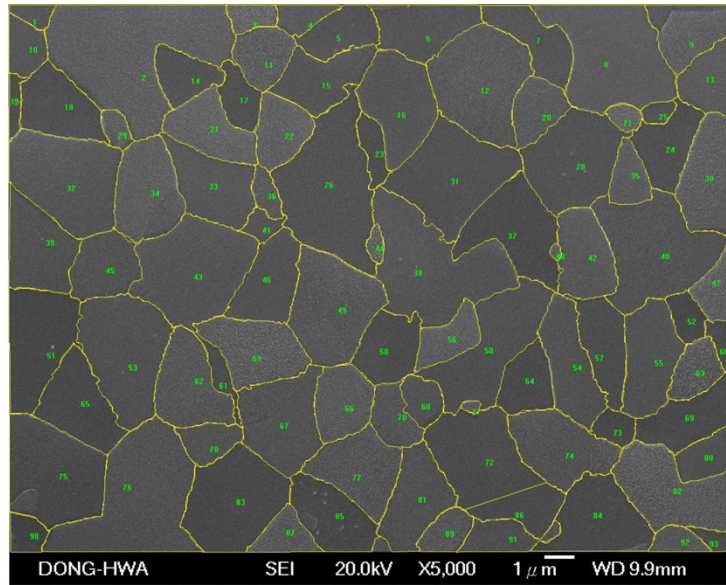
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No.	Area (μm^2)	No.	Area (μm^2)	No.	Area (μm^2)	No.	Area (μm^2)	No.	Area (μm^2)	No.	Area (μm^2)
1	0.4	17	1.1	33	2.6	49	3.7	65	2.6	81	2.3
2	7.3	18	2.2	34	2.8	50	4.1	66	2.0	82	3.4
3	0.6	19	0.4	35	0.9	51	3.3	67	3.2	83	4.0
4	0.7	20	1.3	36	0.4	52	0.7	68	0.6	84	3.0
5	1.3	21	1.8	37	3.2	53	4.3	69	2.1	85	2.3
6	2.5	22	1.5	38	5.1	54	2.4	70	1.2	86	1.6
7	1.9	23	0.9	39	2.6	55	2.6	71	0.1	87	0.9
8	5.1	24	2.0	40	4.8	56	1.2	72	3.8	88	0.0
9	2.0	25	0.3	41	0.5	57	1.8	73	0.6	89	0.8
10	0.9	26	5.6	42	2.3	58	1.9	74	2.7	90	0.7
11	1.4	27	0.3	43	4.6	59	2.5	75	4.1	91	0.9
12	4.3	28	3.7	44	0.2	60	0.6	76	5.9	92	0.6
13	1.5	29	0.4	45	1.9	61	0.5	77	2.5	93	0.4
14	1.3	30	2.6	46	2.2	62	2.4	78	1.0	94	0.1
15	2.3	31	4.6	47	1.0	63	1.1	79	0.0	Total	193.7
16	2.8	32	4.3	48	0.1	64	1.5	80	1.2		

Fig. S1. The FESEM image shows the spectacular scenic nanoscale farmland-like surface containing various domains outlined in yellow. The 94 domains range in area from a few square submicrometers to a few square micrometers.

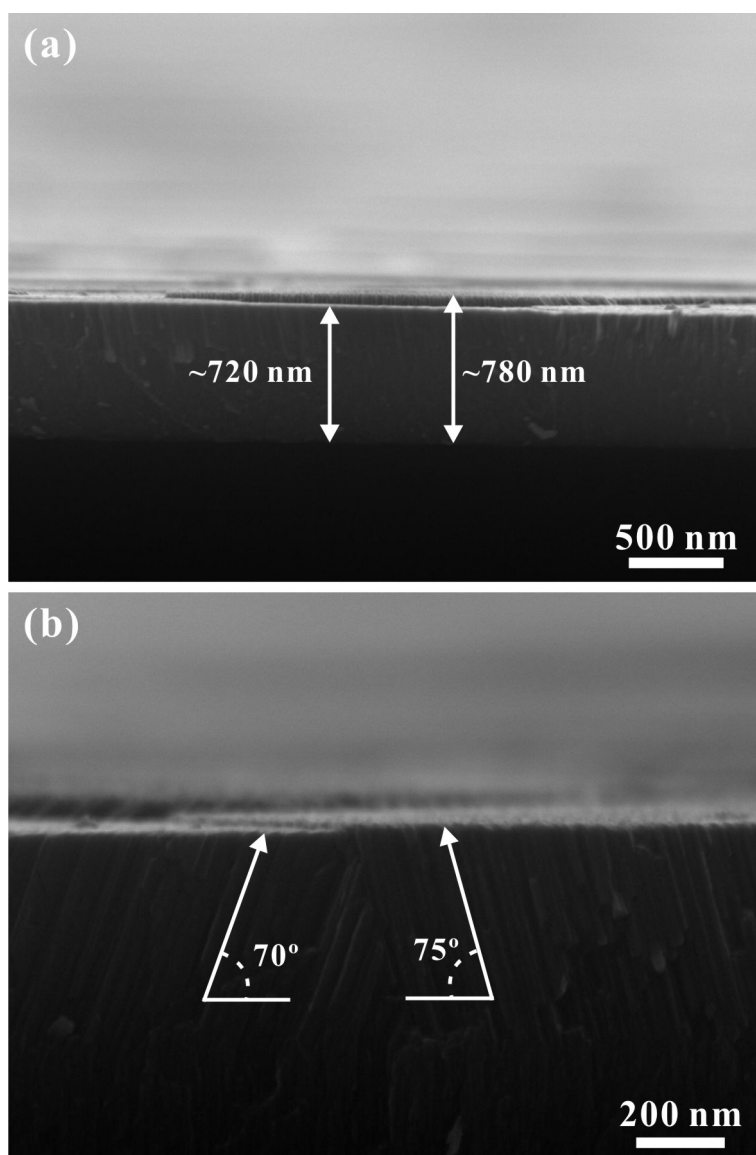


Fig. S2. FESEM images showing side views (90° to the surface normal direction) of the nanoscale farmland-like surface. (a) Two distinct domains that can be seen in the scenic nanoscale farmland-like surface are ~ 720 or ~ 780 nm thick, indicating the real lengths of the 1D niobium-oxide nanorods to be ~ 720 or 780 nm. As mentioned in the main body of the text, the nanoscale farmland-like surface contains of many distinct domains. (b) Two distinct domains consisting of 1D niobium-oxide nanorods growing in two different directions of 70° and 75° , respectively, to the surface horizontal direction. This indicates that each domain in the nanoscale farmland-like surface has its own growth direction for 1D niobium-oxide nanorods. For example, the other three domains shown in Figure 1d each possess three distinct growth directions (represented by three arrows). Hence, the 1D niobium-oxide nanorods grow in different directions in different domains in the scenic nanoscale farmland-like surface.

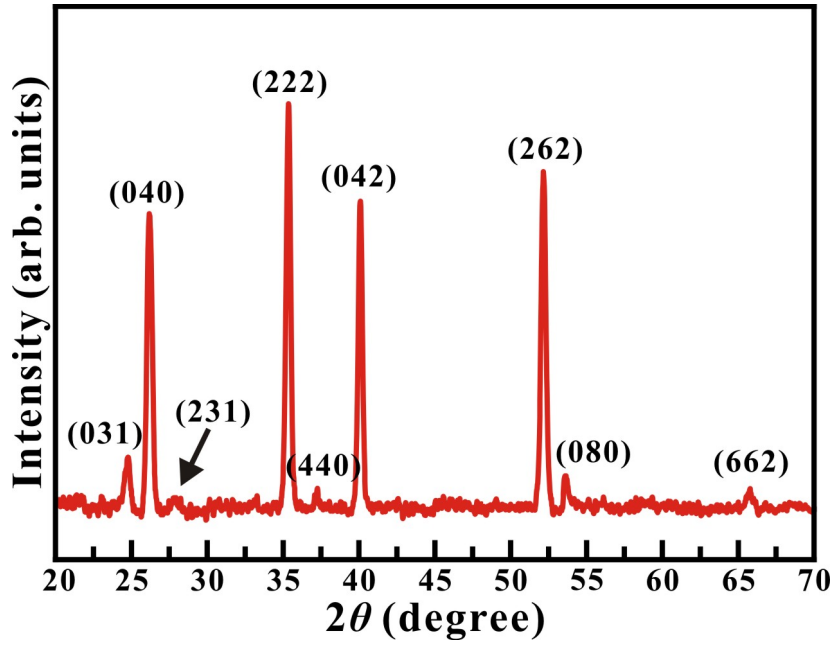


Fig. S3. The XRD patterns reveal the detailed crystalline structure of the as-synthesized 1D niobium-oxide nanorods. The diffraction peaks at $2\theta = 24.8^\circ$, 26.2° , 27.9° , 35.4° , 37.3° , 40.1° , 52.2° , 53.6° , and 65.8° correspond respectively to the (031), (040), (231), (222), (440), (042), (262), (080), and (662) lattice planes of the tetragonal NbO_2 crystal in the space group $I41/a$ with lattice constants of $a = b = 13.696 \text{ \AA}$, $c = 5.981 \text{ \AA}$, and $\alpha = \beta = \gamma = 90^\circ$ (JCPDS card No. 71-0020). The XRD results indicate that the 1D niobium-oxide nanorods arranged in the domains are NbO_2 crystals only.