

Supplementary information:

S1:

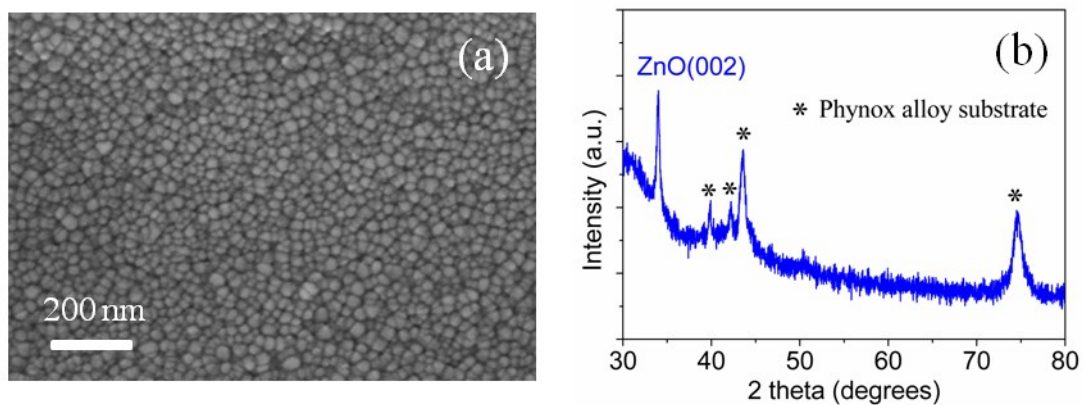


Fig.S1: (a). FE-SEM image of ZnO seeds on the Phynox alloy substrate (b). Corresponding XRD pattern.

Table S1: Chemical composition (weight %) of Phynox alloy.

Chemical composition (weight %) of Phynox alloy										
Fe	Co	Cr	Ni	Mo	Mn	Si	C	P	S	Be
Balance	39-41	19-21	15-16	6.5-7.5	1.5-2.0	≤1.2	≤0.15	≤0.015	≤0.015	≤0.001

Table S2: Tilt angle measurements of ZnO nanorods from FE-SEM images with respect to growth temperature.

Growth temperature (°C)	Tilt angle1 (°)	Tilt angle2 (°)	Tilt angle3 (°)	Avg. tilt angle (°)
60	88.2	83.0	82.5	84.5
70	89.2	88.1	89.7	89.0
80	89.7	89.4	89.6	89.5
90	89.9	89.7	89.8	89.8

Table S3: Average length and diameter of the ZnO nanorods with growth temperatures.

Growth temperature (°C)	Avg. length (nm)	Avg. diameter (nm)	Aspect ratio
60	135.30 ± 17.02	68.65 ± 4.32	1.970
70	359.66 ± 23.16	93.70 ± 9.05	3.838
80	859.43 ± 24.50	93.89 ± 13.15	9.153
90	1304.66 ± 184.97	106.37 ± 12.66	12.265

S2:

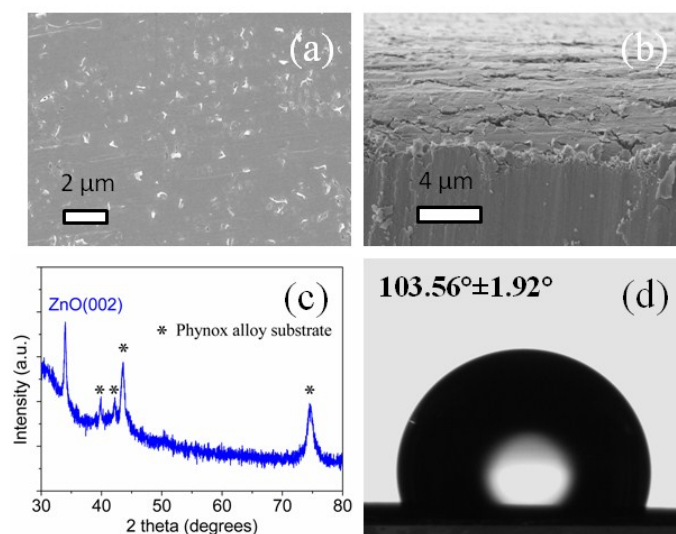


Fig.S2: (a-b). FE-SEM images of ZnO nanorods grown at 50 °C on the Phynox alloy substrate, (c). Corresponding XRD pattern, (d) WCA measurement.

S3:

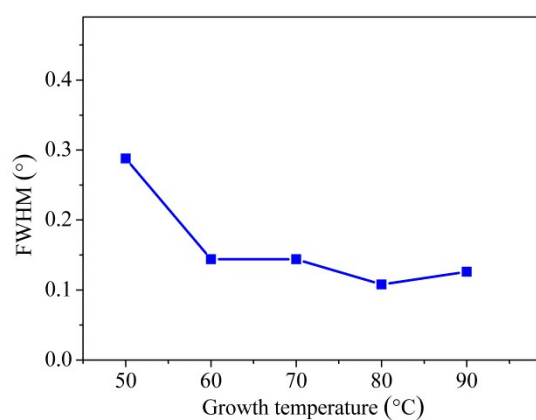


Fig.S3: Effect of growth temperature on FWHM values of as-grown ZnO nanorods.

S4:

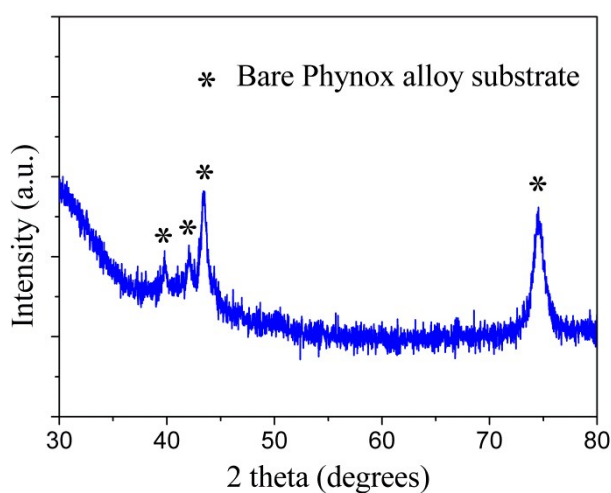


Fig.S4: XRD pattern of bare Phynox alloy substrate.

Table S4: Quantification details of as-grown ZnO nanorods.

Element	Binding energy (eV)	FWHM (eV)	Area (a.u.)	At% (a.u.)
O 1s	530.80	3.762	15633.73	39.54
C 1s	284.80	3.256	6431.92	47.67
Zn 2p	1020.80	3.366	49537.06	12.79

Table S5: WCA measurements of ZnO nanorods with growth temperatures.

Growth Temperature (°C)	WCA1 (°)	WCA2 (°)	WCA3 (°)	Avg.WCA(°)
50	105.1	101.4	104.2	103.56 ± 1.92
60	116.6	120.7	116.4	117.90 ± 2.42
70	135.9	139.1	138.9	137.96 ± 1.79
80	138.9	135.0	137.1	137.00 ± 1.95
90	140.9	136.8	140.9	139.53 ± 2.36