Electronic Supplementary Material (ESI) for RSC Advances

Supporting Information

Template-assisted synthesis of ordered single crystal InN nanowires

Zhuo Chen*[1], Yanan Li[1], Jie Jiang[1], Chuanbao Cao*[1], Tingting Xu[2], Qing Chen[2], Xingyan Xu[1], and Hesun Zhu[1]

[1]Research Center of Materials Science, Beijing Institute of Technology, Beijing 100081, People's Republic of China

[2]Key Laboratory for the Physics and Chemistry of Nanodevices and Department of Electronics, Peking University, Beijing 100871, People's Republic of China.

The involved formulas are given as following:

$$\Delta G_T^{\ominus} = \Delta H_T^{\ominus} - T\Delta S_T^{\ominus} \quad (1),$$

$$\Delta H_T^{\ominus} = \Delta H_{298}^{\ominus} + \int_{298}^{T} \Delta C_p dT \quad (2),$$

$$\Delta S_T^{\ominus} = \Delta S_{298}^{\ominus} + \int_{298}^{T} \frac{\Delta C_p}{T} dT \quad (3),$$

$$\Delta H_{298}^{\ominus} = \sum v_i \Delta H_{298,i}^{\ominus} \ , \ \Delta S_{298}^{\ominus} = \sum v_i \Delta S_{298,i}^{\ominus} \ , \ \Delta C_p = \sum v_i \Delta C_{p,i} \quad (4) .$$

The related thermodynamic data are given in Table S1.

Table S1 The involved thermodynamic data in reactions (1) and (2) [1].

Substance	ΔS_{298}(J/(Kmol))	$-\Delta H_{298}$(kJ/mol)	A	B	C
InN	43.5	138.1	38.07	12.13	---
In_2O_3	107.9	925.9	121.34	13.39	-30.12
In (s)	57.8	0.0	24.31	10.46	---
H_2O(g)	188.7	241.8	30.00	10.71	0.33
H_2(g)	130.6	0.0	27.37	3.33	0.50
NH_3(g)	192.7	45.9	25.80	31.63	0.35

where s-solid,l-liquid, g-gas, and $C_p = A + B \cdot 10^{-3}T + C \cdot 10^{5}T^{-2}$

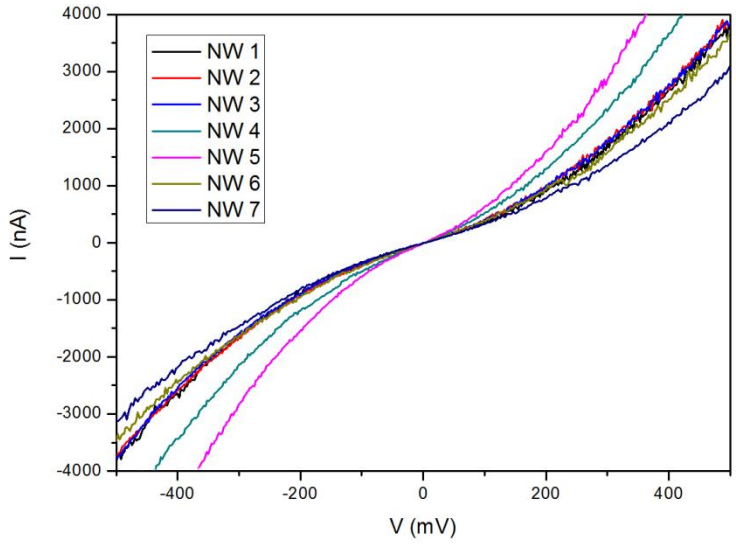

Figure S1. I-V curves of 7 nanowires

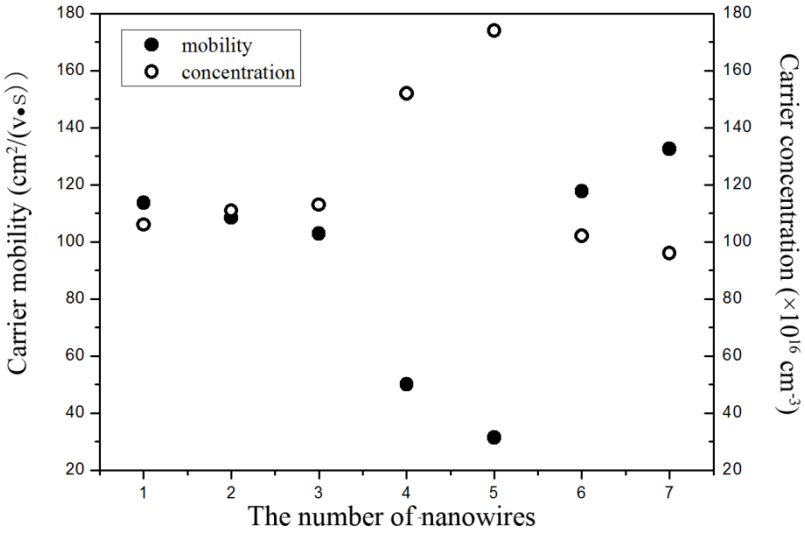

Figure S2. The intrinsic parameters of 7 nanowires.

Reference

(1) O. Kubaschewski, C. B. Alcock and P. J. Spencer, Materials Thermochemistry, Pergamon Press, Oxford 1993.