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Investigation of catalyst-assisted growth of nonpolar GaN nanowires via a modified HVPE process

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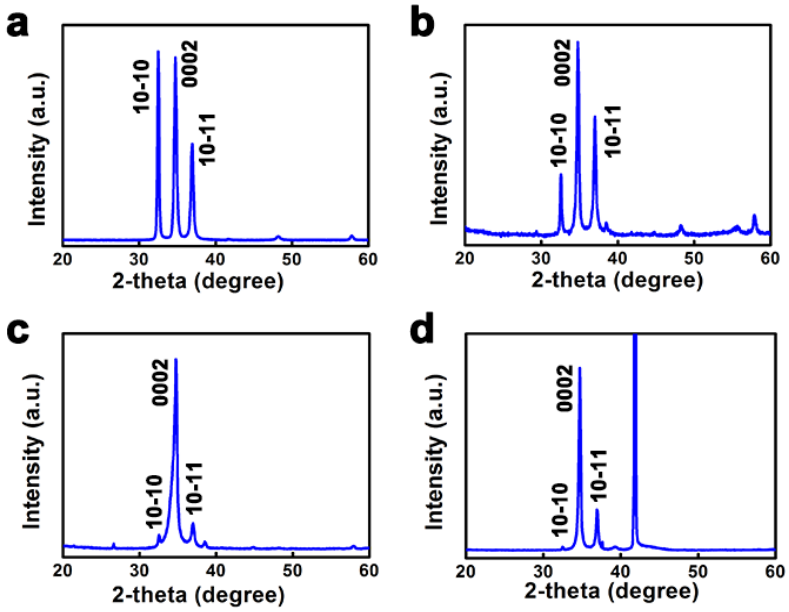

Figure S1. XRD patterns of GaN nanowires grown at 980 ℃ under $GaCl_3$ flux rate of (a) 40 sccm, (b) 30 sccm, (c) 15 sccm and (d) 10sccm, respectively.

Figure S2. Low magnification TEM image of an individual GaN nanowire corresponding to **Figure 2b**.

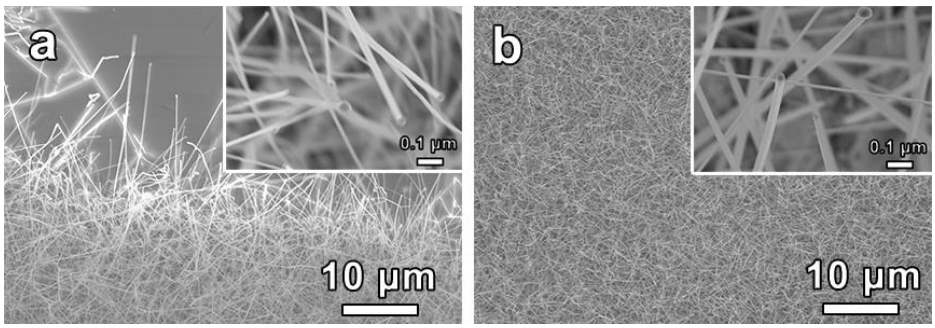

Figure S3. SEM images of GaN nanowires grown at 980 ℃ and $GaCl_3$ flow rate of 10 sccm under different NH_3 flow rate: (a) 30 sccm and (b) 15 sccm.

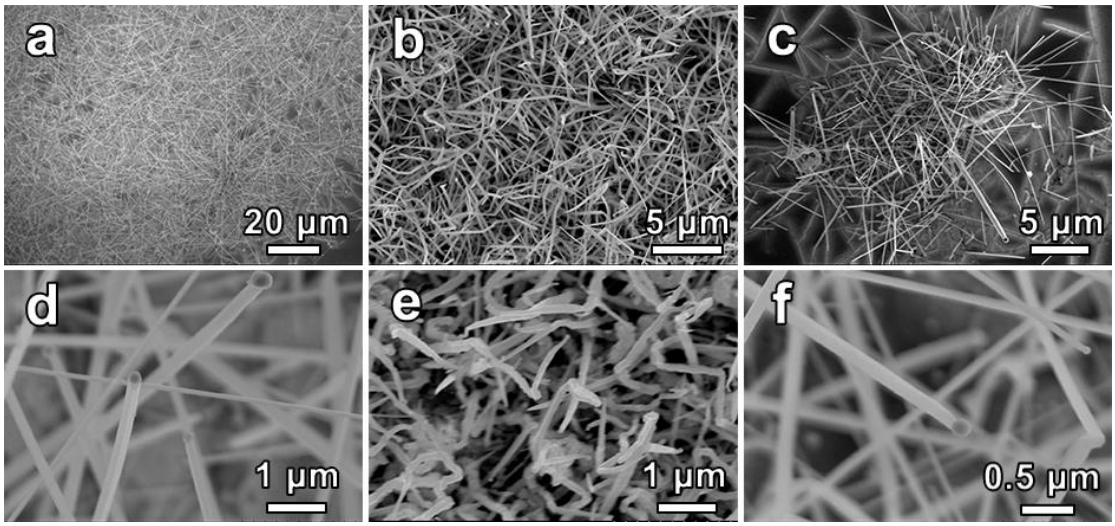

Figure S4. SEM images of GaN nanowires grown under fixed GaCl3 flow rate of 10 sccm under (a, d) 980 ℃, NH_3 flow rate of 15 sccm; (b, e) 900 ℃, NH_3 flow rate of 15 sccm; (c, f) 900 ℃, NH_3 flow rate of 30 sccm.

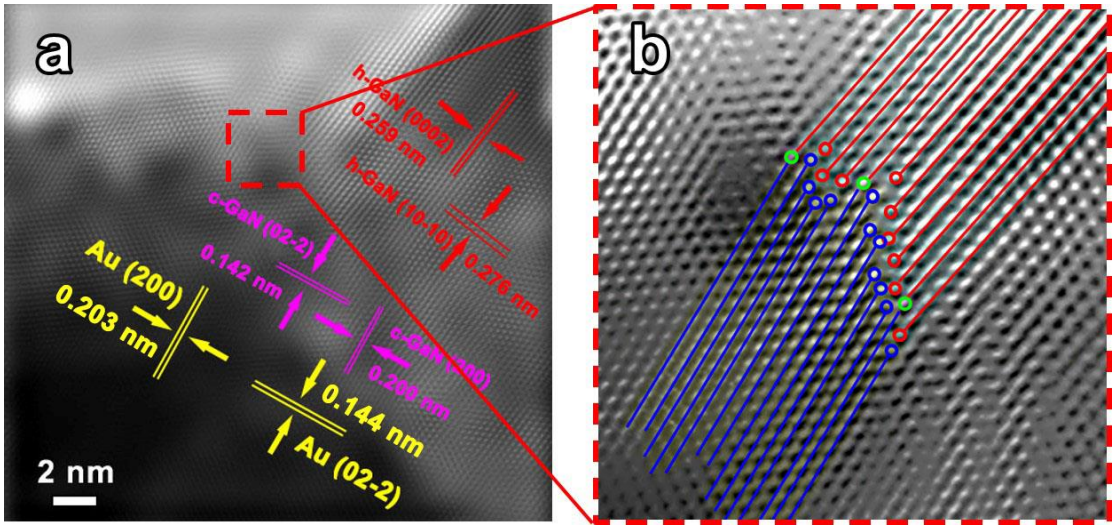

Figure S5. (a) IFFT pattern of Au/GaN interface corresponding to 900 ℃ grown GaN nanowire; (b)enlarged IFFT pattern showing lattice mismatching between cubic GaN and hexagonal GaN.

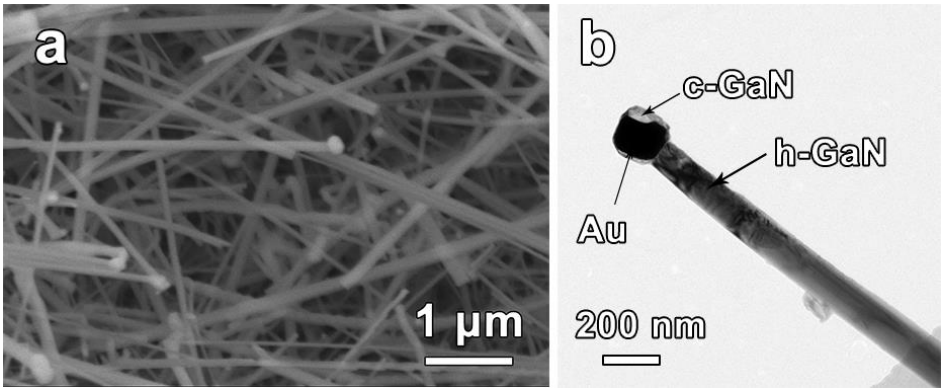

Figure S6. SEM and low-magnification TEM images of nonpolar GaN nanowires grown at 1050 ˚C.

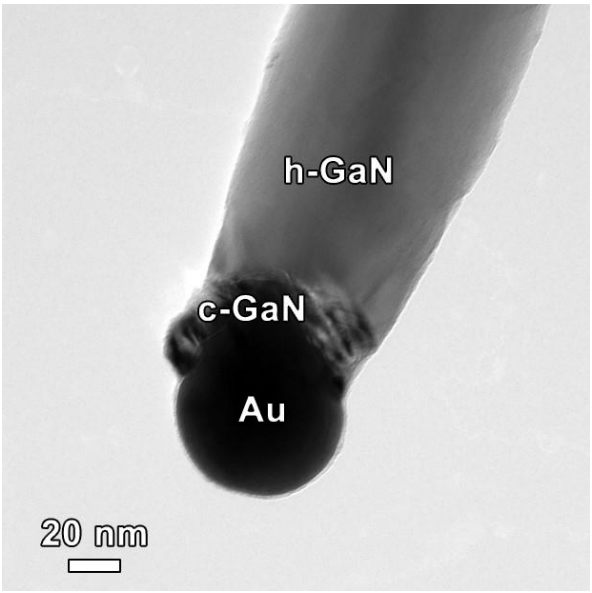

Figure S7. Low-magnification TEM image of an individual GaN nanowire grown at 980 ℃

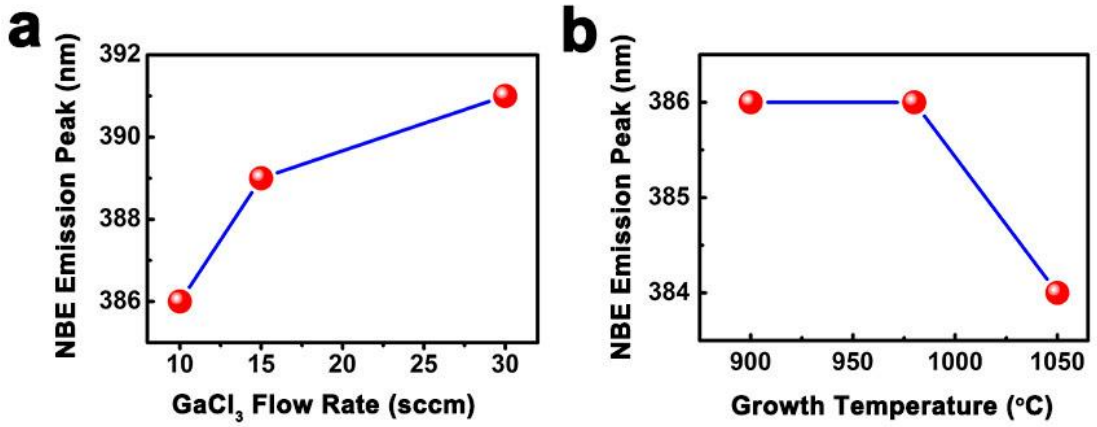

Figure S8. Effect of (a) $GaCl_3$ flow rate and (b) growth temperature on the near-band emission (NBE) peak of GaN nanowires by the modified HVPE method.

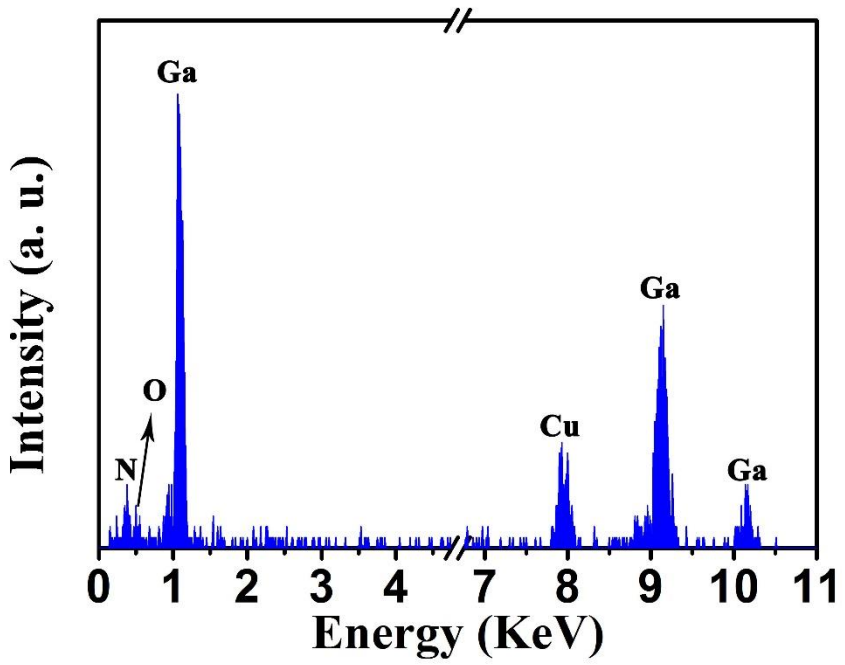

Figure S9. EDS spectrum of a randomly selected individual GaN nanowire grown at 1050 ˚C.