Supplementary information

1.) $\alpha$-GaN nanopillars

![Diffractogram and rocking curve](image)

Fig. 1) Diffractogram and rocking curve (inset) of the $\alpha$-GaN nanopillars.

![Pole figure measurement](image)

Fig. 2) Pole figure measurement of the (0002) and (10 1 1) reflections of the $\alpha$-GaN nanopillars and the (10 1 4) reflection of the (0001)-$\text{Al}_2\text{O}_3$ substrate.

GaN 0002 ($2\Theta = 34.5^\circ, \chi = 0^\circ$)

1011 ($2\Theta = 36.9^\circ, \chi = 62^\circ$)

$\text{Al}_2\text{O}_3$ 1014 ($2\Theta = 35.2^\circ, \chi = 38^\circ$)
2.) α-GaN nanowires using (N₃)₂Ga[(CH₂)₃NMe₂] and H₂

Fig. 3) Diffractogram of the α-GaN nanowires.

Fig. 4) SAED pattern of the α-GaN nanowires
3.) α-GaN nanowires using Ga and NH₃

Fig. 5) Diffractogram of the α-GaN nanowires grown by direct reaction of Ga and NH₃.

Fig. 6) SEM of the α-GaN nanowires.
Fig. 7) SEM of the α-GaN nanowires.