Supporting Information

Homoepitaxial growth of high-quality GaN nanoarrays for enhanced UV luminescence

Baodan Liu,[a,b*] Qingyun Liu,[c] Wenjin Yang,[c] Jing Li,[a,b] Christophe Labbé,[d] Xavier Portier,[d] Xinglai Zhang,[c] Jinlei Yao[e,*]

[a]School of Materials Science and Engineering, Northeastern University, Shenyang 110819, China

[b]Foshan Graduate School of Northeastern University, No. 2, Zhihui Road, Shunde District, Foshan, 528300, China

[c]Shenyang National Laboratory for Materials Science (SYNL), Institute of Metal Research (IMR), Chinese Academy of Sciences (CAS), No. 72, Wenhua Road, Shenhe District, Shenyang, 110016, China

[d]CIMAP CNRS/CEA/ENSICAEN/Normandie University, 6 Bd Maréchal Juin, 14050 Caen Cedex 4, France

[e]Jiangsu Key Laboratory of Micro and Nano Heat Fluid Flow Technology and Energy Application, School of Physical Science and Technology, Suzhou University of Science and Technology, Suzhou 215009, China;

Contact: liubaodan@mail.neu.edu.cn; jlyao@usts.edu.cn

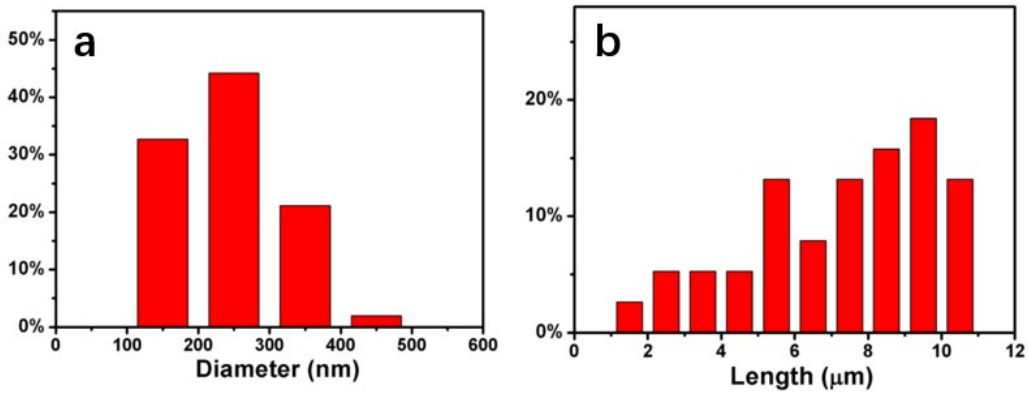

Figure S1 (a) Diameter and (b) height statistic distribution maps of GaN nanowire array

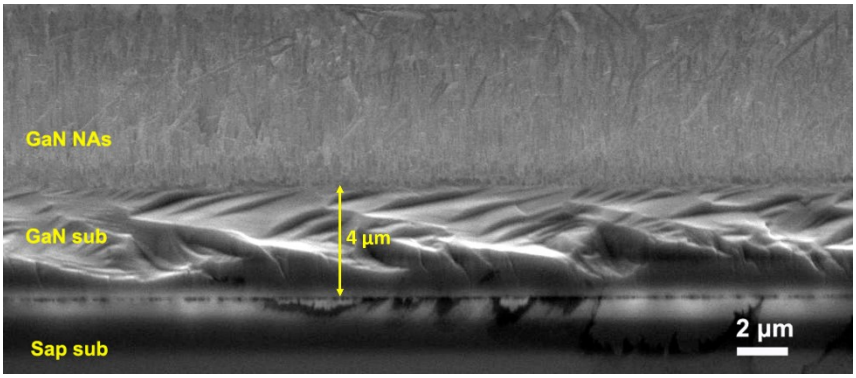

Figure S2 Cross-sectional SEM image of GaN nanoarrays grown on GaN substrate with a thickness of 4 μm.

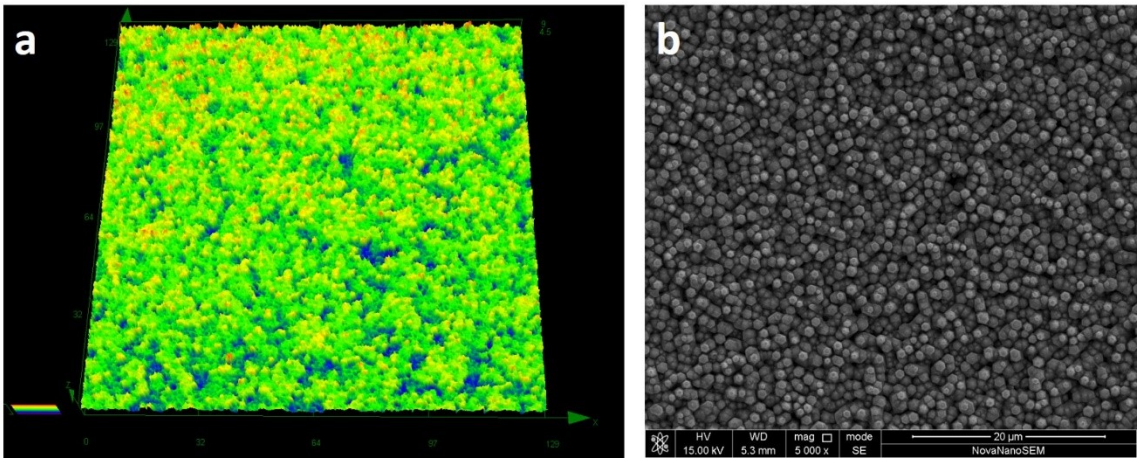

Figure S3 (a) Confocal microscope image and (b) low-magnification SEM image of GaN nanoarrays without Au catalyst

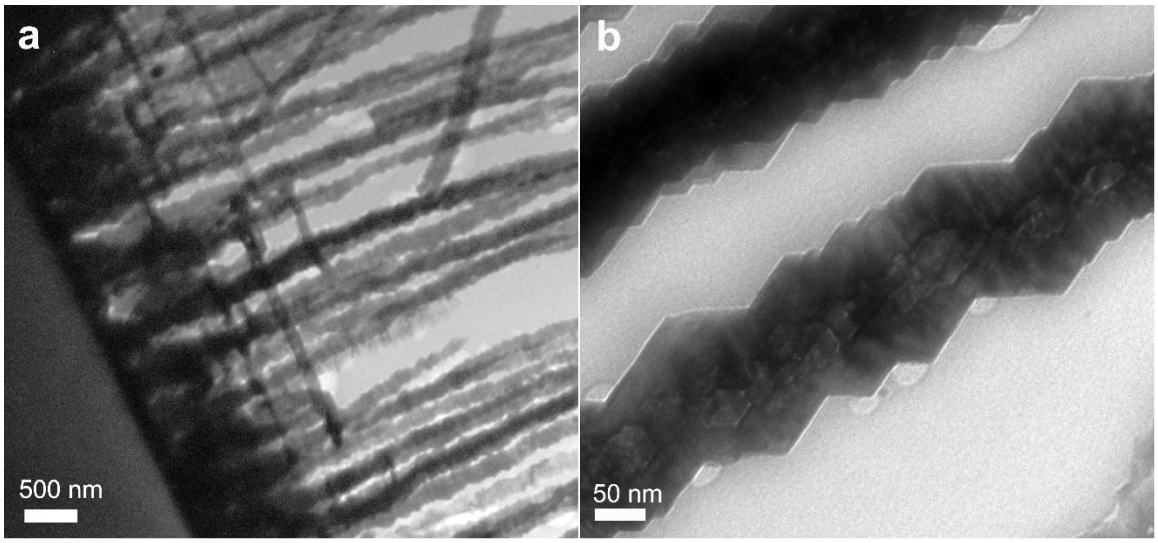

Figure S4 (a) Low-magnification and (b) high-magnification TEM images of GaN nanoarrays;

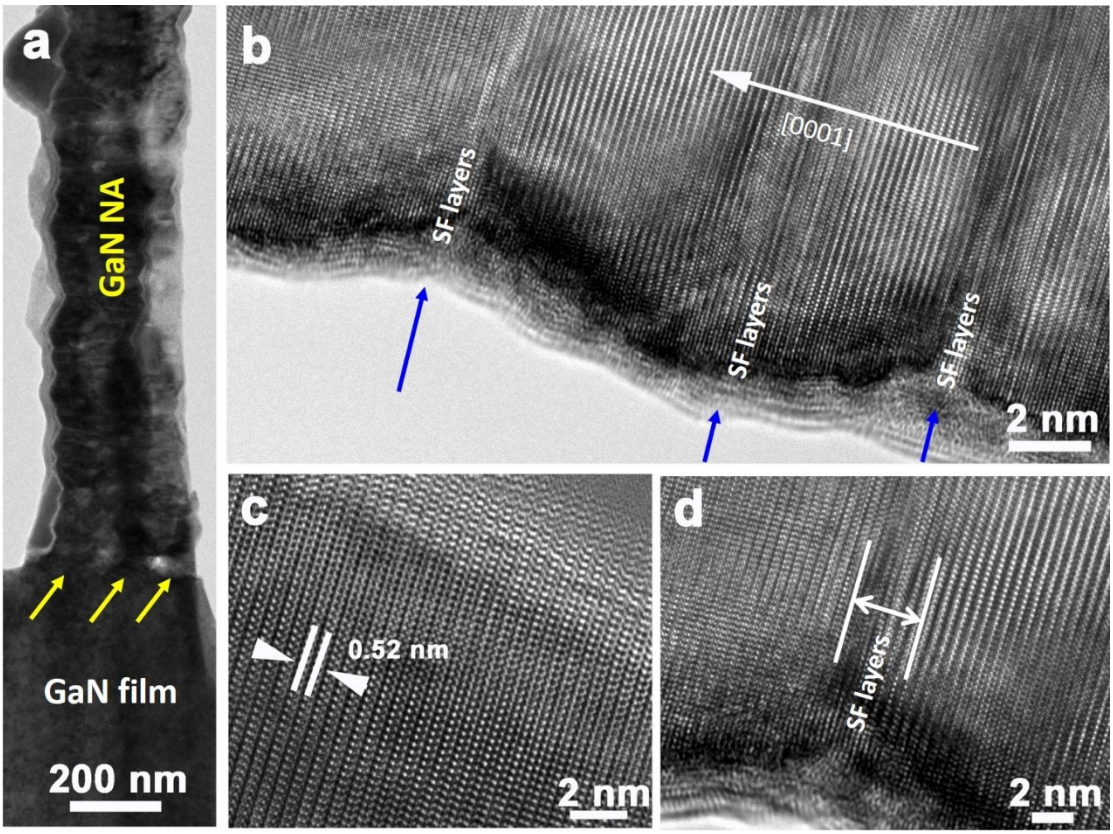

Figure S5 (a) typical TEM image of an individual GaN nanowire with corrugated surface and homoepitaxially grown on GaN film; (b-d) atomically scaled high-resolution TEM images of GaN nanowires at different regions;