# Supporting Information

# Localized States Dependent Electroluminescence from ZnO/ZnS Core-Shell Nanowires-GaN Heterojunction

Ruxue Li,[†] Zhipeng Wei,[†,*] Xuan Fang,[†] Yanbin Wang,[†] Yongfeng Li,[‡] Dengkui Wang,[†] Jilong Tang,[†] Dan Fang,[†] Xueying Chu,[†] Bin Yao,[‡] Rui Chen,[§,*] and Xiaohua Wang[†]

[†] State Key Laboratory of High Power Semiconductor Lasers, School of Science, Changchun University of Science and Technology, 7089 Wei-Xing Road, Changchun 130022, P. R. China

[‡] Key Laboratory of Physics and Technology for Advanced Batteries (Ministry of Education), College of Physics, Jilin University, Changchun 130012, P. R. China

[§] Department of Electrical and Electronic Engineering, Southern University of Science and Technology, Shenzhen, Guangdong 518055, P. R. China

**Corresponding Author**

* Zhipeng Wei, Email: zpweicust@126.com

* Rui Chen, Email: chen.r@sustc.edu.cn

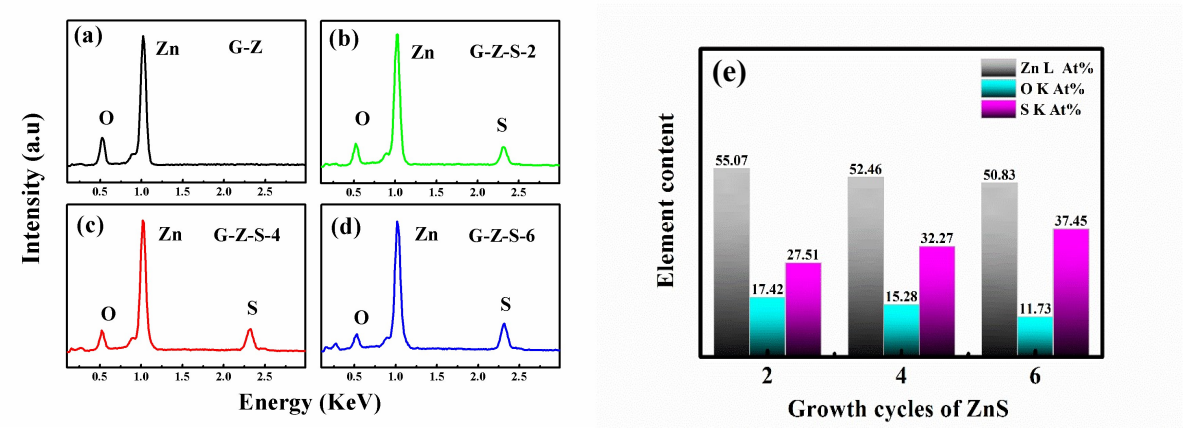


**Figure S1.** (a-d) EDS results of G-Z, G-Z-S-2, G-Z-S-4 and G-Z-S-6 samples. (e) Evolution of the element content of the Zn and S.

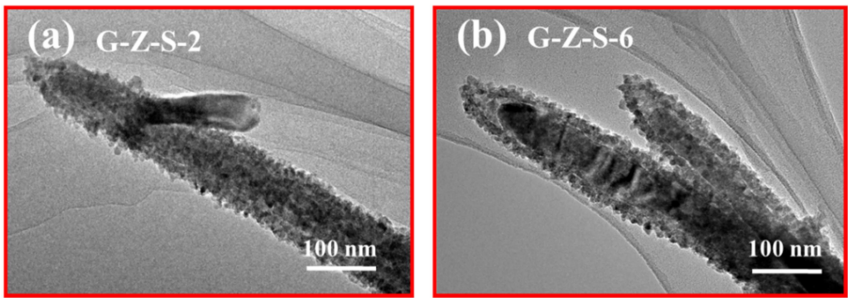


**Figure S2.** TEM images of individual NWs of (a) G-Z-S-2 sample, (b) G-Z-S-6 sample.

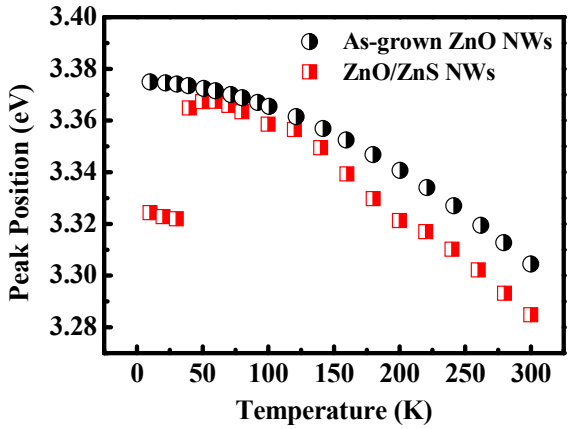


**Figure S3.** Temperature-dependent peak position of as-grown ZnO NWs and ZnO/ZnS NWs.

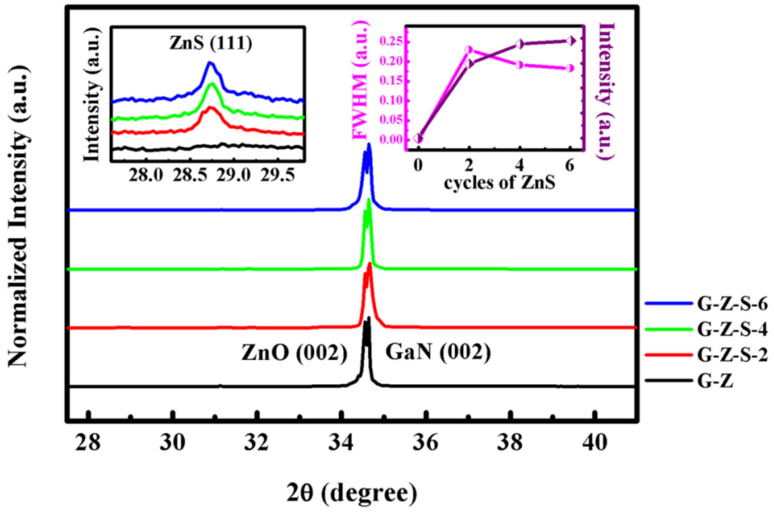


**Figure S4.** XRD patterns of G-Z, G-Z-S-2, G-Z-S-4 and G-Z-S-6 samples. The insert on left is the close-up picture of ZnS (111) along 28.5º. The right insert is the intensity and FWHM of the ZnS (111) with different samples.

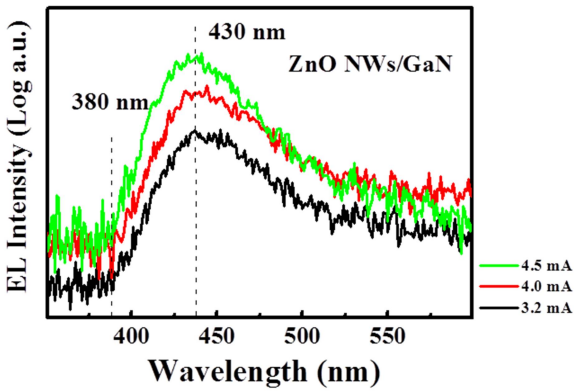


**Figure S5.** The RT EL spectra of the G-Z sample.