

**Supporting Information (SI) for Self-catalyst  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> semiconductor  
lateral nanowire networks synthesis on the insulating substrate for  
deep ultraviolet photodetectors**

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1. Experimental setup of  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> NWs growth

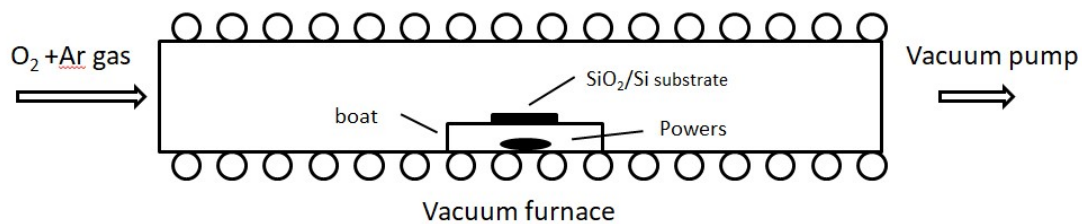


Figure S1. Experimental setup of  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> NWs growth

2. The average diameter of the statistics nanowires

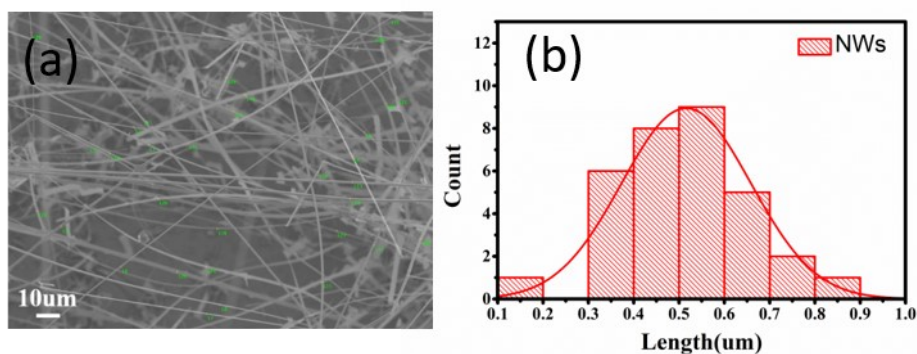


Figure S2. (a) SEM image; (b) histogram of the diameter of the statistics nanowires

3. TGA test for nanowire surface about ratio among organic vs inorganic.

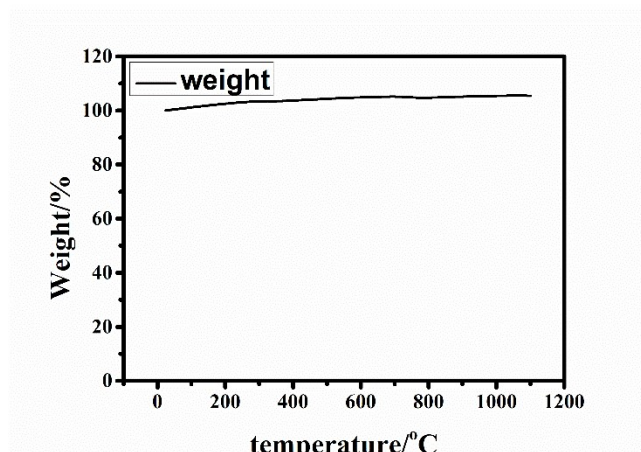


Figure S3. TGA of  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> nanowires

4. SEM image of  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> nanowires at 20 minutes growth time.

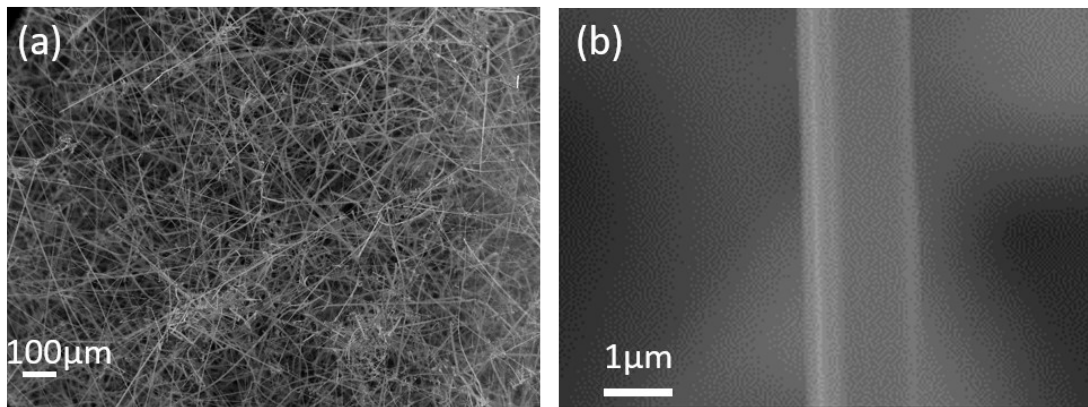


Figure S4. SEM image of  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> nanowires at 20 minutes growth time (a) Large scope. (b) single nanowire enlarged view

5. Spectral response of photodetector

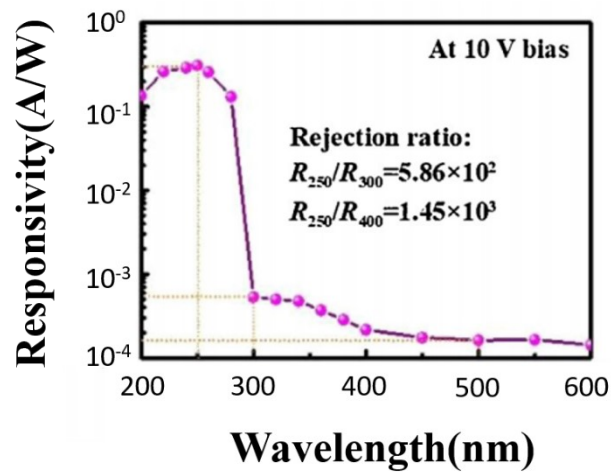


Figure S5. Spectral response of photodetector from 245 nm to 600 nm wavelength

6. Optical image of MSM  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> NWs photodetector device

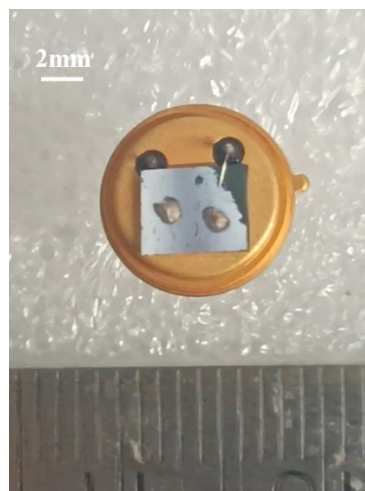


Figure S6. MSM  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> NWs photodetector device