

## **Self-Induced Gate Dielectric for Graphene Field-Effect Transistor**

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### **Synthesis of ZnO Microwire:**

ZnO microwires were synthesized through vapor transport method in a horizontal tube furnace using ZnO and carbon powder mixture as a source material. The schematic of the experimental setup for growth of ZnO microwires is shown in Figure S1a. The mixture of ZnO and graphite with 1:1 weight ratio was loaded in alumina boat and placed in the midpoint of a 1 m long quartz tube. Argon gas with high purity was introduced through one side of the furnace and water bubbler was connected to the other side of the quartz tube. The mixture was heated to 1100 °C at 360 °C/h rate under a constant argon flow rate of 500 sccm. When the temperature reaches 800 °C oxygen gas was also introduced with a flow rate of 25 sccm. The furnace was maintained under these conditions for 30 min and then cooled to room temperature at a rate of 6 °C/min. ZnO fine wires were found to grow on the upstream end of the alumina boat. The surface morphology of ZnO fine wires was studied using FE-SEM (JEOL, JSM 6700F) is Figure S1b.

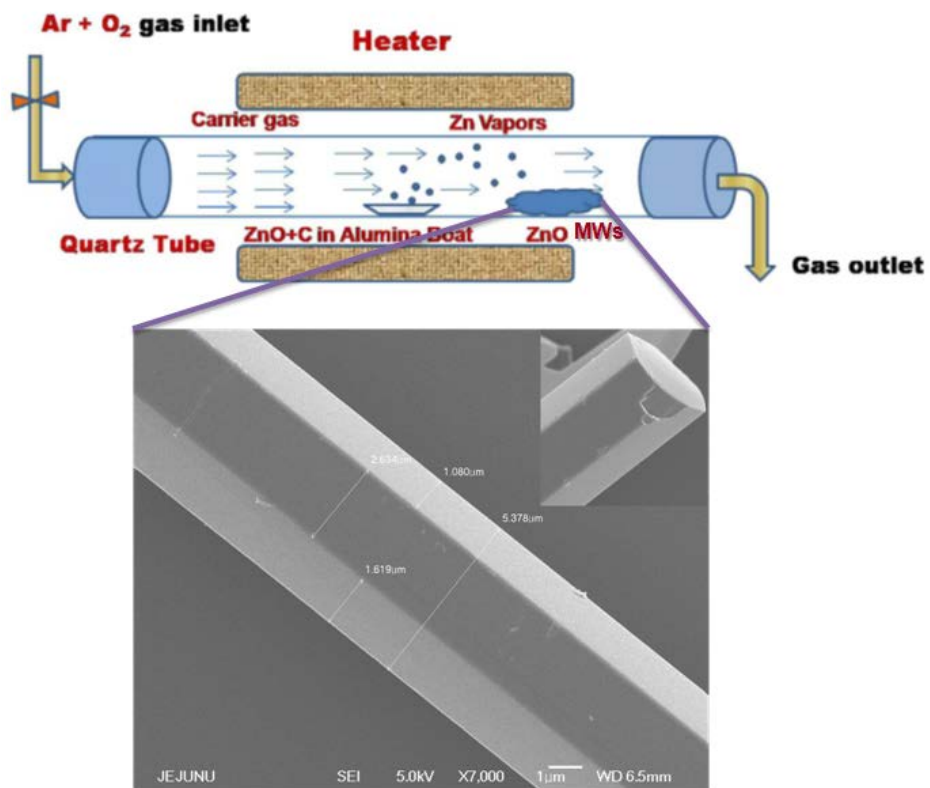


Figure S1 (a) Schematic of the experimental setup (b) FE-SEM Image of the synthesized ZnO microwires, inset shows the hexagonal structure.