

## Catalyst-free Growth of ZnO nanoleaves on ZnO seed layer/glass by Thermal Evaporation Method: Effects of Carrier Gas Flow Rate

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Here, we report for the first time the catalyst-free growth of ZnO nanoleaf on a glass substrate via thermal evaporation method. These nanoleaves were grown on  $(75 \pm 5 \text{ nm})$  ZnO seed layers, which were deposited on glass substrates by radio frequency (RF) magnetron sputtering. Prior to synthesized ZnO nanoleaves, the sputtered ZnO seeds were annealed using the continuous wave (CW) CO<sub>2</sub> laser at 450 °C in air for 15 min. The effects of carrier gas flow rate on the morphological, structural, and optical properties were systematically studied using field emission scanning electron microscopy, X-ray diffraction and UV-Vis spectroscopy. The objective of the present study was achieved by obtaining ZnO nanoleaves and obtains the optimized parameters for the control of different morphologies of these nanoleaves.

**Keywords:** ZnO, nanoleaf, X-ray diffraction and UV-Vis spectroscopy.