

# High Photoluminescence Spectroscopy on High Purity ZnO Crystal Growth by Electric Current Heating Method

Agus Geter Edy Sutjipto\*, Heng Hooi Chi, Ali Shaitir, Ari Legowo

a Faculty of Industrial Sciences & Technology, Universiti Malaysia Pahang, Malaysia

b Aviation Engineering Technology and Science, Higher Colleges of Technology, Abu Dhabi Men's College, United Arab Emirates

## Abstract:

The fabrication technique applied in this research to grow ZnO crystal is known as ECH method. It is a preferred method due to its low cost, simplicity in operating and low growth temperature. However the condition of ECH method to produce the optimum crystal growth has not been studied further. The objectives of this research are to synthesize ZnO ceramic pellets, to produce ZnO micro/nanostructures on ZnO ceramics bar by ECH method, as well as to characterize and analyze structural, morphological, and optical properties of ZnO crystals grown. ZnO pellets were formed by pressed at 3, 4, 5 tons and sintered at 1,100 °C in air for 4 and 72 hours. ZnO ceramic bar was joule heated by direct current of 2 A and 3 A. The result is the grain size of ZnO pellets increased with increasing sintering time and pressing pressure. XRD results indicated mostly crystal prefer to grow along (100) orientation. SEM images showed crystals grown was in a variety of shapes and sizes. PL measurements at room temperature revealed high intensity peak of in visible region in which yellow-level emission was observed from ZnO crystals grown.

**Keywords:** Characterization of Crystal Growth; Crystal Growth; ECH Method; Powder Metallurgy Process; ZnO

## References

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