

## POSTER PRESENTATION

P01

### THE EFFECT OF Ni AND Cu CATALYSTS ON THE GROWTH OF GRAPHENE UNDER DIFFERENT ETHANOL FLOW RATES USING ATMOSPHERIC PRESSURE CHEMICAL VAPOR DEPOSITION

Raed Abdalrheem<sup>1,\*</sup>, F.K. Yam<sup>1,\*</sup>, Abdul Razak Ibrahim<sup>1</sup>, H.S. Lim<sup>1</sup>, K.P. Beh<sup>1</sup>, Ammar A. Oglat<sup>1</sup>, Khaled M Chahrour<sup>1</sup>, Sabah M. Mohammad<sup>2</sup>, M.Z. Mat Jafri<sup>1</sup>

<sup>1</sup>*School of Physics, Universiti Sains Malaysia, 11800 Penang, MALAYSIA.*

<sup>2</sup>*Institute of Nano Optoelectronics Research and Technology (INOR), Universiti Sains Malaysia, 11800 Penang, MALAYSIA.*

**ABSTRACT-** Graphene was grown on both nickel (Ni) and copper (Cu) catalysts by atmospheric pressure chemical vapor deposition (APCVD) technique at various ethanol flow rates. Raman spectroscopy and field emission scanning electron microscopy (FESEM) were used to study morphological and structural properties of APCVD grown graphene. The crystallite size, defect intensity, distance between defects and the graphene thickness were estimated based on Raman spectra analysis. For the same growth conditions, Ni catalyst promote the formation of more graphene layers as compare to Cu. This because of the higher carbon solubility in Ni as compared to Cu which leads to different growth mechanisms.

**Keywords:** graphene, APCVD, ethanol, Ni catalyst, Cu catalyst.