

## **Microstructure of charcoal produced by traditional technique**

### **Abstract**

Charcoal which is produced from wood, a renewable material, is potential for many engineering applications. In developing countries, charcoals are produced by traditional techniques. It is estimated that the charcoal produced by traditional techniques are inappropriate for engineering materials. This study was conducted to observe the microstructure in charcoal prepared by traditional technique by using Raman spectroscopy for further development. Thermogravimetric analysis (TGA) estimated that most of charcoals produced by traditional technique were prepared at low temperature around 300-500 °C indicating by the weight loss above 300 °C for charcoal from acacia wood and above 500 °C for charcoal from mahogany and sonokeling woods. Carbonization temperature determined degree of order of graphitic crystallite and disorder and distorted structure in the microstructure of charcoal. Charcoal from mahogany and sonokeling wood which were estimated prepared at 500 °C showed similar degree of order of graphitic crystallite and disorder and distorted structure with charcoal of Japanese cedar wood which were prepared at 700 °C in laboratory, as showing by the similar position of the Raman G band and the width of G and D bands.