

Influence of Torrefaction Parameters on Elemental Properties of Torrefied Oil Palm Empty Fruit Bunch Biochar

ABSTRACT

This study aimed to determine the elemental properties of torrefied oil palm empty fruit bunch (OPEFB) biochar as an alternative renewable energy source. The influence of three major torrefaction parameters namely particle size, holding temperature, and residence time were investigated. This characterization had been done by the elemental analyser. The carbon element in the torrefied OPEFB biochar was increased as the holding temperature and residence time increased from 200–300°C and 30-90 minutes respectively, while the oxygen element amount is decreasing. This is due to the decomposition of hemicellulose that occurred in this region. This shows that torrefaction parameters of holding temperature and residence time influenced in enhancing the energy properties of the torrefied OPEFB biochar by increasing its carbon element and reducing its oxygen element.