

A Study on Torrefaction of Coffee

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Biomass is a primary type of renewable energy which is expected to be an important energy source in the coming years. Of the different non-conventional energy sources available (e.g., wind, solar, tidal, and nuclear), biomass is widely available and is considered to be carbon neutral, in that the net carbon emissions resulting from the burning of biomass are zero. This study presents the effects of torrefaction on the basic characteristics of coffee. Coffee was torrefied in a horizontal tubular reactor at temperature ranging from 200–450 °C. The torrefied coffee products were characterized in terms of their elemental composition, energy yield, ash content and volatile fraction. The gaseous products were also analyzed. It was found that the coffee undergoes changes in their physical and chemical properties during torrefaction. Furthermore, the energy and mass yield were found to decrease with an increase in the torrefaction temperature, whereas the higher heating value increased up to 350 °C which decreased on further increasing the torrefaction temperature.