ABSTRACT

High temperature pyrolysis procedures of such foods as meat, cashew nuts, and coco beans are associated with bio-hazardous emissions that may be precursors for respiratory health problems including oxidative stress, cancer and lung damage. In this study, 20 mg of powdered cashew nuts was pyrolyzed in a quartz reactor system of volume ~ 1.6 cm 3 at two different temperatures (500˚C500˚C and 700˚C700˚C) under 1 atmosphere pressure at a total pyrolysis time of 5 minutes. Particulate emissions were collected in amber vials and extracted using 2 mL dichloromethane through a porous tube diluter. To explore the surface morphology of particulate emissions, a scanning electron microscope (SEM) was used. Image J computer software was used to measure the size of particulate emissions while Igor graphical code was used to plot the size distribution curves of particulate emissions. Accordingly, it was found that the size of particulates was 13.41 ± 3.47μm at 500˚C500˚C and 12.44 ± 4.33μm at 700˚C700˚C. These particulates were approximately within the PM10 (10 microns) category of respirable particulates. The findings generated from this study are critical in understanding the potential health risks resulting from inhaling particulate emissions from high temperature cooking processes.