**A thermogravimetric analysis of the combustion kinetics of karanja (Pongamia pinnata) fruit hulls char**

**Abstract**

The combustion characteristics of Karanj fruit hulls char (KFH-char) was investigated with thermogravimetry analysis (TGA). The TGA outlined the char combustion thermographs at a different heating rate and isoconversional methods expressed the combustion kinetics. The Kissinger–Akahira–Sunose (KAS) and Flynn–Wall–Ozawa (FWO) methods authenticated the char average activation energy at 62.13 and 68.53 kJ/mol respectively, enough to derive the char to burnout. However, the Coats–Redfern method verified the char combustion via complex multi-step mechanism; the second stage mechanism has 135 kJ/mol average activation energy. The TGA thermographs and kinetic parameters revealed the adequacy of the KFH-char as fuel substrate than its precursor, Karanj fruit hulls (KFH)