



## *The challenge*

Finding a way to make biomass pellets waterproof in order to increase their caloric value with an environmentally-friendly application for recycled plastics and positioning the coated pellets as a cost-effective alternative to coal.

## *The solution*

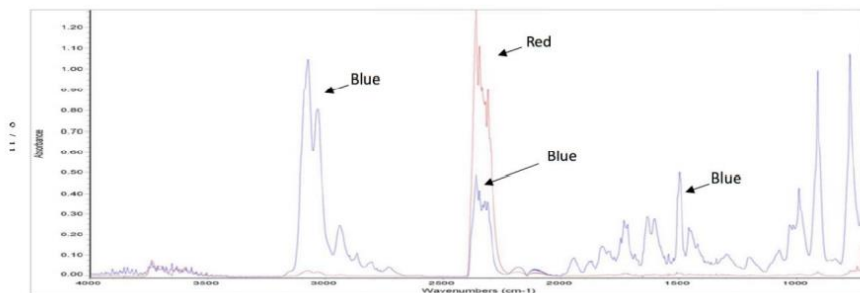
A water-resistant, solid fuel comprising a combustible material coated with an organic material or plastic (e.g., polystyrene). The combustible material may be a plant-based material e.g, biomass or wood pellets, ground wood, or coal fines.

## *Key Benefits*

- ✓ Good fuel source with a higher energy density than untreated pellets.
- ✓ Useful for high temperature applications such as cement production and tire rendering.
- ✓ Waterproof material can be stored outdoors for extended periods of time without crumbling.

## *Development Stage*

Concept validation complete



**Figure 1: Infrared spectrum of combustion products released from polystyrene (blue) and coated biomass pellets (red) at 480°C. The combustion products of the coated biofuel sample have none of the signatures associated with Styrofoam at the same temperature; all that is seen are the typical evolved gases for the biomass pellets.**



## **Details**

The coated pellets:

- Can be burned at a lower temperature than that of a control organic material or plastic alone and produce significantly lower amounts of harmful combustion products such as benzene or polyaromatic hydrocarbons.
- Are waterproof and have a higher energy density than untreated pellets, which is useful for high temperature applications such as cement production and tire rendering.

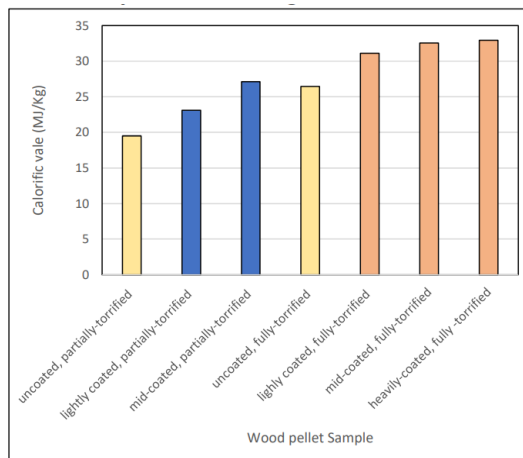
## **Research Team**

McRae, Glenn A; Mackintosh, Alexis F; Basu, Onita D; Seatter, Geoffrey

## **Patents**

PCT/CA2020/050470 (filed Apr. 9, 2020) available for licensing

**Figure 2: Coated pellets have a higher caloric value vs uncoated pellets**



***For more information about licensing and development opportunities, contact***

**Theresa C. White, PhD**

Manager—Innovation Transfer, Contracts and Agreements

Industry and Partnership Services

[theresawhite3@cunet.carleton.ca](mailto:theresawhite3@cunet.carleton.ca)