



# Firebrand Research

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## Introduction

Wildfires have become increasingly common in the United States due to climate change. About 4.5 million buildings are currently at high or extreme risk from wildfires. It has been determined that firebrands, small airborne embers, are the ignition source for the majority of structures that burn during a wildfire event. This research project aims to emulate the firebrand deposition process on different materials in order to obtain combustion and material flammability characteristics.



Figure 1: the firebrands on top of the wood sample in the wind tunnel

## Wind Tunnel

Getting to know all the equipment was disorienting at first, but after a couple tests, I was able to get a basic understanding of their functions.

One of the most fascinating and important machines was the bench-scale wind tunnel, used to record flammability data. The apparatus is divided into three main sections as seen on figure 2.



Figure 2: The Bench-Scale Wind Tunnel Apparatus

## Wood Samples and Firebrands

For my part of the research, I was required to prepare 18x14 cm cuts of pressure treated and trex wood using a band saw. Although there was a supervisor on site, I felt very trusted in using the equipment without much hand-holding in the process.

I also prepared the firebrands, which for the purpose of this research project were cylindrical wooden dowels lit aflame. Setting flame to these small materials did require more supervision, but I still felt a great amount of fulfillment being a part of the sample preparation.

## Reflection:

This was a great experience for me, and I'm happy to know that the results of this research can serve to inform the public as to the flame resistance different materials. I also feel much more knowledgeable in the realm of preparing samples and operating apparatus to collect data. I plan to continue this research in the coming years!

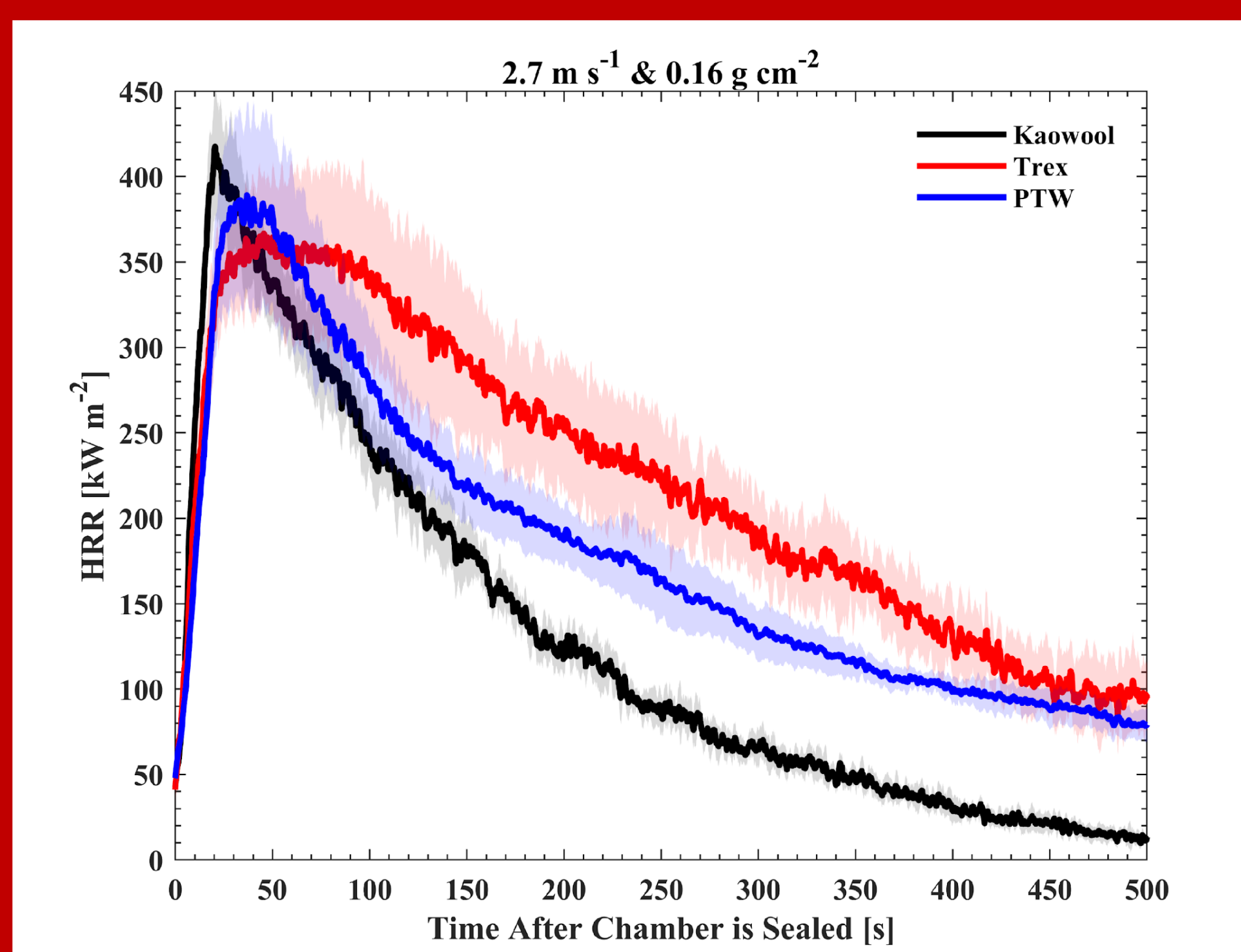


Figure 3: Heat release rate for Kaowool, Trex, and PTW

## Site Information:

Name of Site: The WUI Lab, J.M. Patterson Building

Address: 4356 Stadium Drive, College Park

Email: stolia@umd.edu

Website: <https://fsri.org/research/firebrand-ignition-building-materials>

Your supervisor: Dr. Stanislav I. Stoliarov

The Site Mission: "To find solutions to society's most pressing challenges"

## Acknowledgements

- Dr. Stanislav I. Stoliarov for granting me this opportunity to work on the Firebrand Team.
- My brother Alec Lauterbach for allowing me to work alongside him for this project which essential for his masters in Fire Protection Engineering. I would not have known about this great opportunity without him.
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