

Senior Research Projects

I am interested in the modeling and analysis of combustible and explosive materials. Safety is an important concern in the handling, transport and usage of such materials, especially when exposure to a heat source is a possibility. Experiments have shown that when thermal energy is applied to a combustible material, whether ignition occurs or not depends upon both the amount and the rate of energy supply. Thus there is a tradeoff between energy and power; a small amount of energy supplied rapidly may lead to ignition, but a large amount supplied gradually may not. It is of interest to quantify this tradeoff, and determine how it is affected by the size, shape, confinement and physico-chemical properties of a combustible system, as well as by the geometry and location of the ignition source.

The projects will involve modeling by ordinary and/or partial differential equations, along with analysis and computation. Please get in touch if you are interested.

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