

## **Mechanisms of Combustion and Suppression Chemistry**

Research seeks to provide better understanding and control of combustion, as they relate to novel and alternative fuels, novel combustion environments and geometries, and fire protection and mitigation. Objective is to better understand combustion processes, including spontaneous ignition and flammability limits, and chemical kinetic mechanisms of combustion and fire suppression. Because of a number of environmental concerns related to various legacy fire suppressants and the need to develop alternative fuel sources, combustion aspects of new fuels and fire-suppression technologies need to be understood. Areas of interest include comparison of the combustion behavior of alternative versus petroleum fuels; fuel additives to increase energy content or heat release; differences in effectiveness in fire suppressants between traditional and alternative fuels; scalability of combustion-based power sources; and development and validation of detailed and reduced chemical kinetic mechanisms relevant for fuels, additives, and suppressants. A wide variety of flow reactors and burners, laser diagnostics, ultraviolet/visible and Fourier-transform infrared spectrometers, gas chromatographs, mass spectrometers, and computer systems are available. For more information, please see our Web page at <http://www.nrl.navy.mil/chemistry/research/6180/6185>.