NRL BAA Announcement
#61-09-03

COMBUSTION DYNAMICS - SUPPRESSION

The Combustion Dynamics Section of the Naval Research Laboratory (NRL) is investigating the chemistry, physics, and dynamics of combustion. The Center is interested in research proposals in support of its broad-based program including fundamental combustion concepts and processes; flame propagation, enhancement and inhibition; limit phenomena; fire behavior; and detection, mitigation, and protection of personnel from hazards related to combustion and fire suppression, as applicable to addressing Navy needs. In particular, the Section assists in developing the Navy's short and long range fire protection research and development programs, culminating in shipboard system implementation.

A major thrust is identifying and developing approaches and technologies for fire protection. This includes generation of the mechanisms responsible for flame and fire extinction, with scaling parameters, and the integration of detailed flame suppression in understanding full scale shipboard fire extinction. Fire suppressants can be gaseous, liquid, or solid materials, physical processes or combinations. Innovative instrumental approaches may be required to properly evaluate different laboratory and large scale fire test environments. The desire is to expand knowledge and understanding, and identify and enable implementation of novel and emerging technologies, as opposed to incremental improvements or qualifying specific systems or hardware solutions.

Aqueous Film Forming Foam, AFFF, has long been employed for fire fighting /protection on liquid pool fires. Recent environmental considerations heighten the need to better understand the functioning of AFFF, leading to future improvements / alternatives.

Sensor technology, particularly using optical techniques, to identify chemical species, is a major focus. These chemicals may include flammable species indicating a combustion hazard, combustion by-products which pose a safety hazard for personnel (gas-free engineering), or products resulting from the fire protection systems themselves (for instance, hydrogen sulfide produced by the interaction of AFFF with naturally-occurring bacteria in seawater)

Water aerosols are being used for fire suppression to improve effectiveness in obstructed areas, while minimizing system space and weight requirements and water damage. Innovative advances to the technology are of interest.

Address White Papers (WP) to Code 6185, FAX (202) 767-1716, e-mail, telephone (202) 404-8101. Allow one month before requesting confirmation of receipt of WP, if confirmation is desired. Substantive contact should not take place prior to evaluation of a WP by NRL. If necessary, NRL will initiate substantive contact.