Combustion of Nitrogen in Low-Pressure H2+O2 and H2+CO+O2 Flames
Authors: P. M. Sheaffer; P. F. Zittel; AEROSPACE CORP EL SEGUNDO CA LAB OPERATIONS

CO-chemiluminescence has been observed for the first time in the 248-nm photodissociation of a trace amount of bromoform (CHBr3) vapor present in an excess of O2 and in diluent helium carrier gas at 2 torr and at 298 K. The integrated intensities of the time-resolved chemiluminescence traces due to characteristic CO(A-X), CO(a-X) and CO(d-a) vibronic emissions showed quadratic dependence on the photolysis laser fluence used. The decay kinetics of these chemiluminescences was studied as a function of added H2, D2, N2, CH4, O2... (SLED), from device mechanism to materials. After a two-year intense research on SLEDs, we have expanded our project to other areas, from SLEDs, to phosphorescent PLEDs, and high performance photovoltaic devices. It is realized that our SLED has a similar mechanism as the ECL process. The electrogenerated chemiluminescence (ECL) process usually involves at least two species (or two reactions). One reaction is the...
Molecular Beams in Space: Sources of OH(A yields X) Emission in the Space Shuttle Environment  
Authors: L. S. Bernstein; Y. Chiu; J. A. Gardner; A. L. Broadfoot; M. I. Lester; AIR FORCE RESEARCH LAB HANSCOM AFB MA SPACE WEATHER CENTER OF EXCELLENCE

Emissions Control in Swirl Stabilized Spray Combustors, an Experimental and Computational Study  
Authors: Ephraim Gutmark; CINCINNATI UNIV OH GRADUATE STUDIES AND RESEARCH AND ENGINEERING

Optical, Biochemical, and Molecular Characterization of New Bioluminescence Systems  
Authors: Dimitri Deheyn; Michael Latz; SCRIPPS INSTITUTION OF OCEANOGRAPHY LA JOLLA CA

Authors: William Dimpfl; Sergey F Gimelshein; Ingrid J Wysong; Matthew Braunstein; Lawrence Bernstein; AIR FORCE RESEARCH LAB EDWARDS AFB CA PROPULSION DIRECTORATE

Organic Photodiodes for Biosensor Miniaturization  
Authors: Jason R Wojciechowski; Max Sonnteitner; Hans J Pratt; Christoph Winder; Martin Schamesberger; Roland Pieler; Erwin Fuegender; Mariko Y Yamauchi; Lisa C Shriver-Lake; Frances S Ligler; NAVAL RESEARCH LAB WASHINGTON DC RESEARCH LAB EDWARDS AFB CA PROPULSION DIRECTORATE

Diagnose und Therapie von Funktionsstörungen menschlicher Leukocyten nach Bestrahlung (Diagnosis and Therapy of Dysfunctions of Human Leukocytes After Irradiation)  
Authors: W. Kaffenberger; D. Van Beuningen; BUNDESMINISTERIUM DER VERTEIDIGUNG BONN(GERMANY F R)

Portable Chemical Agent Detection System: Differential Reflectometer and Light Scattering Approaches  
Authors: Christopher P. Palmer; Michael D. DeGrandpre; FLORIDA UNIV GAINESVILLE DEPT OF MATERIALS SCIENCE AND ENGINEERING

Screening of light producing organisms (Research Area 1) has been completed in diverse environments, including the Caribbean that was added on a later date. The screening has led to describing the general change with geographical latitude of pigmentation, chemiluminescence and fluorescence in organisms. This has led to documentation of organisms producing light of different color, which could stimulate future research of specific interest for the AFOSR. Also, as a result from this screening, a new Green Fluorescent Protein (GFP) and also been ...

Mid ultraviolet Cameron band emission from carbon monoxide is seen in plumes of Space Shuttle Orbiter engine exhaust is directed into the atmospheric wind. The observed emission has been attributed to chemiluminescence from two and three step chemistry of a minor amount of methane in the plume with atmospheric atomic oxygen. DSMC modeling has played an important role in determining the mechanism, but standard DSMC methods show significant discrepancies in the size and shape of the radiance. The differences have been traced to the validity of scattering treatment to hyperthermal (E(rel) 1 eV) ...

... species and exhaust constituents, most probably the reaction O + H2O yields OH(A) + OH(X). Process (i) produces a very rotationally cold and spectrally narrow component due to the rapid cooling of the OH(X) in the supersonic expansion of the exhaust flow. Processes (ii) and (iii) produce extremely excited OH(A), not well characterized by thermal vibrational or rotational distributions. The 0 + H2O chemiluminescence reaction has a substantial activation energy, 4.79 eV, and is only slightly above threshold for the ram geometry, where the engine exhaust is directed into the atmospheric wind.
chemiluminescence immunoassay on the OPD substrate and measured the results using a hand-held reader attached to a laptop computer. The miniaturized biosensor with the disposable slide including the organic photodiode detected Staphylococcal enterotoxin B at concentrations as low as 0.5 ng/mL.

An Evaluation of the PCB-TOX-SPOT Water Toxicity Test

Sep 15, 2011 40 pages

Authors: David E Trader; William van der Schalie; ARMY CENTER FOR ENVIRONMENTAL HEALTH RESEARCH FORT DETRICK MD

The United States Army Center for Environmental Health Research (USACEHR) is developing an Environmental Sentinel Biomonitor (ESB) system to test Army drinking water supplies for the presence of toxic industrial chemicals (TICs). One of the technologies considered for inclusion in the ESB system is the PCB TOX-SPOT Chemiluminescence Test, a rapid assay that measures changes in luminescence of the bacteria Photobacterium leiognathi as an indicator of toxicity. The TOX-SPOT test was able to respond to only 5 of 18 chemicals in a test set identified by an Army user group within a desired ...

Historical Perspective of COIL Diagnostics

Jul 17, 2002 14 pages

Authors: Steven J. Davis; PHYSICAL SCIENCES INC ANDOVER MA

In this paper, a history is presented of the development of diagnostic techniques for the chemical oxygen iodine laser (COIL). Several established optically based techniques have been applied to COIL including: visible and near infrared chemiluminescence, resonance absorption and laser induced fluorescence. The history of these developments is traced using the diagnostic methods as the overall theme. In many cases a variant of an established diagnostic was used to probe for some key kinetic rate or mechanism. Indeed, the goal of developing the now well established COIL kinetic rate package was ...

Molecular Mechanism of Bacterial Magnetite Formation and Its Application

Apr 2002 15 pages

Authors: Tadashi Matsunaga; Yoshiko Okamura; TOKYO UNIV OF AGRICULTURE AND TECHNOLOGY (JAPAN)

... by lipid bilayer membranes. Sizes of BMPs vary from 50 - 100 nm in diameter, aid number over 10 per cell. BMPs are composed of magnetite (Fe(3)O(4)) with a single magnetic domain. Easy aqueous dispersion of BMPs enable development of highly sensitive chemiluminescence enzyme immunoassays by the chemical coupling of antibodies on BMP surfaces. BMPs can likewise be used as drug delivery systems employing magnetoliposomes with high capture volumes. We previously reported a technique for preparing recombinant BMPs on which proteins were displayed by gene-fusion. We furthermore applied such ...