Welcome

18th International Colloquium on the Dynamics of Explosions and Reactive Systems July 29 – August 3, 2001 Seattle, Washington

organized by

Engineering Professional Programs, College of Engineering, University of Washington and the Institute for the Dynamics of Explosions and Reactive Systems

Welcome to the Proceedings of the 18th International Colloquium on the Dynamics of Explosions and Reactive Systems. Following the well established tradition of Colloquia in Brussels (1967), Novosibirsk (1969), Marseilles (1971), San Diego (1973), Bourges (1975), Stockholm (1977), Göttingen (1979), Minsk (1981), Poitiers (1983), Berkeley (1985), Warsaw (1987), Ann Arbor (1989), Nagoya (1991), Coimbra (1993), Boulder (1995), Cracow (1997) and Heidelberg (1999), this Colloquium provides an international forum for reporting recent advances in experimental investigation and mathematical modeling of explosions and reactive systems.

Three plenary lectures survey recent developments and discuss opportunities for further research:

- Problems of Predicting Turbulent Burning Rates by D. Bradley (Leeds University),
- Advanced Laser Diagnostics for Reactive Flows by R.K. Hanson (Stanford University)
- Formation of Nanoparticles in Gaseous Reactive Systems by P. Roth (University of Duisburg).

Minisymposia are organized about two themes: pulsed detonation engines (PDE) and ram accelerators (RAMAC). The former theme (13 podium presentations) is a continuation of a discussion started at the 17th ICDERS. The latter theme (9 podium presentations) is quite appropriate given that much of the recent impetus for RAMAC research derives from the seminal efforts of the University of Washington AERL. During sessions of the Colloquium the 186 podium presentations and the 40 poster presentations cover a broad range of both theoretical and experimental topics.

These Proceedings of the 18th ICDERS are published on the web and, for archival purposes, as CD-ROM. As a digital and multimedia product, the CD-ROM offers elements, e.g., color graphics and digital photographs appear throughout the technical papers. If the Proceedings were to be printed, cost considerations would limit the number of color plates.

Without the able support of the University of Washington Engineering Professional Programs staff (Bill Rogers, Director; Jan Kvamme, Assistant Director; Christy Roop, Program Coordinator and Mike Mortensen, Conference Assistant) the organization of the Colloquium and the production of the Proceedings would not have been possible.

We gratefully acknowledge the financial support of the Air Force Office of Scientific Research, the Office of Naval Research, and the University of Washington and also the in-kind support of the Combustion Research Facility of the Sandia National Laboratories.

A message from the Program Chair on behalf of the Program Committee

For over 35 years, ICDERS has provided a unique forum for the discussion of work on the dynamical aspects of explosions and reactive systems. The participants in the 18th ICDERS, and readers of these Proceedings, will indubitably concur that this tradition has been continued and the vision of the founders has been maintained.

For the 16th ICDERS, held in Krakow in 1997, the Program Committee chaired by Elaine Oran introduced multiple plenary lectures to the program. The 18th ICDERS Program Committee continued this initiative by inviting Derek Bradley, Ron Hanson, and Paul Roth to give plenary lectures. These lectures offer a more in depth view of specialist topics than that afforded by a standard lecture, and are of value to both the expert and the neophyte.

The Program Committee functioned as two subcommittees – one for reactive systems chaired by N. Peters and one for detonations and explosions chaired by K. Kailasanath. The review process for contributed papers was modeled on the process used by the Program Committee for the 17th ICDERS. Each abstract was assigned to one of the two subcommittees, then reviewed and ranked by at least one member of the Program Committee. Criteria for this ranking were originality, quality, and relevance to the central themes of ICDERS. Any contribution falling short of these criteria was then reviewed by the relevant sub committee chair and, subsequently, by the Program Committee Chair. As a consequence, a few submissions were declined.

Review procedures are inevitably subjective and inherently flawed. Despite our best efforts, the present review procedure is no exception. To enable our colleagues to present the most recent results, the procedure, functioning under a stringent time constraint, could only be accomplished by electronic communication between the members of the Program Committee. The Committee believes that it has screened out those submissions which would be less relevant to the interests of the ICDERS community.

The Program Committee encourages authors presenting papers at the Colloquium to submit fulllength versions to one of three journals, *Shock Waves, Combustion Science and Technology,* or *Combustion Theory and Modelling.* To facilitate the processing of submitted papers, each journal has designated a special editor. E. S. Oran will serve as special editor for *Shock Waves;* W. A. Sirignano and F. A. Williams, *Combustion Science and Technology;* and Gaetano Continillo, *Combustion Theory and Modelling.* Authors should submit their manuscript(s) to the most appropriate of the three journals. A submitted manuscript should conform to the stylistic standards of the selected journal. The Editorial Board of each of these journals will conduct independent reviews (beyond the review for paper presentation at the Colloquium) and will make publication decisions according to its standards. Any paper submitted for publication should also acknowledge that it was initially presented at the 18th ICDERS. Further details concerning publication may be found by reference to the <u>archival publications</u> or by contacting the <u>special editors</u>.

If you have comments on the current, or suggestions for a future, ICDERS program, you are encouraged to direct them to the IDERS board, whose current president and vice president are F. Williams of the University of California at San Diego and E. Oran of the Naval Research Laboratory, respectively.

J. Ray Bowen (Chair) for the Program Committee

Program Committee

J. R. Bowen, J. Buckmaster, D. Dunn-Rankin, K. Kailasanath, P. Lindstedt, N. Peters, S. Pope, J. Shepherd, N. N. Smirnov, K. Takayama, P. Wolanski, and A. Oppenheim (Honorary Chair)

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