

Workshop on Burning Plasma Science: Exploring the Fusion Science Frontier

**11-13 December 2000
Austin, Texas**

Sponsored by the University Fusion Association

Stimulated by the growing interest in the science of burning plasmas coming out of discussions at the 1999 Fusion Summer Study at Snowmass and the recent charge [5 Oct. 2000] to FESAC by the DOE Office of Science to "...address the scientific issues of burning plasma physics," the University Fusion Association (UFA) is sponsoring a Workshop on Burning Plasma Science, 11-13 December 2000, in Austin, TX, to provide a forum for in-depth community discussion of the critical scientific issues connected with burning plasmas. Based on progress achieved at this December workshop (which focuses on scientific issues), a follow-on workshop focusing on the technology of burning plasmas will be held next year.

Purpose and Scope: The workshop is being organized by the UFA to be one of the primary sources of community input to the assessments of burning plasma science being carried out in the next year by FESAC and the Virtual Laboratory for Technology Next Step Options Advisory Committee. The emphasis of the workshop will be on burning plasma science issues in tokamak configurations, but discussion of burning plasma issues as they relate to other fusion concepts and more broadly to scientific areas outside of fusion energy will be strongly encouraged. Building on the progress made in discussing these issues at Snowmass 1999 as summarized in the report of the Burning Plasma Physics Working Group Group [<http://www.ap.columbia.edu/Smproceedings> or <http://plasma.ep.wisc.edu/UFA/Download.html>], the key questions which speakers and discussion leaders are asked to address are:

- 1) What are the compelling scientific issues which could be addressed by a burning plasma experimental facility?
- 2) Identify those burning plasma scientific issues which are inaccessible for study in existing or near-term non-burning plasma experiments.
- 3) What is the present physics basis and confidence level in achieving burning plasma conditions? In particular, how have recent developments in theory and experiment affected our confidence in achieving burning plasma conditions?
- 4) How comprehensively can these burning plasma science issues be addressed establishing a firm basis for extrapolation in scale and magnetic configuration?
- 5) Are there compelling scientific issues outside of fusion energy which can be addressed by a burning plasma experimental facility?

The workshop will be organized to provide time for in-depth discussion of proposed answers to these questions. A report summarizing the range of views and degree of consensus reached will be prepared.

Organizational Approach: A mix of plenary and breakout sessions will be used (following the model developed at Snowmass), with parallel breakout sessions held in four topic areas: (1) Energetic Alpha-Particle Physics; (2) Self-Heating, Transport, and Confinement at Reactor Scale; (3) Macro-stability in a Self-Heated Burning Plasma; and (4) Relation of Burning Plasma Science to Other Fields.

Place and Time of the Workshop: The workshop will be held in the Applied Computational & Engineering Sciences (ACES) facility at the University of Texas-Austin (SE corner of 24th and Speedway Streets) from 8:30 AM to about 5:30 PM on Monday and Tuesday, December 11 and 12, and concluding at 1 PM on Wednesday, December 13.

Hotel Information: Blocks of hotel rooms are being held at the La Quinta Hotel (512-476-1166 or 800-642-4239 mention Group Code: 907-45371 for \$70 rate) and Doubletree Hotel (512-479-4000 or 800-222-8733 mention Group Code: BPS for \$70 government rate or \$99 reduced rate). These rooms are being held through November 30, so please make your reservations as soon as possible.

Prospective Participants interested in making presentations in one of the topic areas or of a more general nature addressing one or more of the five key questions are encouraged to send a title and very brief abstract of the proposed presentation by e-mail to the workshop organizers listed below.

Organizing Committee:

Gerald Navratil, Columbia University, Chair
Amitava Bhattacharjee, Univ. of Iowa
Ray Fonck, Univ. of Wisconsin
Earl Marmor, MIT
Raffi Nazikian, Princeton University
Jim Van Dam, University of Texas
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