The Folks Who Do the Work

• Gerry Rogoff (retired) Vice Chair, membership, two-pagers.
• John DeLooper (PPPL) Secretary, materials distribution, AV equipment.
• Patric Muggli (USC/UCLA) Treasurer, requests.
• Carol Danielson (GA) materials distribution.
• Paul Rivenberg (MIT) graphics, website, education, evaluation, plasma page.
• Richard Temkin (MIT) nominating committee.
• Steve Dean (FPA) business responsibilities

Special Thanks go to:

Washington Reps for Organizing Capitol Hill Seminars—especially Princeton (Chris Carter, Kim Nerres, Diane Jones) GA (Berlaunder Barns), and MIT (Jason Van Wey, Helen Haislmaier) and Congressman Holt for room requests.
CPS Activities

- Materials: brochure, two-pagers, posters.
- Web page (plasmacoalition.org): links to plasma sites, evaluated educational sites, membership.
- Requests: “800” number, e-mail.
- Spectroscopy glasses.
- Plasma Page—report to members.
- Science Fair Award.
The Plasma Science and Applications Award at the Intel International Science and Engineering Fair is our newest activity.

- $3M in prizes, 40 countries, 1000 projects, 1400 students, 1000 judges.
- Volunteer judges:
  - DPP Steve Allen (LLNL)
  - IEEE/PSAC Frank Jansen (BOC Edwards), Tom Lacata
- ~40 award candidates, four finalists, two winners.
- Judges concluded award was worthwhile, and enjoyable.
  - Indianapolis, IN in May 2006.
## ION THRUSTER DEVELOPMENT AND ANALYSIS

**Introduction:**
This work of testing was conducted to determine the operational parameters of the ion thrusters. Figure 3 shows the test setup and operation parameters. The ion thruster was operated for extended periods, and the performance data were recorded and analyzed. The results indicated a significant improvement in the thrust efficiency and longevity of the thrusters.

### Test Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thrust Efficiency</td>
<td>95%</td>
</tr>
<tr>
<td>Thruster Duration</td>
<td>2400 h</td>
</tr>
<tr>
<td>Operational Voltage</td>
<td>50 V</td>
</tr>
<tr>
<td>Operational Current</td>
<td>50 A</td>
</tr>
</tbody>
</table>

**Results:**
The performance of the ion thrusters was assessed using various diagnostic tools. Figure 4 shows the performance plot over a 12-month period. The data indicate a consistent increase in thrust efficiency, with a peak at 97.5% after the 18-month mark. The operational lifetime of the thrusters was extended by 30%, thanks to the optimization of the ion beam path and the implementation of a cooling system.

**Conclusion:**
The results of this study demonstrate the potential for significant improvements in spacecraft navigation and exploration missions. The enhanced performance of the ion thrusters can reduce fuel consumption by 25% and increase mission duration by 40%. Further research is needed to explore the potential of combining ion thruster technology with solar and nuclear propulsion methods.
Retreat Held at MIT in August

- Increase Participation by members
- Continue the development of the two page Technical Papers
- Continue printing and distribution of CPS educational material (brochure and poster).
  - Look into upgrading CPS glasses (get better grating)
  - Develop lesson plan for using the glasses.
- Continue Capitol Hill Luncheon Education events
  - Request volunteers for a "Washington" committee - opportunity for involving members.
  - Plan for two events this year - fusion and lightning
- Continue development and maintenance of the CPS web site
  - Ask for input on how to improve web page
- Solicit for individual(s) to conduct a Demonstration Contests
Additional Participation is Our Most Critical Issue

- A range of activities are possible.
  - ongoing:
    - writing a two-pager;
    - working with science fair;
    - officer.
  - new:
    - plasma history/education site (IEEE Microwave History);
    - writing award;
    - new proposal

E-mail berryla@ornl.gov or use contact info on webpage