

Foreword

The second NASA Space Electrochemical Research and Technology (SERT) Conference was held at the Lewis Research Center on April 11 - 13, 1989. The conference was designed to examine current technologies and advanced ideas applicable to future space missions. With the ever-increasing demand for higher power and the extended duration of future NASA missions, it is necessary to consider what systems may best fulfill these needs.

Lunar and Mars initiatives with their storage requirements, low-earth-orbit missions with their cyclic demands, and long duration geosynchronous orbit missions all require advanced electrochemical systems. It is important to identify the technology barriers which affect the advancement of these systems and to pursue new ideas which will enable future space missions. By bringing together research scientists, technology advocates, power system engineers and mission planners at the conference, attention was brought to bear on vital areas.

The areas of special consideration at this year's conference were:

- (i) Advanced concepts
- (ii) Hydrogen-oxygen fuel cells and electrolyzers
- (iii) Nickel electrodes
- (iv) Advanced rechargeable batteries

The conference opened with a series of overviews in the areas of NASA advanced mission models covering unmanned planetary missions and manned exploratory missions. Technical papers in each of the four special areas were then presented. These sessions were chaired by individuals recognized as being extremely knowledgeable in their area of expertise. The technical sessions were followed by workshops in each of the special areas. The workshops provided a forum for general discussions and an opportunity to identify future research needs.

The majority of the technical papers presented at the conference and a summary of the workshop sessions comprise this special issue.

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