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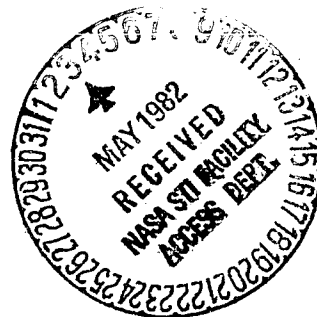
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MATERIALS PROCESSING IN SPACE BIBLIOGRAPHY

Compiled by Elizabeth Pentecost
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March 15, 1982



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16. ABSTRACT <p>This report is a bibliographic listing of current literature dealing with flight experiments utilizing a low-gravity environment to elucidate and control various processes or with ground-based activities that provide supporting research. Included are Government reports, contractor reports, conference proceedings, and journal articles. Subdivisions of the bibliography include the five categories: Crystal Growth; Metals, Alloys, and Composites, Fluids and Transport; Glasses and Ceramics; and Ultrahigh Vacuum and Containerless Processing Technologies, in addition to a list of patents and appendices providing a compilation of anonymously authored collections and reports and a cross reference index.</p>			
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PREFACE

The Materials Processing in Space (MPS) Bibliography is a comprehensive compilation of Government reports, contractor reports, conference proceedings, and journal articles dealing with flight experiments utilizing a low-gravity environment to elucidate and control various processes or with ground-based activities that provide supporting research. The bibliography is subdivided into various categories, including: Crystal Growth; Metals, Alloys, and Composites; Fluids and Transport; Glasses and Ceramics; and Ultra-high Vacuum and Containerless Processing Technologies. The category in some cases has been chosen rather arbitrarily, recognizing that in almost all cases only the processes that occur in the fluid phase are subjected to the influence of gravity. Generally the choice was based on the emphasis of the experiment. Experiments that are primarily concerned with the growth of single crystals are classified under Crystal Growth. Those that actually involve solidification of metals, metal models, and various composites were catalogued under Metals, Alloys and Composites. Those that primarily measure effects in fluids, heat flow and separation and chemical processes were catalogued under Fluids, Transports and Chemical Processes. Some papers that deal with observed effects of low gravity on living organisms that may pertain to materials processing are also included. Papers that pertain primarily to equipment and facilities for carrying out flight experimentation are placed in a separate category, as are those that summarize flight programs or give a general survey of materials processing in space. European, Soviet, and Japanese documents that deal with their respective flight programs are listed according to the specific categories discussed previously. Section II is a list of all patents produced by scientists involved in the MPS program during the last eight years. Appendix A is a compilation of papers, symposium proceedings, industry reports, committee reports, etc., which are not authored. Appendix B is a cross reference index.

It should be emphasized that this document represents an attempt to compile the current literature generated by the flight experiments and ground-based investigations dedicated to the study of processing materials in space. An annual edition of the bibliography is planned in order to add current literature. All papers referenced are on file in the Space Processing Division at Marshall Space Flight Center. Copies can be made available to workers in the field upon request to the bibliographer.

Any omissions that might have occurred are sincerely regretted. Investigators are encouraged to submit information on any work that was inadvertently omitted or any new work to the bibliographer for inclusion in next year's edition of the bibliography. All correspondence concerning corrections, additions, or deletions to the Materials Processing in Space Bibliography should be directed

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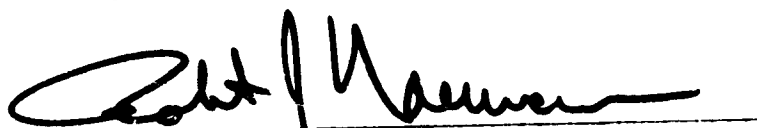
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The information in this report has been reviewed for technical content. Review of any information concerning Department of Defense or nuclear energy activities or programs has been made by the MSFC Security Classification Officer. This report, in its entirety, has been determined to be unclassified.



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