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# LIFE PREDICTION OF MATERIALS EXPOSED TO MONOTONIC AND CYCLIC LOADING — BIBLIOGRAPHY

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16. Abstract

This Bibliography is comprised of approximately 1200 reference citations related to the mechanics of failure in aerospace structures. Most of the references are for information on life prediction for materials exposed to monotonic and cyclic loading in elevated temperature environments such as that in the hot end of a gas turbine engine. Additional citations listed are for documents on the thermal and mechanical effects on solar cells in the cryogenic vacuum environment; radiation effects on high temperature mechanical properties; and high cycle fatigue technology as applicable to gas turbine engine bearings.

The bibliography represents a search of the literature published in the period April 1962 through April 1974 and is largely limited to documents published in the United States. It is a companion volume to NASA CR-134750, Life Prediction of Materials Exposed to Monotonic and cyclic Loading - A Technology Survey.



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## FOREWORD

This Bibliography is comprised of approximately 1200 reference citations related to life prediction of materials in the environments defined in the Introduction. The literature search which resulted in the bibliography was begun as a part of NASA Lewis Research Center Contract NAS 3-16681 and continued under Contract NAS 3-17640.

The purpose of this publication is to provide, in easy reference form, a survey of the pertinent literature published in the period 1962-1974. Documents referenced that are dated earlier than this period have been included because of the frequency of their citation as referenced, usually because they are regarded as "classics". It therefore provides a basis for broadening the information base produced for the Aerospace Safety Research and Data Institute.

It is recognized that the bibliography is an incomplete listing as any bibliography for such a broad subject must always be. Nevertheless, it is hoped that it will contribute as a guide to those who seek related information. This Bibliography is a companion volume to NASA CR-134752, Life Prediction of Materials Exposed to Monotonic and Cyclic Loading – A Technology Survey.

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## INTRODUCTION

This bibliography contains more than 1200 reference citations pertaining to life prediction for materials exposed to monotonic and cyclic loading in a selected environment. These reference citations document the work and conclusions of more than 1500 specialists working on the life prediction of aerospace structural materials subject to creep, low-cycle fatigue, and thermal fatigue. Particular areas of emphasis include the thermal/mechanical environment of the hot end of the gas turbine engine and the initiation and propagation of fatigue cracks in smooth and precracked specimens. Other areas included are the interactions between creep, fatigue, and the environment at elevated temperatures, thermal and mechanical fatigue effects on solar cells in the cyrogenic vacuum environment, radiation effects on high temperature mechanical properties; and high cycle fatigue technology as applicable to gas turbine bearings.

The bibliography is comprised of citations previously published in NASA CR-121202 under NASA Contract NAS 3-16681 and new citations resulting from significant research of the primary subject under NASA Contract NAS 3-17640. All references are listed alphabetically using the surname of the principal author. When an author could not be identified, a corporate source is cited. The last section of the bibliography is a complete author index, including the names of co-authors.

Each entry includes the author or corporate source, the title, a publication source, and the date. The format used is unique to the purpose of the bibliography. All entries preceded by an asterisk (*) are included in the Aerospace Safety Research and Data Institute data base, i.e., ASRDI Forms 102A were completed for them. The remaining citations are either references cited by authors whose work has been abstracted or are valid references that could not be researched under the current contract because of funding limitations. When it could be readily established, the entry has been qualified to show its availability from one or more of the several government or government-sponsored information distribution centers.

Alternative sources for the references in the bibliography are identified as follows:

"A" Numbers, e.g., A73-12005
Hard copy and/or microfiche of these citations may be purchased from the NASA-sponsored Technical Information Service operated by the AIAA, 750 Third Avenue, New York, New York 10017.

"AD" Numbers, e.g., AD-734304
Hard copy and/or microfiche/mircofilm of AD numbers that are unclassified and unlimited in distribution may be purchased from the National Technical Information Service Springfield, Virginia 22151.

Hard copy and/or microfiche/microfilm of AD numbers that are limited distribution and available only to qualified registered users may be ordered directly from the Defense Documentation Center, Cameron Station, Alexandria, Virginia 22314.

"N" Numbers, e.g., N69-16367
Hard copy and/or microfiche of these citations may be purchased from the National Technical Information Service, Springfield, Virginia 22151

The order of precedence for information included in the citations in this bibliography is:

1. Author(s)
2. Title
3. Original source, i.e., technical report number of preceedings, journals, etc.
4. Date of publication
5. Alternative source

A particular effort has been made to highlight the date of publication because of its relevance in a field of research that is continually changing.

In general, the source for all references is an activity in the United States of America. It is recognized that considerable Russian, Japanese, and British literature exists in this subject area and that only a fragment of it is referenced. The problem of translation is a constraint, but more significantly, time did not permit an adequate survey of foreign literature of interest.

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Life prediction of materials exposed to monotonic and cycle loading – The works of experts in the life prediction of materials subject to creep, low-cycle fatigue and thermal fatigue are represented. Particular areas of emphaisis include the thermal/mechanical environment of the hot end of the gas turbine engine and the initiation and propagation of fatigue cracks in smooth and precracked specimens. Other areas included are the interactions between creep, fatigue, and the environment at elevated temperatures; thermal and mechanical fatigue effects on solar cells in the cryogenic vacuum environment; radiation effects on high temperature mechanical properties; and high cycle fatigue technology as applicable to gas turbine engine bearings.

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