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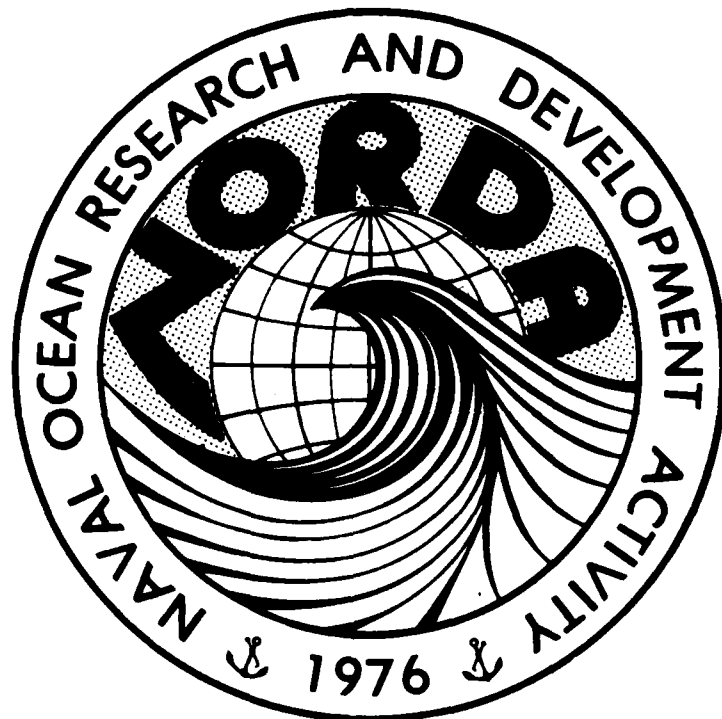


Bibliography on Multi-Component Diffusion for Marine Applications

References through 1984

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ABSTRACT

This report is a bibliography of over 230 published papers, reports, theses, and abstracts on double diffusion and multi-component diffusion through 1984. The citations cover research in oceanography, fluid mechanics, solar pond technology, and meteorology, with emphasis on the first two fields.

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INTRODUCTION

Complex convective instabilities can arise in fluids with two or more components when these components have different molecular diffusivities. When only two components are present, the process is termed double diffusive convection; when three or more, multicomponent convection. The existence of the phenomenon was first suggested in 1956 by three oceanographers, Stommel, Arons and Blanchard, but was considered only an "oceanographical curiosity" of little practical significance for a decade and a half. However, since the late 1960's it has become increasingly apparent that multicomponent convection is a very important process not only in oceanography but also in such diverse fields as astrophysics, metallurgy, chemical engineering, solid earth geophysics, and solar pond technology.

This bibliography was compiled in support of research in double diffusion by the Fine Scale Variability Project of the Physical Oceanography Branch at the Naval Ocean Research and Development Activity (NORDA). To limit its size, references from only the fields of oceanography, fluid mechanics, solar pond technology, and meteorology were included, with emphasis being placed on the first two categories. Excluded were citations from such fields as astrophysics, metallurgy, vulcanology, and other branches of geophysics. References through 1984 are presented; later years will be included in future versions. All citations are ordered alphabetically by first author and date, with co-authored papers following single author papers.

This document will be updated, annotated, and indexed in the future, and the author would appreciate being notified of any corrections or additions. Comments or requests for copies of this or future versions should be addressed to

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