PREFACE

IAU Symposium 135 on Interstellar Dust was hosted and co-sponsored by NASA's Ames Research Center from July 26–30, 1988. The symposium was held at the lovely campus of Santa Clara University situated around the historic Santa Clara Mission in California. The meeting was made possible by generous grants from the Astronomy and Relativity Branch of the National Aeronautics and Space Administration and the Galactic Astronomy Program of the National Science Foundation. The International Astronomical Union provided travel grants to a few participants from countries with limited travel funds. We are particularly grateful for the support and services rendered by the dedicated staff at NASA's Ames Research Center and to the SETI Institute for professionally and expeditiously administering the U.S. grants.

This symposium brought together 199 scientists representing 19 different countries. The wide range of interest and expertise of the participants — all in some way related to interstellar dust — is reflected in the great variety of topics that were discussed during the symposium ranging from UV, visible and IR observations of interstellar extinction to quantum-statistical calculations of the IR emission from highly vibrationally excited molecules. During the course of the meeting, 41 invited review papers and 140 contributed papers were presented. This book is a collection of the invited review papers. The contributed papers have been published in a companion volume, NASA CP-3036, available from National Technical Information Service, Springfield, Virginia 22161, USA.

Interstellar dust is of major importance in astrophysics because of its central role in processes such as star formation, the energy balance and spectra of gas clouds, interstellar chemistry — including the formation, modification, preservation and transport of molecules, and so on. The effect of dust on these and other processes is determined by its physical and chemical nature. Until recently, both were the center of controversy and speculation. This situation has improved substantially since the previous IAU Symposium on Interstellar Dust in 1972. There has been significant progress observationally, experimentally and theoretically in areas related to dust research in recent years. In particular, the opening-up of the IR window by ground-based and air- and space-borne observatories has provided a touchstone against which theories and experiments can be tested. A good example is the recent realization that polycyclic aromatic hydrocarbon molecules and related compounds may be a heretofore unrecognized, ubiquitous component of the interstellar medium. Likewise, the isolation of largely unmodified interstellar grain components in meteorites and in interplanetary dust particles promises to be as revolutionary in the next decade. Thus, it was appropriate to bring researchers together from these various sub-fields in order to integrate the most recent developments. The aim of the symposium was to draw a coherent picture of the dust's composition and its physical characteristics in the various phases of the interstellar medium. The central theme throughout the meeting was the confrontation of theory and laboratory data with observations.

The scientific content of the meeting was determined after much correspondence among the various members of the scientific organizing committee who sometimes held diverse opinions as to the final program. We particularly thank John Mathis

for working so hard with us to determine the content and tone of this conference and for dealing with the often cumbersome IAU rules and regulations.

All of the review talks presented at the meeting are included in this book, except for one which we knew from the outset. The review articles have been provided electronically by the authors and have been lightly edited to improve language and particularly layout. The articles were typeset at NASA Ames using LaTeX to yield a uniform presentation. Although we didn't anticipate the hornet's nest of problems involved in LaTeX'ing the entire book, we think that the effort has improved the final product. We thank the authors for the high quality of their review talks and papers. Because of their hard work we believe this book will have a lasting impact on the field.

There are many people, a number on the local organizing committee, whose extraordinary efforts and high level of dedication went into making the meeting and associated publications such a success. Among these, we want to single out a few for particular mention. Janice Varney laid out, typed, and mailed all of the meeting announcements, kept track of the responses, organized the tour and accommodations sheets, and maintained the budget. Janice also generated a creative financial arrangement during the week of the meeting to deal with local banks that don't understand what international means. Amara Graps pulled us through the chaos of multiple electronic versions of these papers, converted or modified the papers into a pleasing LaTeX structure no matter how mysterious the original format, kept track of all versions of the many hard copies, and helped keep the editors from despairing of ever being done with this task. What you hold has been largely created by Amara. Gary Villere has patiently prepared many macros, numerous "UNIX-style utilities" and clever indexing routines to "TeX" this book. Anyone wishing a copy of these macros, utilities and routines can obtain them by writing Gary Villere or Amara Graps at NASA Ames Research Center. For those of you thinking about producing a book such as this, all of it was typeset on an Apple Macintosh™ (Plus and II– the II was considerably faster than the Plus) running TeXtures™, with the final outputs from a VAX 785. On behalf of all the participants at the conference and the readers of this book, we thank each of these people for their outstanding effort.

Lou Allamandola
Xander Tielens

Moffett Field, June, 1989

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