Molecules In Astrophysics Probes And Processes

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Dissociative Recombination of Molecular Ions with Electrons - Steven L. Guberman 2012-12-06
Dissociative Recombination of Molecular Ions with Electrons is a comprehensive collection of refereed papers describing the latest developments in dissociative recombination research. The papers are written by the leading researchers in the field. The topics covered include the use of microwave afterglows, merged beams and storage rings to measure rate coefficients and to identify the products and their yields. The molecules studied range in size from the smallest, H2+, to bovine insulin ions. The theoretical papers cover the important role of Rydberg states and the use of wave packets and quantum defect theory to deduce cross sections, rate constants and quantum yields. Several theoretical and experimental papers address the controversial topic of H3+ dissociative recombination and its importance in the interstellar medium. Dissociative recombination studies of other molecular ions in the interstellar medium and in cometary and planetary atmospheres are covered. Ionization is an important competitive process to dissociative recombination and its competition with predissociation and its role in the reverse process of the association of neutral species is presented. Dissociative attachment, in which an electron attaches to a neutral molecule, has many similarities to dissociative recombination. The topics covered include the accurate calculation of electron affinities, attachment to molecules, clusters, and to species absorbed on solid surfaces and electron scattering by a molecular anion.
Astronomy and Astrophysics - 2006

Molecular Astrophysics - A. G. G. M. Tielens 2021-02-04
Ideal for advanced students, this comprehensive overview of molecular astrophysics bridges physics, astronomy, and physical chemistry.
Asymptotic Giant Branch Stars - Harm J. Habing 2013-04-17
The underlying astrophysical mechanisms of the objects known as asymptotic giant branch stars - the structures that occur during the dramatic period prior to a star's death - is the main theme of this text. Over the past three decades, asymptotic giant branch stars have become a topic of their own, and the contributions to this volume all focus on these entities themselves, rather than their connections to other fields of astronomy. Among the many topics covered are new methods of high-quality infrared observation and the more detailed and realistic simulations made possible by increasingly fast computers. This collection should be useful to graduate students who work in the field, teachers who want to address the subject in their courses, and to astronomers from various backgrounds who are interested in the astrophysics of AGB stars.
The First Rung - Hamid Rafizadeh 2018-05-21
What can the long-dead ancients tell us about our future? Plenty, according to sacred texts and modern science. While the modern person has only witnessed one celestial state of the earth, ancient peoples have witnessed two. Science calls these two versions glacial and interglacial earth, but to the ancients they are the blue-skied earth and the canopied earth. And as the earth positions to once again flip to its yet unknown secondary state, we can turn to the ancients for answers. The First Rung weaves together the stories of humanitys epic struggle to understand the past in order to understand the presentand most importantly, to understand the future. This fascinating account provides eye-opening insight into the mix of ancient and modern knowledge that defines the earths celestial environment, and author Hamid Rafizadeh offers a tour of the evidence regarding the earths two different versionsdetails of which our ancient human ancestors have seen. By bringing echoes of the past into the present, we can have an intellectual awakening of the knowledge that holds the answers for humanitys survival and well-being. The unknown, hidden past of the ancients haunts the modern humans life; it is a dangerous shadow cast on everyone, but it is also a knowledge not to be missed.
Physical Processes in Circumstellar Disks Around Young Stars - Paulo J. V. Garcia 2011-05-15
Circumstellar disks are vast expanses of dust that form around new stars in the earliest stages of their birth. Predicted by astronomers as early as the eighteenth century, they weren’t observed until the late twentieth century, when interstellar imaging technology enabled us to see nascent stars hundreds of light years away. Since then, circumstellar disks have become an area of intense study among astrophysicists, largely because they are thought to be the forerunners of planetary systems like our own—the possible birthplaces of planets. This volume brings together a team of leading experts to distill the most up-to-date knowledge of circumstellar disks into a clear introductory volume. Understanding circumstellar disks requires a broad range of scientific knowledge, including chemical processes, the properties of dust and gases, hydrodynamics and magnetohydrodynamics, radiation transfer, and stellar evolution—all of which are covered in this comprehensive work, which will be indispensable for graduate students, seasoned researchers, or even advanced undergrads setting out on the study of planetary evolution.
Handbook of Molecular Physics and Quantum Chemistry, 3 Volume Set - Stephen Wilson 2003-03-07
Published in three volumes, this comprehensive reference work brings together in a single source for the first time, a detailed presentation of the most important theoretical concepts and methods for the study of molecules and molecular systems. The logical format of the Handbook allows the reader to progress from the foundations of the field to the most important and exciting areas of current research. Edited and written by an outstanding international team, and containing over 100 articles written by more than 50 contributors, it will be invaluable for both the expert researcher and the graduate student or postdoctoral worker active in any of the broad range of fields where these concepts and methods are important. Comprises three themed volumes: * Fundamentals * Molecular Electronic Structure * Molecules in the Physico-Chemical Environment: Spectroscopy, Dynamics and Bulk Properties * Presents detailed articles covering the key topics, presented in a didactic manner * Focuses both on theory and the relation of experiment to theory Volume 1, Fundamentals presents the foundations of molecular physics and quantum chemistry. It consists of 7 parts arranged as follows:- Part 1 Introduction Part 2 Elements of Quantum Mechanics Part 3 Orbital Models for Atomic, Molecular and Crystal Structure Part 4 Symmetry Groups and Molecular Structure Part 5 Second Quantization and Many-Body Methods Part 6 Approximate Separation of Electronic and Nuclear Motion Part 7 Quantum Electrodynamics of Atoms and Molecules The central problem of molecular physics and quantum chemistry is the description of atomic and molecular electronic structure. The development of appropriate models for the description of the effects of electron correlation and of relativity are key components of the analysis. Volume 2, Molecular Electronic Structure, addresses these topics, and consists of 7 parts arranged as follows: Part 1 Approximation methods Part 2 Orbital Models and Generalized Product Functions Part 3 Electron correlation Part 4 Relativistic molecular electronic structure Part 5 Electronic structure of large molecules Part 6 Computational quantum chemistry Part 7 Visualization and interpretation of molecular electronic structure In reality no molecular system exists in isolation. Molecules interact with other atoms and molecules, and with their environment. Volume 3, Molecules in the Physico-Chemical Environment - Spectroscopy, Dynamics and Bulk Properties, consists of 7 parts arranged as follows:- Part 1 Response theory and propagator methods Part 2 Interactions between molecules Part 3 Molecules in different environments Part 4 Molecular Electronic spectra Part 5 Atomic Spectroscopy and Molecular

Vibration-Rotation Spectroscopy Part 6 Molecular dynamics and dynamical processes Part 7 Bulk properties

Faraday Discussions of the Chemical Society - 1998

Planetary Systems - Ludwik Marian Celnikier 1998

Astrochemistry: Recent Successes and Current Challenges (IAU S231) - International Astronomical Union. Symposium 2006-04-27

An up-to-date survey of astrochemistry in the early years of the twenty-first century. For researchers and graduate students.

Millimeter-Wave Astronomy: Molecular Chemistry & Physics in Space - W.F. Wall 2012-12-06

Proceedings of the 1996 INAOE Summer School of Millimeter-Wave Astronomy held at INAOE, Tonantzintla, Puebla, México, 15-31 July 1996

Encyclopedia of Astronomy & Astrophysics - P Murdin 2001-01-01

In a unique collaboration, Nature Publishing Group and Institute of Physics Publishing have published the most extensive and comprehensive reference work in astronomy and astrophysics. This unique resource covers the entire field of astronomy and astrophysics and this online version includes the full text of over 2,750 articles, plus sophisticated search and retrieval functionality and links to the primary literature. The Encyclopaedia's authority is assured by editorial and advisory boards drawn from the world's foremost astronomers and astrophysicists. This first class resource is an essential source of information for undergraduates, graduate students, researchers and seasoned professionals, as well as for committed amateurs, librarians and lay people wishing to consult the definitive astronomy and astrophysics reference work.

Astrophysics and Space Science - L.B.F.M. Waters 2012-12-06

The successful launch on November 17, 1995 of ESA's Infrared Space Observatory (ISO) by means of an Ariane 4 carrier, has set in motion a true revolution in quantitative infrared astronomy. For the first time since the very successful IRAS mission in 1983, the astronomical community has uninterrupted access to the infrared part of the electromagnetic spectrum. The four focal plane instruments on board of ISO (the camera ISOCAM, the photometerjcamera ISOPHOT, and the short and long wavelength spec trographs ISO-SWS and ISO-LWS), perform very well and live up to the high expectations all of us had at launch. In the spring of 1996, Thijs de Graauw (principal investigator of the SWS) first suggested the idea to organize a conference dedicated to ISO re sults in the area of stars and circumstellar matter, and coined the title ISO 's View on Stellar Evolution. At the first scientific meeting to highlight some of the early ISO results which was held in May of 1996 at ESA's laboratory ESTEC in Noordwijk, the Netherlands, the conference was announced and a preliminary science organizing committee was formed. The conference was held from July 1 to 4, 1997, in conference centre de Leeuwenhorst, Noord wijkerhout, the Netherlands. The conference was opened by the Director of ESA 's Science Programme, Professor R. Bonnet.

Astrobiology: Future Perspectives - P. Ehrenfreund 2006-03-05

Astrobiology, a new exciting interdisciplinary research field, seeks to unravel the origin and evolution of life wherever it might exist in the Universe. The current view of the origin of life on Earth is that it is strongly connected to the origin and evolution of our planet and, indeed, of the Universe as a whole. We are fortunate to be living in an era where centuries of speculation about the two ancient and fundamental problems: the origin of life and its prevalence in the Universe are being replaced by experimental science. The subject of Astrobiology can be approached from many different perspectives. This book is focused on abiogenic organic matter from the viewpoint of astronomy and planetary science and considers its potential relevance to the origins of life on Earth and elsewhere. Guided by the review papers in this book, the concluding chapter aims to identify key questions to motivate future research and stimulate astrobiological applications of current and future research facilities and space missions. Today’s rich array of new spacecraft, telescopes and dedicated scientists promises a steady flow of discoveries and insights that will ultimately lead us to the answers we seek.

Dense Molecular Gas around Protostars and in Galactic Nuclei - Willem A. Baan 2005-12-05

These proceedings summarize our present knowledge on astronomical molecules, highlight major problems to be addressed, and finally propose future work. Their theoretical understanding involves physics, numerical simulations and chemistry.

Molecular Astrophysics - Geerd H.F. Diercksen 2012-12-06

and In the IAU Symposium of 1979 devoted to interstellar molecules [8]. Excellent relevant monographs [9. 10] . related timely proceedings [11] . and recently published elementary textbooks [12. 13] further help to define the pedagogical scope of molecular astrophysics. A significant financial investment has been made in the establishment of ground- and satellite-based observationai facilities for molecuiar astrophysical studies. In the coming years. a wealth of experimental data is bound to accumulate. in which connection close interactions between observers. astrophysical modeliers. and molecular physicists and chemists can play a helpful role in analysis and interpretation. In view of the increasing pace of activity in the field of molecular astrophysics. and in the apparent absence of relevant international meetings since the Liege 1977 and IAU 1979 Symposia. it was deemed appropriate and timely by the organizers to hold a workshop in 1984. Consequently. the NATO Advanced Research Workshop. "Molecular Astrophysics State of the Art and Future Directions". was organized and held at Bad Wlndshelm. West Germany. from 8 to 14 July 1984. The choice of speakers and subject matter of the Workshop was largely subjective. but designed to include most of the generally accepted areas of molecular astrophysical study. Workers from the fields of radio. infrared. and uv-optlcal observations. astrophysical modelling. laboratory spectroscopy. reaction chemistry. collision physics. and theoretical molecular physics and chemistry. were Invited to present survey lectures In their areas of speciality. In addition.

Molecular Hydrogen in Space - International Conference on H{2O in Space (1999 : Paris) 2000-11-06

Molecular hydrogen is the most abundant molecule in the Universe. In recent years, advances in theory and laboratory experiments coupled with breakthrough observations with important new telescopes and satellites have revolutionized our understanding of molecular hydrogen in space. It is now possible to address the question of how molecular hydrogen formed in the early Universe and the role it played in the formation of primordial structures. This timely volume presents articles from a host of experts who reviewed this new understanding at an international conference in Paris. This book provides the first multi-disciplinary synthesis of our new understanding of molecular hydrogen. It covers the theory of the physical processes and laboratory experiments, as well as the latest observations. It will therefore be an invaluable reference for all students and researchers in astrophysics and cosmology.

Astronomical Spectroscopy: An Introduction To The Atomic And Molecular Physics Of Astronomical Spectroscopy (Third Edition) - Tennyson Jonathan 2019-04-18

The third edition of Astronomical Spectroscopy examines the physics necessary to understand and interpret astronomical spectra. It offers a step-by-step guide to the atomic and molecular physics involved in providing astronomical spectra starting from the relatively simple hydrogen atom and working its way to the spectroscopy of small molecules.Based on UCL course material, this book uses actual astronomical spectra to illustrate the theoretical aspects of the book to give the reader a feel for such spectra as well as an awareness of what information can be retrieved from them. It also provides comprehensive exercises, with answers given, to aid understanding.

Dust and Molecules in Evolved Stars - I. Cherchneff 2013-11-11

Dust and molecules are found in a large variety of astrophysical environments, in particular in the circumstellar material ejected by evolved stars. This book brings together the leading astronomers and astrophysicists in the field of molecular astrophysics and stellar physics to discuss the important issues of dust and molecular formation, the role of solids in circumstellar environments, molecules as probes of circumstellar parameters, the stellar contribution to the enrichment of the Galaxy, and the latest observational data in various wavelength domains, in partiular in the infrared with results from the Infrared Space Observatory. The astrophysical senarios include late-type stars, novae, Wolf-Rayet stars, Luminous Blue Variables and supernovae. Audience: Researchers and graduate students in the fields of stellar physics, stellar evolution and astrochemistry.

The Central Regions of the Galaxy and Galaxies - International Astronomical Union. Symposium 1998-08-31

Proceedings of the August 1997 symposium. One hundred and ninety-four contributions present comparative studies on the data of the Milky Way and central regions of nearby galaxies. Included is information on galactic bulges, galactic center star clusters, star formation, starbursts, neutral ISM in the galactic center, molecular gas in the nuclei of galaxies, gas dynamics in the galactic center, the central parsecs of the milky way, magnetic and high-energy phenomena, black holes in

galaxies, black hole in the galactic center, and black hole powering of AGN and jets. A sampling of topics: diffraction-limited IR speckle masking observations of the central regions of Seyfert galaxies, the stellar content of the Quintuplet cluster, and the structural characteristics of spiral bulges. Annotation copyrighted by Book News, Inc., Portland, OR

Molecules in Astrophysics: Probes and Processes - International Astronomical Union. Symposium 1997-04-30

Proceedings of the 178th Symposium of the International Astronomical Union held in Leiden, The Netherlands, July 1-5, 1996

Chemical Evolution from Zero to High Redshift - Jeremy Walsh 2013-06-29

Tetons 4 - Chick Woodward 2001

Annotation These proceedings from the May-June 2000 conference in Grand Teton National Park, Wyoming feature 32 full papers and 51 posters on the stellar structure of the galaxy, dust in the galaxy, the cool interstellar medium, the warm interstellar medium, very low-mass stars, evolved stars, dust and debris disks, and future prospects for research. An abstract is provided for each paper, and many contributors illustrate their findings with diagrams, graphs, or other images. Annotation c. Book News, Inc., Portland, OR (booknews.com)

Cometary Science after Hale-Bopp - Hermann Böhnhardt 2013-04-17

Comet Hale-Bopp defines a milestone event for cometary science: it is the first "really big" comet observed with modern equipment on the ground and from space and due to that; it is considered the new reference object in cometary sciences. At the beginning of a new era in spacecraft exploration of comets and five years after Hale-Bopp's perihelion passage these proceedings of invited and contributed papers for IAU Colloquium 186 "Cometary Science after Hale-Bopp" review the state-of-the-art knowledge on comets, the icy, dusty and most primordial left-overs of the formation disk of our own solar system.

The Century of Space Science - J.A. Bleeker 2012-12-06

One of the most attractive features of the young discipline of Space Science is that many of the original pioneers and key players involved are still available to describe their field. Hence, at this point in history we are in a unique position to gain first-hand insight into the field and its development. To this end, The Century of Space Science, a scholarly, authoritative, reference book presents a chapter-by-chapter retrospective of space science as studied in the 20th century. The level is academic and focuses on key discoveries, how these were arrived at, their scientific consequences and how these discoveries advanced the thoughts of the key players involved. With over 90 world-class contributors, such as James Van Allen, Cornelis de Jager, Eugene Parker, Reimar Lüst, and Ernst Stuhlinger, and with a Foreword by Lodewijk Woltjer (past ESO Director General), this book will be immensely useful to readers in the fields of space science, astronomy, and the history of science. Both academic institutions and researchers will find that this major reference work makes an invaluable addition to their collection.

Atomic and Molecular Data and Their Applications - Keith A. Berrington 2000-11-06

The principal motivations for establishing the ICAMDATA conference series are to provide a focal point for intensive interactions between atomic and molecular data producers, compliers and users, and to provide a forum to discuss major issues, which are highlighted in this volume. Both theoretical and experimental approaches are reviewed and cover a broad spectrum of topics, including electron impact with atoms and molecules, atomic structure and transition probabilities, heavy particle collisions, quantum chemistry, and thermochemical data. Most papers focus not only on the means of production of data but also on providing some idea of the accuracy of the data produced. The third aspect of the conference examined closely the various databases around the world.

Stellar Evolution, Stellar Explosions, and Galactic Chemical Evolution, Proceedings of the Second Oak Ridge Symposium on Atomic and Nuclear Astrophysics, Oak Ridge, Tennessee, 2-6 December 1997 - Mezzacappa 1998-01-01

Bringing together atomic physicists, nuclear physicists, astronomers, and astrophysicists from around the world, Stellar Evolution, Stellar Explosions, and Galactic Chemical Evolution focuses on stellar atmospheres; stellar evolution; stellar explosions, such as novae, supernovae, and x-ray bursters; pregalactic and galactic chemical evolution; the interstellar medium; and atomic and nuclear data for astrophysics. Consisting of invited papers, invited posters, and contributed posters, this volume covers observations, modeling, and atomic and nuclear physics foundations, including data, experiments, and theories, that are essential to understanding these important astrophysical objects and events. It documents a confluence of atomic physics, nuclear physics, and astrophysics and a confluence of data from atomic and nuclear physics experiments from current-generation astronomical instruments-all have helped advance the frontier in our understanding of the universe.

Astrochemistry : from Molecular Clouds to Planetary Systems - International Astronomical Union. Symposium 2000

Lectures in Astrobiology - Muriel Gargaud 2005-06-08

First comprehensive, beginning graduate level book on the emergent science of astrobiology.

The Origin of Stars and Planetary Systems - Charles J. Lada 2012-12-06

A few years after the publication of The Physics of Star Formation and Early Stellar Evolution, we received a request from the publisher for an up dated second edition of this popular reference book. As originally intended, the volume had proved to be a useful "text" book for graduate astronomy courses and seminars which dealt with topics related to stellar origins. The book was based on a series of lectures delivered by a distinguished group of leading researchers at a NATO Advanced Study Institute (ASI) held in May 1990 on the island of Crete, Greece. The primary goal of the ASI was in fact to produce a book which "would simultaneously provide a broad and systematic overview of, as well as a rigorous introduction to, the fun damental physics and astronomy at the heart of modern research in star formation and early stellar evolution. " However, by 1995 concern had arisen among those who used the text as a reference for graduate seminars and courses that the book would need to be updated to stay abreast of the discoveries and progress in this rapidly evolving field. After some discussion we concluded that a new edition of the book was warranted and that the goal of producing a new edition would be best accomplished by organizing a second ASI in Crete to review the progress in star formation research.

Reports on Astronomy - Immo Appenzeller 2012-12-06

IAU Transactions are published as a volume corresponding to each General Assembly. Volume A is produced prior to the Assembly and contains Reports on Astronomy, prepared by each Commission President. The intention is to summarize the astronomical results that have affected the work of the Commission since the production of the previous Reports up to a time which is about one year prior to the General Assembly. Volume B is produced after the Assembly and contains accounts of Commission Meetings which were held, together with other material. The reports included in the present volume range from outline summaries to lengthy compilations and references. Most reports are in English.

RNA World Hypothesis and the Origin of Life: Astrochemistry Perspective - Ashraf - Ali 2022-09-26

Formation and Evolution of Solids in Space - J. Mayo Greenberg 2012-12-06

Interstellar dust, meteorites, interplanetary dust particles (IDP's), the zodiacal light, comets, comet dust. Where do they come from, what are they made of, how do they evolve, and finally, are there connections between them? These are the questions discussed in this volume by some of the world's outstanding experts in their respective fields. The techniques used for studying the `small' solid objects of space are thoroughly discussed. Some of the methods involve a synthetic approach using the laboratory to create analog environments and materials which are believed to resemble those in space. Others use direct laboratory methods with state-of-the-art analytical tools to study the material of the objects themselves - meteorites, IDP'S. And others apply the latest in astronomical facilities to provide quantitative data on the material properties of the solids which can only be deduced from remote observations, These are compared with the laboratory results. In one instance there was a possibility to study a solar system body in situ and that was the case of comet Halley and some of the results of these studies obtained from space `laboratories' launched to meet it are discussed here. Finally, there are theoretical papers which are aimed at bridging the results of observational and laboratory methods. This book is recommended to senior scientists as well as graduate students who wish to pursue research in interstellar and solar system astronomy and their connections.

Lectures in Astrobiology - Bernard Barbier 2006-01-13

This is the first of a divided two-part softcover edition of the "Lectures in

Astrobiology Volume I" containing the sections "General Introduction", "The Early Earth and Other Cosmic Habitats for Life" and "Appendices" including an extensive glossary on Astrobiology. "Lectures in Astrobiology" is the first comprehensive textbook at graduate level encompassing all aspects of the emerging field of astrobiology. Volume I of the Lectures in Astrobiology gathers a first set of extensive lectures that cover a broad range of topics, from the formation of solar systems to the quest for the most primitive life forms that emerged on the Early Earth.

Comets II - Michel C. Festou 2004-11-01

The study of comets is a field that has seen tremendous advances in recent years, far surpassing the knowledge reflected in the original Comets volume published as part of the Space Science Series in 1982. This new volume, with more than seventy contributing authors, represents the first complete overview of comet science in more than a decade and contains the most extensive collection of knowledge yet assembled in the field. Comets II situates comet science in the global context of astrophysics for the first time by beginning with a series of chapters that describe the connection between stars and planets. It continues with a presentation of the formation and evolution of planetary systems, enabling the reader to clearly see the key role played in our own solar system by the icy planetesimals that were the seeds of the giant planets and transneptunian objects. The book presents the key results obtained during the 1990s, in particular those collected during the apparition of the exceptional comets C/Hyakutake and C/Hale-Bopp in 1996-1997. The latest results obtained from the in situ exploration of comets P/Borrelly and P/Wild 2 are also discussed in detail. Each topic of is designed to be accessible to students or young researchers looking for basic, yet detailed, complete and accurate, information on comet science. With its emphasis on the origin of theories and the future of research, Comets II will enable scientists to make connections across disciplinary boundaries and will set the stage for discovery and new understanding in the coming years.

Astronomy Reports - 1999

Laboratory Astrophysics and Space Research - P. Ehrenfreund 2012-12-06

The book presents the most recent developments of laboratory studies in astrophysics and space research. The individual chapters review laboratory investigations under simulated space conditions, studies for the design of successful space experiments or for supporting the interpretation of astronomical and space mission recorded data. Related theoretical models, numerical simulations and in situ observations demonstrate the necessity of experimental work on the Earth's surface. The expertise of the contributing scientists covers a broad spectrum and is included in general overviews from fundamental science to recent space technology. The book intends to serve as a reference for researchers and graduate students on the most recent activities and results in laboratory astrophysics, and to give reviews of their applications in astronomy, planetology, cosmochemistry, space research and Solar System exploration.

Solid State Astrochemistry - Valerio Pirronello 2012-12-06

The fundamental role that Astrochemistry plays into regulating the processes that in interstellar clouds lead to the formation of stars, and how these processes concur into affecting the shape and the dynamics of galaxies and hence into showing the Universe in the way it appears to us is well established. Together with those occurring in the gas phase a special relevance is recognized to processes that involve interstellar dust grains, the solid component of matter diffused among stars. The school on "Solid State Astrochemistry", held at the Ettore Majorana Centre for Scientific Culture in Erice (Sicily) from the 5th to the 15th of June 2000, was the fifth course of the International School of Space Chemistry. In spite of its very focused aim it was attended by 66 participants from 17 different countries, that in the very special environment provided by the Majorana Centre, discussed in great details the various aspects of the subject.

Molecules in Astrophysics: Probes and Processes - International Astronomical Union. Symposium 1997-04-30

Proceedings of the 178th Symposium of the International Astronomical Union held in Leiden, The Netherlands, July 1-5, 1996

The Molecular Astrophysics of Stars and Galaxies - T. W. Hartquist 1998

This book provides a comprehensive survey of modern molecular astrophysics. It gives an introduction to molecular spectroscopy and then addresses the main areas of current molecular astrophysics, including galaxy formation, star forming regions, mass loss from young as well as highly evolved stars and supernovae, starburst galaxies plus the tori and discs near the central engines of active galactic nuclei. With chapters written by leading experts, the book is unique in giving a detailed view of this wide-ranging subject. It will provide the standard introduction for research students in molecular astrophysics; it will also enable chemists to learn the astrophysics most related to chemistry as well as instruct physicists about the molecular processes most important in astronomy.