The Cambridge Encyclopedia Of Meteorites

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The Book of the Damned Charles Fort 1972 "Time travel, UFOs, mysterious planets, stigmata, rock-throwing poltergeists, huge footprints, bizarre rains of fish and frogs-nearly a century after Charles Fort's Book of the Damned was originally published, the strange phenomenon presented in this book remains largely unexplained by modern science. Through painstaking research and a witty, sarcastic style, Fort captures the imagination while exposing the flaws of popular scientific explanations. Virtually all of his material was compiled and documented from reports published in reputable journals, newspapers and periodicals because he was an avid collector. Charles Fort was somewhat of a recluse who spent most of his spare time researching these strange events and collected these reports from publications sent to him from around the globe. This was the first of a series of books he created on unusual and unexplained events and to this day it remains the most popular. If you agree that truth is often stranger than fiction, then this book is for you"--Taken from Good Reads website.

Mineralogy Martin Okrusch 2020-09-18 This book presents a translation and update of the classic German textbook of Mineralogy and Petrology that has been published for decades. It provides an introduction to mineralogy, petrology, and geochemistry, discussing the principles of mineralogy, including crystallography, chemical bonding, and physical properties, and the genesis of minerals in a didactic and

understandable way. Illustrated with numerous figures and tables, it also features several sections dedicated to the genesis of mineral resources. The textbook reflects the authors' many years of experience and is ideal for use in lectures on mineralogy and petrology.

Heaven's Touch James B. Kaler 2009 "As you gaze into the starry sky, you might feel isolated from the Universe around you - but you're not. This book reveals the startling ways life on Earth is touched by our cosmic environment, and demonstrates why without such contact, life itself wouldn't be possible." "Heaven's Touch embarks on an unforgettable journey across the cosmos, beginning in near space with a look at the gentle ebb and flow of lunar and solar tides. Acclaimed astronomer James Kaler describes their subtle effects on our world and also explores the Sun's more potent influences, such as solar storms that cause auroras, give comets their tails, and knock out power grids on Earth. He ventures across the Solar System to consider how the planets can act to produce climate change, even global disaster. Kaler shows how Jupiter's gravity can throw asteroids toward potentially devastating collision with Earth, and how even our whole Galaxy might hurl comet storms at us. He then takes us into deepest space to describe the cosmic rays launched at us from exploding stars, and considers not just how these exploders might harm us, but how they also join together in the creation of stars and how they serve to populate the Universe with the very building blocks of life." --Book Jacket.

Asteroids, Meteorites, and Comets Linda T. Elkins-Tanton 2010 Asteroids, Comets, and Meteorites provides students, researchers, and general readers with the most up-to-date information on this fascinating field. From the days of the dinosaurs to our modern environment, this book explores all aspects of these cosmic invaders.

Darwinian Evolution of Molecules Hiromoto Nakazawa 2018-06-09 On the basis of thermodynamic considerations and the Earth's historical processes, this book argues the physical inevitability of life's generation and evolution, i.e., Why did life generate? Why does life evolve? Following an introduction to the problem, the hypothesis "Darwinian Evolution of Molecules" is proposed, which explains how, when, and where life was instigated through successive chemical reactions and the survival of selected molecules. The individual processes described are all scientifically reasonable, being verifiable by

experiment. The hypothesis is supported by extensive reference to the scientific literature published in academic journals, including some experimental reports from the author's own research group. The readers of this book will learn that the decreasing temperature of the early Earth led to a reduction in its entropy, inducing the Earth's materials to order, which entailed ordering of the light elements as organic molecules with subsequent further ordering (i.e., evolution) to systems that can be considered alive (i.e., life). Researchers and students, as well as the non-academic audience, interested in the interdisciplinary problem of the origin of life will find suggestions and possible approaches to the scientific and conceptual problems they may be facing.

Cosmochemistry Harry McSween, Jr 2021-11-30 Thoroughly updated to include exciting discoveries from spacecraft missions and laboratory analyses, as well as new teaching resources.

Environmental Management Santosh Sarkar 2010-08-12 There has been a steady increase in anthropogenic pressure over the past few years due to rapid industrialization, urbanization and population growth, causing frequent environmental hazards. Threats of global environmental change, such as climate change and sea level rise, will exacerbate such problems. Therefore, appropriate policies and measures are needed for management to address both local and global trends. The book 'Environmental Management' provides a comprehensive and authoritative account of sustainable environmental management of diverse ecotypes, from tropical to temperate. A variety of regional environmental issues with the respective remedial measures has been precisely illustrated. The book provides an excellent text which offers a versatile and in-depth account of management of wide perspectives, e.g. waste management, lake, coastal and water management, high mountain ecosystem as well as viticulture management. We hope that this publication will be a reference document to serve the needs of researchers of various disciplines, policy makers, planners and administrators as well as stakeholders to formulate strategies for sustainable management of emerging environmental issues.

Stamping the Earth from Space Renato Dicati 2017-01-10 This unique book presents a historical and philatelic survey of Earth exploration from space. It covers all areas of research in which artificial satellites have contributed in designing a new image of our planet and its environment: the atmosphere and

ionosphere, the magnetic field, radiation belts and the magnetosphere, weather, remote sensing, mapping of the surface, observation of the oceans and marine environments, geodesy, and the study of life and ecological systems. Stamping the Earth from Space presents the results obtained with the thousands of satellites launched by the two former superpowers, the Soviet Union and the United States, and also those of the many missions carried out by the ESA, individual European countries, Japan, China, India, and the many emerging space nations. Beautifully illustrated, it contains almost 1100 color reproductions of philatelic items. In addition to topical stamps and thematic postal documents, the book provides an extensive review of astrophilatelic items. The most important space missions are documented through event covers and cards canceled at launch sites, tracking stations, research laboratories, and mission control facilities.

Meteor Showers and their Parent Comets Peter Jenniskens 2006-09-14 Meteor Showers and their Parent Comets is a unique handbook for astronomers interested in observing meteor storms and outbursts. Spectacular displays of 'shooting stars' are created when the Earth's orbit crosses a meteoroid stream, as each meteoroid causes a bright light when it enters our atmosphere at high speed. Jenniskens, an active meteor storm chaser, explains how meteoroid streams originate from the decay of meteoroids, comets and asteroids, and how they cause meteor showers on Earth. He includes the findings of recent space missions to comets and asteroids, the risk of meteor impacts on Earth, and how meteor showers may have seeded the Earth with ingredients that made life possible. All known meteor showers are identified, accompanied by fascinating details on the most important showers and their parent comets. The book predicts when exceptional meteor showers will occur over the next fifty years, making it a valuable resource for both amateur and professional astronomers.

Cabinet Of Curiosities, A: The Myth, Magic And Measure Of Meteorites Martin Beech 2021-03-05 Hurtling through the atmosphere, in a blaze of light and reverberating percussions, the arrival of a meteorite on Earth is a magical, rare, and precious sight. These characteristics have accordingly ensured a long, yet often controversial history. For all this, meteorites are cosmic messengers. They tell us about the entire history of the solar system, their story carrying us from the very earliest moments, when solid material first began to form in the solar nebula. Indeed, meteorites played a key role in the origins of Earth's oceans

and the genesis of life. Meteorites additionally tell us about the origin and evolution of the asteroids, and they tell us about impacts upon the Moon as well as the volcanic history of planet Mars. Much is known about the structure and chemistry of meteorites, but for all this, they still harbor many scientific mysteries that have yet to be resolved.

Stardust Sun Kwok 2013-04-08 How did life originate on Earth? For over 50 years, scientists believed that life was the result of a chemical reaction involving simple molecules such as methane and ammonia cooking in a primordial soup. Recent space observations have revealed that old stars are capable of making very complex organic compounds. At some point in their evolution, stars eject those organics and spread them all over the Milky Way galaxy. There is evidence that these organic dust particles actually reached the early Solar System. Through bombardments by comets and asteroids, the young Earth inherited significant amounts of stardust. Was the development of life assisted by the arrival of these extraterrestrial materials? In this book, the author describes stunning discoveries in astronomy and solar system science made over the last 10 years that have yielded a new perspective on the origin of life. Other interesting topics discussed in this book The discovery of diamonds and other gemstones in space The origin of oil Neon signs and fluorescent lights in space Smoke from the stars Stardust in our hands Where oceans come from The possibility of bacteria in space

The Fallen Sky Christopher Cokinos 2009-07-30 In this acclaimed volume, prizewinning poet and nature writer Christopher Cokinos takes us on an epic journey from Antarctica to outer space, weaving together natural history, memoir, and in-depth profiles of amateur researchers, rogue scientists, and stargazing dreamers to tell the riveting tale of how the study of meteorites became a modern science.

The Cambridge Guide to the Solar System Kenneth R. Lang 2003-09-25 Provides descriptions of all the planets and their moons.

Stamping Through Astronomy Renato Dicati 2013-06-18 Stamps and other postal documents are an attractive vehicle for presenting astronomy and its development. Written with expertise and great enthusiasm, this unique book offers a historical and philatelic survey of astronomy and some related

topics on space exploration. It contains more than 1300 color reproductions of stamps relating to the history of astronomy, ranging from the earliest observations of the sky to modern research conducted with satellites and space probes. Featured are the astronomers and astrophysicists who contributed to this marvelous story – not only Ptolemy, Copernicus, Kepler, Newton, Herschel, and Einstein but also hundreds of other minor protagonists who played an important role in the development of this, the most ancient yet the most modern of all the sciences. The book also examines in depth the diverse areas which have contributed to the history of astronomy, including the instrumentation, the theories, and the observations. Many stamps illustrate the beauty and the mystery of celestial objects: galaxies, nebulae, stars, planets, satellites, comets, and minor celestial bodies.

Encyclopedia of Geochemistry C.P. Marshall 1999-07-31 This is a complete and authoritative reference text on an evolving field. Over 200 international scientists have written over 340 separate topics on different aspects of geochemistry including organics, trace elements, isotopes, high and low temperature geochemistry, and ore deposits, to name just a few.

Chemistry of Space David E. Newton 2009-01-01 Discusses current research and advances in the field of space chemistry, including the origins of the universe, the chemical composition of planets and meteors, and stellar evolution.

The Volcanoes of Mars James R. Zimbelman 2020-12-05 The Volcanoes of Mars offers a clear, cohesive summary of Mars volcanology. It begins with an introduction to the geology and geography of the red planet and an overview of its volcanic history, and continues to discuss each distinct volcanic province, identifying the common and unique aspects of each region. Incorporating basic volcanological information and constraints on the regional geologic history derived from geologic mapping, the book also examines current constraints on the composition of the volcanic rocks as investigated by both orbiting spacecraft and rovers. In addition, it compares the features of Martian volcanoes to those seen on other volcanic bodies. Concluding with prospects for new knowledge to be gained from future Mars missions, this book brings researchers in volcanology and the study of Mars up to date on the latest findings in the study of volcanoes on Mars, allowing the reader to compare and contrast Martian volcanoes to volcanoes studied

on Earth and throughout the Solar System. Presents clearly organized text and figures that will quickly allow the reader to find specific aspects of Martian volcanism Includes definitions of geological and volcanological terms throughout to aid interdisciplinary understanding Summarizes key results for each volcanic region of Mars and provides copious citations to the research literature to facilitate further discovery Synthesizes the most current data from multiple spacecraft missions, including the Mars Reconnaissance Orbiter, as well as geochemical data from Martian meteorites Utilizes published geologic mapping results to highlight the detailed knowledge that exists for each region

Meteorite Mineralogy Alan Rubin 2021-08-05 A comprehensive summary of the mineralogy of all meteorite groups and the origin of their minerals.

From Dust to Life John Chambers 2017-05-02 The birth and evolution of our solar system is a tantalizing mystery that may one day provide answers to the question of human origins. From Dust to Life tells the remarkable story of how the celestial objects that make up the solar system arose from common beginnings billions of years ago, and how scientists and philosophers have sought to unravel this mystery down through the centuries, piecing together the clues that enabled them to deduce the solar system's layout, its age, and the most likely way it formed. Drawing on the history of astronomy and the latest findings in astrophysics and the planetary sciences, John Chambers and Jacqueline Mitton offer the most up-to-date and authoritative treatment of the subject available. They examine how the evolving universe set the stage for the appearance of our Sun, and how the nebulous cloud of gas and dust that accompanied the young Sun eventually became the planets, comets, moons, and asteroids that exist today. They explore how each of the planets acquired its unique characteristics, why some are rocky and others gaseous, and why one planet in particular--our Earth--provided an almost perfect haven for the emergence of life. From Dust to Life is a must-read for anyone who desires to know more about how the solar system came to be. This enticing book takes readers to the very frontiers of modern research, engaging with the latest controversies and debates. It reveals how ongoing discoveries of far-distant extrasolar planets and planetary systems are transforming our understanding of our own solar system's astonishing history and its possible fate.

Fundamentals of Spacecraft Charging Shu T. Lai 2011-10-17 As commercial and military spacecraft become more important to the world's economy and defense, and as new scientific and exploratory missions are launched into space, the need for a single comprehensive resource on spacecraft charging becomes increasingly critical. Fundamentals of Spacecraft Charging is the first and only textbook to bring together all the necessary concepts and equations for a complete understanding of the subject. Written by one of the field's leading authorities, this essential reference enables readers to fully grasp the newest ideas and underlying physical mechanisms related to the electrostatic charging of spacecraft in the space environment. Assuming that readers may have little or no background in this area, this complete textbook covers all aspects of the field. The coverage is detailed and thorough, and topics range from secondary and backscattered electrons, spacecraft charging in Maxwellian plasmas, effective mitigation techniques, and potential wells and barriers to operational anomalies, meteors, and neutral gas release. Significant equations are derived from first principles, and abundant examples, exercises, figures, illustrations, and tables are furnished to facilitate comprehension. Fundamentals of Spacecraft Charging is the definitive reference on the physics of spacecraft charging and is suitable for advanced undergraduates, graduate-level students, and professional space researchers. Some images inside the book are unavailable due to digital copyright restrictions.

Primitive Meteorites and Asteroids Neyda M. Abreu 2018-07-27 Primitive Meteorites and Asteroids: Physical, Chemical, and Spectroscopic Observations Paving the Way to Exploration covers the physical, chemical and spectroscopic aspects of asteroids, providing important data and research on carbonaceous chondrites and primitive meteorites. This information is crucial to the success of missions to parent bodies, thus contributing to an understanding of the early solar system. The book offers an interdisciplinary perspective relevant to many fields of planetary science, as well as cosmochemistry, planetary astronomy, astrobiology, geology and space engineering. Including contributions from planetary and missions scientists worldwide, the book collects the fundamental knowledge and cutting-edge research on carbonaceous chondrites and their parent bodies into one accessible resource, thus contributing to the future of space exploration. Presents the most current data and information on the mission-relevant characteristics of primitive asteroids Addresses the physical, chemical and spectral characteristics of carbonaceous chondritic meteorites and the bearings on successful exploration of their

parent asteroids Includes chapters on geotechnical properties and resource extraction

Lunar Sourcebook Grant Heiken 1991-04-26 The only work to date to collect data gathered during the American and Soviet missions in an accessible and complete reference of current scientific and technical information about the Moon.

The Firefly Encyclopedia of Astronomy Paul Murdin 2004 Presents a range of topics that illustrate the state of modern astronomy, and includes practical advice ranging from how to use binoculars to advanced imaging techniques.

The Cambridge Encyclopedia of Meteorites O. Richard Norton 2002 Beautifully illustrated with over 140 full colour images, The Cambridge Encyclopedia of Meteorites provides a thorough guide to these fascinating extraterrestrial rocks. Meteorites are our only contact with materials from beyond the Earth-Moon system. Using well known petrologic techniques, this book reveals in vivid colour their extraordinary external and internal structures. Looking deeper still, right to the atomic level, they begin to tell us of the environment within the solar nebula that existed before the planets accreted. In recent years, meteorites have caught the imagination of scientist and collector alike. An army of people are now actively searching for them in the hot and cold deserts of Earth. This book is a valuable guide to assist the searchers in the field to recognize the many classes of meteorites. It is further a reference source for students, teachers and scientists who wish to probe deeper these amazing rocks from space.

Chondrules Sara S. Russell 2018-06-30 An overview of state-of-the-art research into properties and possible formation mechanisms of chondrules, by leading cosmochemists and astrophysicists.

Asteroids Michael K. Shepard 2015-04-16 Where do asteroids come from and what are they made of? What clues do they hold about the evolution of the Solar System? Scientists have catalogued hundreds of thousands of asteroids, and many are thought to contain water and amino acids, the building blocks of life. Michael K. Shepard tells the fascinating story of their discovery, and what they can tell us about the history of our own planet. He describes how we find and study asteroids, what they look like through the

eyes of powerful telescopes and spacecraft, and plans for future sample return missions. This timely book interweaves accessible scientific explanations with historical background and personal narrative, providing an engaging read for anyone curious about asteroids and what they may mean for our future - both as threats and opportunities.

Encyclopedia of Geochemistry William M. White 2018-07-24 The Encyclopedia is a complete and authoritative reference work for this rapidly evolving field. Over 200 international scientists, each experts in their specialties, have written over 330 separate topics on different aspects of geochemistry including geochemical thermodynamics and kinetics, isotope and organic geochemistry, meteorites and cosmochemistry, the carbon cycle and climate, trace elements, geochemistry of high and low temperature processes, and ore deposition, to name just a few. The geochemical behavior of the elements is described as is the state of the art in analytical geochemistry. Each topic incorporates cross-referencing to related articles, and also has its own reference list to lead the reader to the essential articles within the published literature. The entries are arranged alphabetically, for easy access, and the subject and citation indices are comprehensive and extensive. Geochemistry applies chemical techniques and approaches to understanding the Earth and how it works. It touches upon almost every aspect of earth science, ranging from applied topics such as the search for energy and mineral resources, environmental pollution, and climate change to more basic questions such as the Earth's origin and composition, the origin and evolution of life, rock weathering and metamorphism, and the pattern of ocean and mantle circulation. Geochemistry allows us to assign absolute ages to events in Earth's history, to trace the flow of ocean water both now and in the past, trace sediments into subduction zones and arc volcanoes, and trace petroleum to its source rock and ultimately the environment in which it formed. The earliest of evidence of life is chemical and isotopic traces, not fossils, preserved in rocks. Geochemistry has allowed us to unravel the history of the ice ages and thereby deduce their cause. Geochemistry allows us to determine the swings in Earth's surface temperatures during the ice ages, determine the temperatures and pressures at which rocks have been metamorphosed, and the rates at which ancient magma chambers cooled and crystallized. The field has grown rapidly more sophisticated, in both analytical techniques that can determine elemental concentrations or isotope ratios with exquisite precision and in computational modeling on scales ranging from atomic to planetary.

The Cambridge Guide to the Solar System Kenneth R. Lang 2011-03-03 Richly illustrated with full-color images, this book is a comprehensive, up-to-date description of the planets, their moons, and recent exoplanet discoveries. This second edition of a now classic reference is brought up to date with fascinating new discoveries from 12 recent Solar System missions. Examples include water on the Moon, volcanism on Mercury's previously unseen half, vast buried glaciers on Mars, geysers on Saturn's moon Enceladus, lakes of hydrocarbons on Titan, encounter with asteroid Itokawa, and sample return from comet Wild 2. The book is further enhanced by hundreds of striking new images of the planets and moons. Written at an introductory level appropriate for undergraduate and high-school students, it provides fresh insights that appeal to anyone with an interest in planetary science. A website hosted by the author contains all the images in the book with an overview of their importance. A link to this can be found at www.cambridge.org/solarsystem.

Field Guide to Meteors and Meteorites O. Richard Norton 2008-05-25 What is unique about Richard Norton's book is that it is both a field guide to observing meteors, and also a field guide to locating, preparing and analysing meteorites. In addition to giving the reader information about observing techniques for meteors, this book also provides a fully detailed account of the types of meteorites, how and where to find them, how to prepare and analyse them. The book provides everything the amateur astronomer (or geologist!) needs to know about meteors and meteorites. It is thus the only complete book on the subject available at present.

Fundamentals of Physical Geology Sreepat Jain 2013-10-18 Physical Geology is a vast subject and it is not possible to cover all aspects in one book. This book does not invent the wheel but merely put together sets of updated but concise material on Physical Geology with lots of illustrations. All illustrations are created by hand and give a real classroom feel to the book. Students or readers can easily reproduce them by hand. This is a book, where a diagram says it all. The book is divided into four parts. The first part “The Solar System and Cosmic Bodies” deals with elements of our Solar System and the cosmic bodies around it (like meteorites, asteroids, etc.). The second part “The Earth Materials” deals with Earth and its internal structure. The third part “The Hydrologic System” is more exhaustive and deals with the hydrological system of the Earth including Weathering and Mass Wasting, Streams, Groundwater, Karst,

Glaciers, Oceans and Aeolian Processes and Landforms. The fourth and the final part "The Tectonic System" deals with different aspects of Plate Tectonics, Earthquakes and Volcanoes.

Planet Formation Wolfgang Brandner 2011-02-17 When this book was published in 2006, it had been just over ten years since the first planet outside our solar system was detected. Since then, much work has focused on understanding how extrasolar planets may form, and discovering the frequency of potentially habitable Earth-like planets. This volume addresses fundamental questions concerning the formation of planetary systems in general, and of our solar system in particular. Drawing from advances in observational, experimental and theoretical research, it summarises our understanding of the planet formation processes, and addresses major open questions and research issues. Chapters are written by leading experts in the field of planet formation and extrasolar planet studies. The book is based on a meeting held at Ringberg Castle in Bavaria, where experts gathered together to present and exchange their ideas and findings. It is a comprehensive resource for graduate students and researchers, and is written to be accessible to newcomers to the field.

Encyclopedia of Time H. James Birx 2009-01-07 "With a strong interdisciplinary approach to a subject that does not lend itself easily to the reference format, this work may not seem to support directly academic programs beyond general research, but it is a more thorough and up-to-date treatment than Taylor and Francis's 1994 Encyclopedia of Time. Highly recommended." —Library Journal STARRED Review Surveying the major facts, concepts, theories, and speculations that infuse our present comprehension of time, the Encyclopedia of Time: Science, Philosophy, Theology, & Culture explores the contributions of scientists, philosophers, theologians, and creative artists from ancient times to the present. By drawing together into one collection ideas from scholars around the globe and in a wide range of disciplines, this Encyclopedia will provide readers with a greater understanding of and appreciation for the elusive phenomenon experienced as time. Features Surveys historical thought about time, including those ideas that emerged in ancient Greece, early Christianity, the Italian Renaissance, the Age of Enlightenment, and other periods Covers the original and lasting insights of evolutionary biologist Charles Darwin, physicist Albert Einstein, philosopher Alfred North Whitehead, and theologian Pierre Teilhard de Chardin Discusses the significance of time in the writings of Isaac Asimov, Samuel Taylor Coleridge, Fyodor M. Dostoevsky,

Francesco Petrarch, H. G. Wells, and numerous other authors Contains the contributions of naturalists and religionists, including astronomers, cosmologists, physicists, chemists, geologists, paleontologists, anthropologists, psychologists, philosophers, and theologians Includes artists' portrayals of the fluidity of time, including painter Salvador Dali's The Persistence of Memory and The Discovery of America by Christopher Columbus, and writers Gustave Flaubert's The Temptation of Saint Anthony and Henryk Sienkiewicz's Quo Vadis Provides a truly interdisciplinary approach, with discussions of Aztec, Buddhist, Christian, Egyptian, Ethiopian, Hindu, Islamic, Navajo, and many other cultures' conceptions of time Key Themes Biography Biology/Evolution Culture/History Geology/Paleontology Philosophy Physics/Chemistry Psychology/Literature Religion/Theology Theories/Concepts

Ultraviolet Radiation in the Solar System M. Vázquez 2006-06-30 In the history of science the opening up of a new observational or experimental window is always followed by an increase in knowledge of the subject concerned. This is also the case with the subject of this book, ultraviolet radiation (hereafter UV). In principle, the ultraviolet range might be just one more of these windows, of no particular importance. However, the energy per UV photon provides the main peculiarity, its magnitude being great enough to produce important ch- ical reactions in the atmospheres of planets and satellites, thereby a?ecting the transmission of this radiation to the ground. The Sun is the main natural source of UV radiation in the Solar System and our planet is the body where its in?uences can be best tested and the only one where its relation with life can be studied. However, the terrestrial atmosphere blocksmostofthephotonsinthiselectromagneticrangeandastronomershavehad to develop various techniques (balloons, planes and rockets) to cross this barrier and access the information. These tools have been used in parallel to investigate the physical properties of the terrestrial atmosphere and the interaction of its constituents with light. This book will addresses most of these topics.

Planetary Geology Angelo Pio Rossi 2017-11-28 This book provides an up-to-date interdisciplinary geoscience-focused overview of solid solar system bodies and their evolution, based on the comparative description of processes acting on them. Planetary research today is a strongly multidisciplinary endeavor with efforts coming from engineering and natural sciences. Key focal areas of study are the solid surfaces found in our Solar System. Some have a direct interaction with the interplanetary medium and others have

dynamic atmospheres. In any of those cases, the geological records of those surfaces (and sub-surfaces) are key to understanding the Solar System as a whole: its evolution and the planetary perspective of our own planet. This book has a modular structure and is divided into 4 sections comprising 15 chapters in total. Each section builds upon the previous one but is also self-standing. The sections are: Methods and tools Processes and Sources Integration and Geological Syntheses Frontiers The latter covers the far-reaching broad topics of exobiology, early life, extreme environments and planetary resources, all areas where major advancements are expected in the forthcoming decades and both key to human exploration of the Solar System. The target readership includes advanced undergraduate students in geoscience-related topics with no specific planetary science knowledge; undergraduates in other natural science domains (e.g. physics, astronomy, biology or chemistry); graduates in engineering and space systems design who want to complement their knowledge in planetary science. The authors' backgrounds span a broad range of topics and disciplines: rooted in Earth geoscience, their expertise covers remote sensing and cartography, field mapping, impact cratering, volcanology and tectonics, sedimentology and stratigraphy exobiology and life in extreme environments, planetary resources and mining. Several generations of planetary scientists are cooperating to provide a modern view on a discipline developed from Earth during and through Space exploration.

Meteorite Maria Golia 2015-10-15 Among the rarest things on earth, meteorites carry an air of mystery and drama while having left a pervasive, outsized mark on our planet and civilization. In Meteorite, Maria Golia tells the long history of our engagement with these sky-born space rocks. Arriving amid thunderous blasts and flame-streaked skies, meteorites were once thought to be messengers from the gods. Worshipped in the past, now scrutinized with equal zeal by scientists, meteorites helped sculpt Earth's features and have shaped our understanding of the planet's origins. Prized for their outlandish qualities, meteorites are a collectible and a commodity, objects of art and artists' desires and a literary muse; and 'meteorite hunting' is an adventurous, lucrative profession for some and an addictive hobby for thousands of others. A richly illustrated, remarkably wide-ranging account of the culture and science surrounding meteorites, Golia's book explores the ancient, lasting power of the meteorite to inspire and awe.

Lectures in Astrobiology Muriel Gargaud 2005-06-08 First comprehensive, beginning graduate level book

on the emergent science of astrobiology.

Rocks from Space O. Richard Norton 2001-02-01 Explores the world of meteorites, asteroids, and comets from the perspectives of science, folklore, and superstition

LACAME 2012 César Augusto Barrero Meneses 2014-03-27 Proceedings of the Thirteenth Latin American Conference on the Applications of the Mössbauer Effect, Medellin, Colombia, November 11-16, 2012. The broad scope of the Applications of the Mössbauer Effect to interdisciplinary subjects makes this volume an outstanding source of information to researchers and graduate students, who will find the unique results of Mössbauer spectroscopy a valuable aid and complement to their research in conjunction with other techniques. In this volume, applications to mineralogy, catalysis, soil science, amorphous materials, nanoparticles, magnetic materials, nanotechnology, metallurgy, corrosion, and magnetism, have been put together in original works produced by invited speakers and different research teams across the continent. Reprinted from Hyperfine Interactions (HYPE) Volume

Discovering Mars William Sheehan 2021-10-19 For millenia humans have considered Mars the most fascinating planet in our solar system. We've watched this Earth-like world first with the naked eye, then using telescopes, and, most recently, through robotic orbiters and landers and rovers on the surface. Historian William Sheehan and astronomer and planetary scientist Jim Bell combine their talents to tell a unique story of what we've learned by studying Mars through evolving technologies. What the eye sees as a mysterious red dot wandering through the sky becomes a blurry mirage of apparent seas, continents, and canals as viewed through Earth-based telescopes. Beginning with the Mariner and Viking missions of the 1960s and 1970s, space-based instruments and monitoring systems have flooded scientists with data on Mars's meteorology and geology, and have even sought evidence of possible existence of life-forms on or beneath the surface. This knowledge has transformed our perception of the Red Planet and has provided clues for better understanding our own blue world. Discovering Mars vividly conveys the way our understanding of this other planet has grown from earliest times to the present. The story is epic in scope—an Iliad or Odyssey for our time, at least so far largely without the folly, greed, lust, and tragedy of those ancient stories. Instead, the narrative of our quest for the Red Planet has showcased some of our

species' most hopeful attributes: curiosity, cooperation, exploration, and the restless drive to understand our place in the larger universe. Sheehan and Bell have written an ambitious first draft of that narrative even as the latest chapters continue to be added both by researchers on Earth and our robotic emissaries on and around Mars, including the latest: the Perseverance rover and its Ingenuity helicopter drone, which set down in Mars's Jezero Crater in February 2021.

Modern Meteor Science Robert Hawkes 2006-08-18 This volume contains leading edge research and authoritative reviews in meteor science. It provides a comprehensive view of meteoroid research including the dynamics, sources and distribution of these bodies. Techniques for investigation of meteor phenomena in the book include conventional and large aperture radar systems, spacecraft detection, optical systems, spectral measurements, and laboratory based interplanetary dust particle studies.