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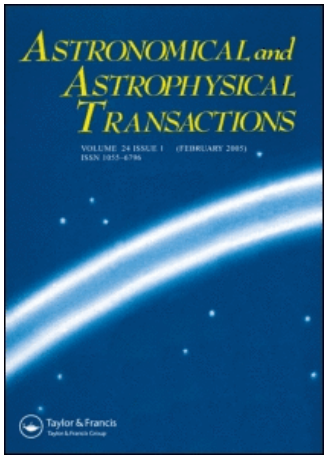

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Book review

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Book review

Meteorites and the Early Solar System II, edited by D. S. Lauretta and H. Y. McSween Jr, The University of Arizona Press in Collaboration with the Lunar and Planetary Institute, Tucson, 2006, 943pp, $90, hardback (ISBN-13:978-0-8165-2562-1)

Meteorites and the Early Solar System II, a new book in the world-famous Space Science Series, was recently published by the University of Arizona Press and Lunar and Planetary Institute (USA). Unlike some other texts in the Space Science Series, this book is not the result of a conference on this topic. It summarizes the efforts of 88 authors from nine different countries working on investigations of the earliest stages of the solar system. A key distinction between this book and the first *Meteorites and the Early Solar System*, as underlined by the editors in the Preface, is the focus on the connection between astrophysics and meteoritics. 'This volume is process-oriented and emphasizes the constraints that meteoritical investigations place on the nature, duration and extent of the primary processes that occurred during the early stages of solar system formation', say the editors.

The structure of the book is arranged to inform the reader in a readily accessible and self-evident way about modern ideas concerning the origin and evolution of the solar system. An overview of meteorites is given in the first part, followed by sections concerning results on meteoritic limitations on astrophysical and geochemical processes and then the chronological sequence of the formation epochs of the solar system. The epochs, with some abbreviations, are: the presolar epoch (Part II), disk formation epoch (III), the first nebular epoch: genesis of the first solar system materials (IV), the second nebular epoch: materials processing in the nebula (V), the accretion epoch (VI), the parent-body epochs: alteration and metamorphism (VII) and melting and differentiation (VIII), and, finally, the planetary epoch (IX).

As highlighted throughout the book, all investigated samples of extraterrestrial matter contain recorded histories of the origin and formation of their parent bodies – from presolar grains to comets, asteroids and large planets. It is now known that the composition, chemistry and mineralogy of meteorites collectively provide evidence of a wide variety of chemical and physical processes. For this reason, all accessible extraterrestrial matter has been subjected to laboratory investigations, not only meteorites collected from terrestrial surfaces but micrometeorites and interplanetary and interstellar dust particles acquired by contemporary methods and techniques. The basic sequence of processes, from parent-body metamorphism to its melting and differentiation, is discussed in a number of the contributions. The processes are important for an understanding of the formation and evolution of terrestrial planets. Thus, a logical ending to the book is the chapter 'Meteorites and the Earth'.

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Especially interesting results were obtained and presented in contributions by H. Y. McSween *et al.*, 'Recent advances in meteoritics and cosmochemistry'; B. S. Meyer and E. Zinner, 'Nucleosynthesis'; L. R. Nittler and N. Dauphas, 'Meteorites and the chemical evolution of the Milky Way'; M. Chaussidon and M. Gounelle, 'Irradiation processes in the early solar system'; R. H. Nichols, Jr, 'Chronological constraints on planetesimal accretion'; A. J. Brearley, 'The action of water'; T. G. Sharp and P. S. De Carly, 'Shock effects in meteorites'; M. Wadhwa *et al.*, 'Timescales of planetesimal differentiation . . .'; T. J. McCoy *et al.*, 'Asteroid differentiation'; and M. Zolensky *et al.*, 'Flux of extraterrestrial materials'.

All material included in the book is of value to and useful for a broad audience of readers; from astronomy and planetary scientists to students studying elements of science. The book is well presented and has a convenient glossary and index. If possible to speak about any lack of this book, it is only its big size and volume.

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