

Preface

R.R. Vondrak · J.W. Keller · C.T. Russell

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One of the most important celestial bodies, the Moon, is literally at the Earth's doorstep. The Moon is important for what it can tell us about the formation and evolution of the solar system especially the inner solar system. It is important because it can serve as a veritable planetary laboratory enabling us to understand physical processes that take place on the Moon as well as on other similar solar system bodies. It is important because we may use the Moon as a platform for scientific instruments and a place where astronauts can learn to live and work on planetary surfaces. Yet it is insufficiently explored.

This collection of articles describes an attempt to redress this oversight, the Lunar Reconnaissance Orbiter mission, its flight system, instruments and scientific investigations. It begins with a foreword by Wendell Mendell that describes the events that have culminated in the current return to the Moon. The foreword is followed by an introduction to the mission and its objectives by R.R. Vondrak and colleagues. An important aspect of any space mission is the flight system that has to survive the rigors of space and provide the needed support for the investigations. The spacecraft and mission design are described by C. Tooley et al. The Laser Ranging system, a spacecraft subsystem for precision orbit determination, is described by M.T. Zuber and colleagues. These articles are followed by discussions of each of the investigations and their attendant hardware: the LRO Camera by M.S. Robinson and colleagues; the LRO Diviner IR Radiometer by D.A. Paige et al., the LAMP Lyman Alpha Spectrometer by G.R. Gladstone and colleagues, the LEND Neutron Detector by I. Mitrofanov et al., LOLA the Lunar Orbiter Laser Altimeter by D.E. Smith and colleagues; the CRaTER Cosmic Radiation detector by H. Spence and colleagues; and the LRO Miniature Radio Frequency Technology Demonstration by S. Nozette and colleagues.

R.R. Vondrak (✉) · J.W. Keller
Greenbelt, MD, USA
e-mail: richard.vondrak@nasa.gov

C.T. Russell
Los Angeles, CA, USA

The success of this volume is due to many people, the hardest working of whom are the authors who have had to distill a set of highly readable papers from the myriad documents and charts that such missions produce. The editors benefited from an excellent audience, the referees who carefully read each article and provided feedback to the authors that strengthened the volume even more. These referees included O. Aharnson, J.L. Bandfield, B. Bills, G. Born, G.T. Delory, W. Feldman, N.S. Hegde, B. Klecker, W. Mendell, R. Mewaldt, S. Mottola, S. Nakazawa, L. Paxton, R. Phillips, J.E. Pirozzoli, T. Prettyman, B.R. Sandel, R. Simpson, H. Weaver, M. Wicczorek.

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