Magnetospheric Imagery and Atmospheric Remote Sensing—Part 2

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This special section of *Optical Engineering* is a sequel to the December 1993 issue covering the same topics. The majority of the papers in this issue were presented in a somewhat different form at the SPIE annual meetings held in San Diego, California, in 1992 and 1993. At these meetings 74 papers were presented. From these and from other contributed papers, 42 papers were chosen for these two special sections of *Optical Engineering.* This issue contains 17 papers; 25 other papers were included in the December 1993 issue.

Johnson and Herrmann provide an overall description of the Inner Magnetospheric Imager (IMI) mission.

Five papers describe techniques and issues related to imaging neutral particle "emissions" from the magnetosphere. McComas et al. provide the fundamental scientific and technical issues relevant to low-energy neutral atom (LENA) imaging techniques. This paper is one of four papers by the Los Alamos group that is leading the development in this area. Moore et al. describe modeling results for LENA flux in various lines of sight. Funsten, McComas, and Scime compare various techniques for LENA imaging, and Scime et al. describe one of these techniques that uses a transmission grating to reject background UV signals. The instrument proposed by Ghielmetti et al. combines an ion mass spectrometer and a low work function reflecting surface that converts neutral atoms into negative ions.

Garrido et al. show a detailed simulation of plasmaspheric EUV emissions at 304 and 834 Å for He^+ and O^+ ions, respectively. Imhof, Voss, and Datlowe describe observation results of x-ray emissions from auroras from a number of spacecrafts and list instruments that are about to improve on these measurements in several upcoming missions.

Frank et al. describe a small Explorer mission that was proposed in response to a recent NASA research announcement that was to be a pathfinder for IMI. Chakrabarti et al. describe a filter coating suitable for use at 834 Å for magnetospheric and ionospheric imagery applications. McKenzie, Gorney, and Imhof describe two x-ray imagers for use in upcoming space missions.

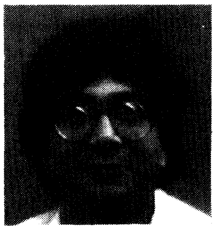
McCoy et al. describe two spectroscopic instruments for atmospheric and ionospheric remote sensing applications. The SSULI is a limb imager slated for flight aboard a Defense Meteorological Satellite Program spacecraft, while the RAIDS missions contain a far-UV imaging spectograph to be flown aboard the NOAA J weather satellite.

Two papers are included that describe instrumentation for solar EUV measurements. A sounding rocket experiment that uses a conventional spectograph is described by Woods et al. Daybell et al. describe an optics-free configuration that potentially has a significant advantage over conventional spectrographs for long-duration solar observations.

The last two papers in this special section concern ground-based interferometers for upper atmospheric studies. Noto et al. have developed a Fabry-Pérot system for operation around 1 μm. The Fabry-Pérot interferometer described by Niciejewski, Killeen, and Turnbull is optimized for nightglow operations from remote sites in the visible wavelength regime.

It is reassuring to note the creativity expressed in the papers included in these two special sections of *Optical Engineering.* A number of the principal authors are graduate students, which indicates hope for future growth in these studies.

I thank Dr. Brian Thompson for providing this unique opportunity to disseminate these papers to a larger audience that would otherwise be impossible. I want to thank the contributors, the reviewers, the editorial staff of *Optical Engineering,* and Ms. Kathy Collins of Boston University for their support in this venture.



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