Announcing a Special Issue of *Applied Physics B* on

LIDAR Monitoring of the Atmosphere – Recent Developments

The need for better knowledge of the physico-chemical processes in the atmosphere became obvious to the scientific community when the ozone hole over Antarctica was discovered in 1985, and when the crucial role of CFCs in its creation was confirmed at the end of 1987. Stratospheric ozone is an effective shield against the solar UV radiation of wavelength less than 300 nm which can cause DNA damage. A further decrease in the ozone concentration will certainly be a danger to all forms of life.

Due to the high altitude of the stratosphere, aircraft and balloons cannot easily be employed for probing. Therefore, remote sensing techniques are suited best for the investigation of the upper atmosphere. Ground-based LIDAR (Light Detection and Ranging) stations have now achieved a high level of sophistication with stable optical setups, powerful and broadly tunable lasers, and advanced yet fast algorithms running on workstations. The advantages of such LIDAR stations are evident: On the one hand, conventional ground-based, aircraft- or balloon-borne instruments do not have LIDAR's vertical range; on the other, satellite remote sensing is still in its infancy, is very expensive, and will not be fully developed for a long time to come.

We believe that now is a suitable time to bring together contributions concerned with recent developments of the LIDAR technique as it is applied in ground-based stations for the monitoring of physical and chemical characteristics of the troposphere and the stratosphere. In particular, we hope to review progress in the monitoring of ozone and substances related to its depletion, such as reactive chlorine and nitrogen compounds. Also of interest are techniques for monitoring physical parameters such as temperature, pressure and the size distribution of aerosols, above all in the polar stratospheric clouds. Contributions that describe novel techniques of instrumentation and special LIDAR inversion algorithms are also invited. Thus, with this feature issue of *Applied Physics B* we hope to review the broad field of LIDAR applications in atmospheric chemistry and physics.

Contributions should consist of an original plus two copies of the manuscript with original figures suitable for reproduction. The deadline for submission is

November 30, 1991

The special issue on "LIDAR Monitoring of the Atmosphere – Recent Developments" is scheduled for April 1992 and any papers which cannot be included will be published in subsequent issues. Contributions should be sent directly to the guest editor:

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