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decimeter accuracy and is more cost-effective than sonar.

Inelastic (Raman, Brillouin) scattering yields additional information about the molecular composition of the atmosphere and hydrosphere. The authors provide a detailed theoretical and experimental treatment of the response of gases and liquids to laser illumination. The spectral scattering properties of the ocean may be digitized as functions of time. Spectral components of the Raman-scattered light depend on water-column temperature and salinity. Fluorescence of pigmented algae and inorganic material competes with Raman scattering in the temporally varying spectrum of returned light. Fluorescence permits quantification of sediment load and, through phytoplankton fluorescence, the major biota as well. Illuminated in the UV, petroleum oil spills may be identified: Fluorescence from lighter Ekofisk petroleum persists much longer than that from Arabian heavy oils.

This book should be a useful reference primarily for specialists in remote studies of the oceanic biosphere. Subjects are not always accurately indexed, the illustrations are monochromatic, and the equipment described is sometimes dated. But the book provides an excellent overview of the theory and practice of spectral lidar remote sensing for the evaluation of marine environments.

**Gregory A. Neumann**

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Greenbelt, Maryland*

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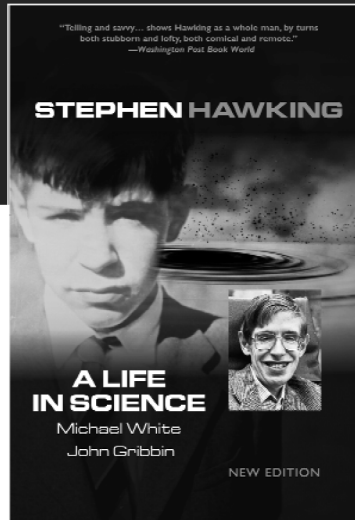
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