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Lidar techniques for environmental and ecological monitoring

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An overview of optical probing of the atmosphere will be given, where mostly active remote- sensing techniques of the laser-radar type will be covered, but also some passive techniques employing ambient radiation. Atmospheric objects of quite varying sizes can be studied. Mercury is the only pollutant in atomic form in the atmosphere, while other pollutants are either molecular or in particle form. Light detection and ranging (Lidar) techniques allow three-dimensional mapping of such constituents, and examples from atmospheric lidar work in Lund and in Guangzhou will be given. Recently, much larger lidar targets have been studied. Monitoring of flying insects and birds is of considerable ecological interest, and several projects have been pursued in collaboration with biologists. Mostly, elastic backscattering and fluorescence techniques are employed. Some references to recent activities by the author and his colleagues are given below.

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