

## **SCIAMACHY - Mission Objectives and Instrument Concept**

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### **Abstract**

**SCIAMACHY (Scanning Imaging Absorption Spectrometer for Atmospheric CHartographY) is a spectrometer which measures sunlight that is transmitted, reflected and scattered by the earth atmosphere in the ultraviolet, visible and near infrared wavelength region (240 nm - 2400 nm) with high spectral resolution (0,2 nm - 0,5 nm). SCIAMACHY determines the absorption, reflection and scattering characteristics of the atmosphere by measuring the extraterrestrial solar irradiance and the upwelling radiance coming from the earth and its atmosphere. The ratio of extraterrestrial irradiance and the upwelling radiance can be inverted to provide information about the amounts and distribution of important atmospheric constituents, which absorb or scatter light, and the spectral reflectance (or albedo) of the earth's surface. SCIAMACHY was conceived to improve our knowledge and understanding of a variety of issues of importance to the chemistry and physics of the Earth atmosphere (troposphere, stratosphere and mesosphere) such as**

- \* "Ozone hole" chemistry as the halogen loading of the stratosphere, resulting from anthropogenic release of CFC's and halons, approaches his maximum,**
- \* tropospheric pollution (emission from industrial activity and biomass burning),**
- \* troposphere - stratosphere exchange.**

**SCIAMACHY is a national contribution to ESA's ENVISAT-1 project (to be launched in 1999), funded by the German and Dutch governments, including a Belgian contribution. A descoped version of SCIAMACHY, GOME (Global Ozone Monitoring Experiment) was selected for the ESA payload of ERS-2. GOME has been successfully making measurements since its launch aboard ERS-2 in April 1995.**

*Keywords: SCIAMACHY, environmental monitoring, atmospheric chemistry, hyperspectral sensor*