Alexandru Ioan Cuza University of Iasi is the oldest higher education institution in Romania. Ever since 1860, the university has been carrying on a tradition of excellence and innovation in the fields of education and research.

In the frame of future aerospace missions, one of the main objectives of the **Alexandru Ioan Cuza University of Iasi, Romania** (LOASL laboratory) as of **European Space Agency (ESA)** is focused on **the next generation of microsatellites,** by developing tools for science and exploration, to determine their future impact on space systems but also utilitarian activities related to daily life.

Alexandru Ioan Cuza University of Iasi is able to develop several new techniques where coupled high resolution laser, passive and active remote optical emission spectroscopy (LIDAR & Fast laser imaging optical emission spectroscopy instruments) are used to investigate a large type of chemical and toxic trace compounds, their kinetics and physical properties with high temporal and spatial resolution levels. Physico-chemical properties of troposphere -mixture low temperature chemical compounds, dust particles plume and solid samples can also be successfully investigated.

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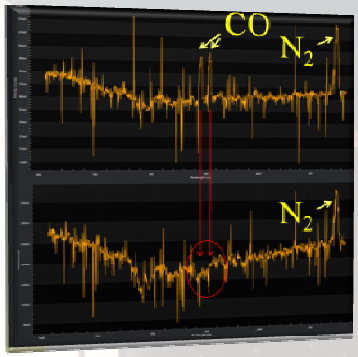
Advanced Optical Remote Sensors for Airborne and Spaceborne Platforms

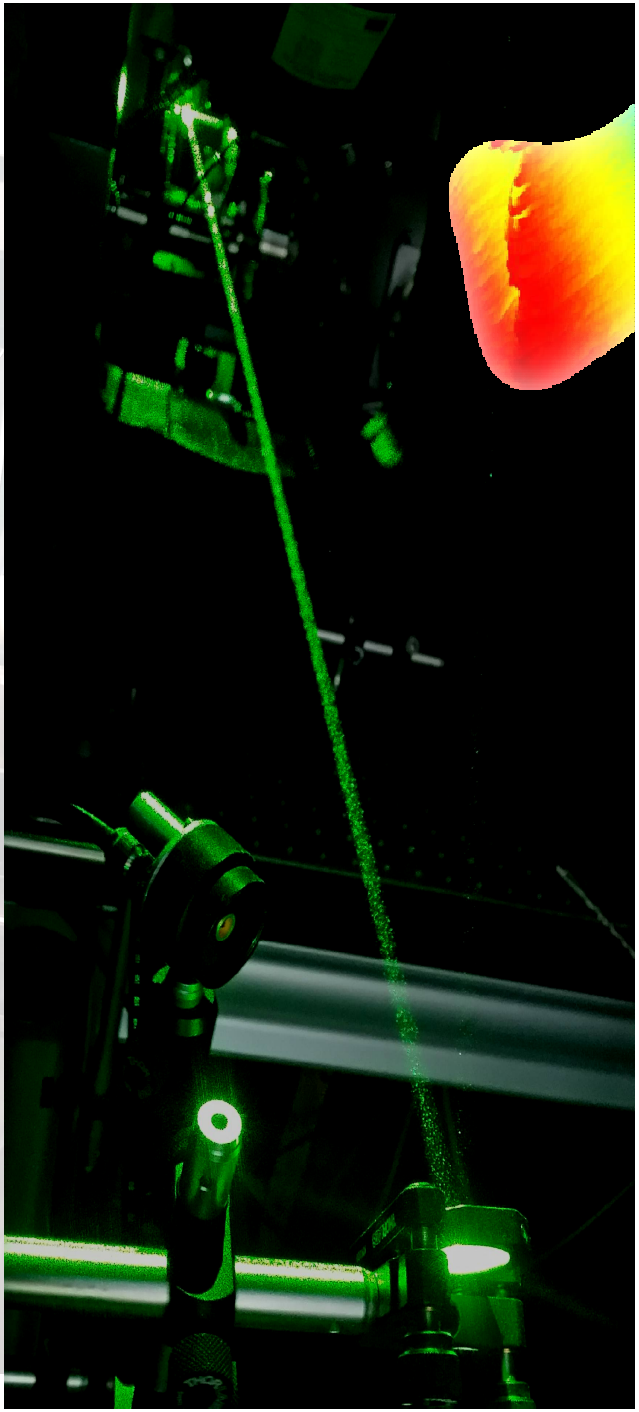
Long distance remote laser induced RAMAN & breakdown spectroscopy



The fastest LIDAR resolved spectroscopy

Physico-chemical properties of the atmosphere compound behavior

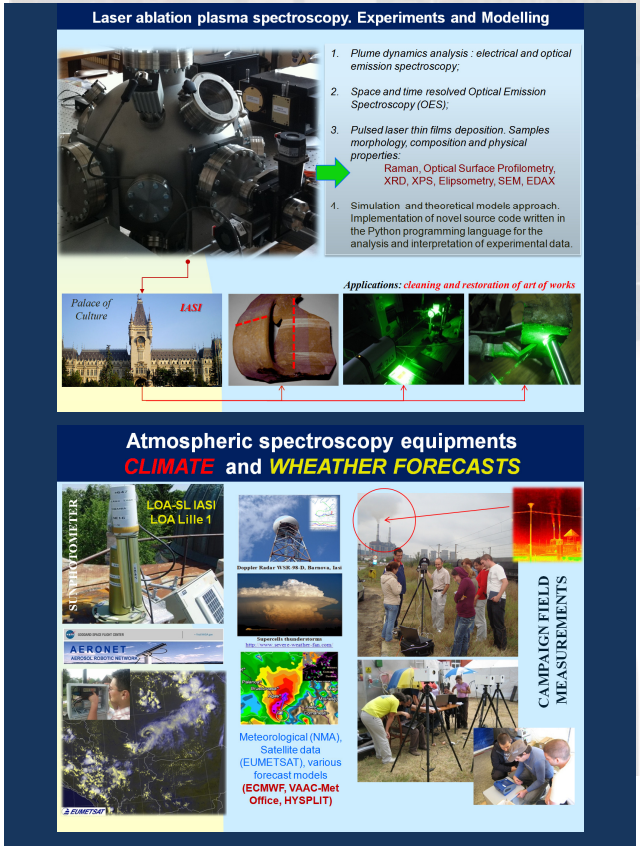
2 ns temporal resolution, 1 cm spatial resolution



spectroscopy.phys.uaic.ro

Atmosphere Optics, Spectroscopy and Lasers Laboratory from Faculty of Physics, "Alexandru Ioan Cuza" University Iasi, performs complex studies in the following researcher fields:

- Laser ablation spectroscopy. Pulse laser deposition (PLD); Polymer science (applications in the materials science, optoelectronics, environmental sensors)
- Fundaments and atmospheric environment, interaction of laser with atmospheric aerosols; Environmental monitoring techniques (LIDAR Techniques)
- Self-organization. Nonlinear dynamics; Meteorology. Doppler Radar WSR-98 D; Analyzing satellite images; Analysis and interpretation- baric topography of the main isobar levels; Analysis and interpretation of NWP (Numerical Weather Prediction); Control and logical validation of real data from the meteorological network.



Applications

- obtaining real time images of the atmosphere plume structures, even in spectroscopy mode, in order to obtain a broad range of a given chemical space distribution
- time-space resolved temperature and humidity profiles
- real-time monitoring tool to measure concentration of sulphur dioxide injected in the **troposphere** from **the volcanic ash eruption**, water profiles and their dynamics, acid rain, chemical transformation/physical properties
- ice nucleation variability, physical and chemical impact, influence upon the mixed-phase cloud; mineralogical dust composition dynamics influences upon the ice nucleation
- a wide range of toxic, organic and inorganic compounds detection, their time-space variability
- analyzing of dependence of lifetime and size of the molecules; why the small molecules are more stable than large ones?
- remotely detecting trace explosive by monitoring NO photo-fragmentation of TNT under UV radiation
- studies of the temperature space-time profile upon the airborne pollution, electric chargeed particle, atmospheric electricity.