



## STSM Scientific Report Template

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Explain briefly below how your STSM matched one of these key-points :

1. strengthen current collaborative projects
2. establish new collaborations
3. obtain necessary knowledge for the application of new techniques
4. use host infrastructures that are not available at the home institute.

Our research is aimed to study polarization of light scattering by particles suspended in the air and deposited on a surface. The measurements were conducted with two experimental setups. One is the goniospectropolarimeter FIGIFIGO, located at Finnish Geospatial Research Institute (FGI). Another one, the IAA Cosmic Dust Laboratory (CODULAB), located at the Instituto de Astrofísica de Andalucía (IAA). The CODULAB is devoted to measure the full scattering matrix of cloud of dust particles in air. The visit to IAA is crucial for successful accomplishing the research because it made it possible study of selected samples with both experimental setups and, also, numerous discussion of the obtained results. Therefore, with help of the COST funding we strengthen collaboration between our institutions.

Describe below the activities carried out during the STSM and the main results obtained.

During the STSM the IAA experimental setup and technique of light-scattering measurements by aerosol particles have been learned. Set of powder samples was brought from FGI to measure them with IAA experimental setup. We have measured intensity and degree of linear polarization of light scattering by aerosols at wavelength  $\lambda=520$  nm. Beforehand, the polarimetric responses in the same samples in the deposited mode have been investigated at FGI. Using measured data obtained with FGI and IAA experimental setups, the comparative analysis of light scattering by aerosol particles and particulate surfaces is conducted.

Moreover, size distributions of sample particles have been measured at IAA with a MasterSizer2000 from Malvern instrument. This facility is unavailable in FGI.

Using the light-scattering responses measured in single-scattering regime, we estimated the refractive index in several samples whose chemical composition is either poorly known or it is too complicated to infer their average refractive index.

The obtained results are planned to be published in at least two scientific papers in peer-review journals.