

Surface Properties of Transneptunian Objects

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Transneptunian objects (TNOs) contain the least processed material accessible for investigation. In fact these bodies located so far from the Sun are considered the fossils of the proto-planetary disk, and can provide important information on the processes that dominated the evolution of the early solar nebula.

An overview of the surface properties based on the results obtained during the last Large Program performed at ESO-VLT (2007-2008) will be presented. Simultaneous high quality visible and near-infrared spectroscopy and photometry have been carried out on 40 objects with various dynamical properties, using the instruments FORS1 (V), ISAAC (J) and SINFONI (H+K bands) mounted respectively at UT2, UT1 and UT4 VLT-ESO telescopes (Cerro Paranal, Chile).

To investigate the surface properties of these bodies, a radiative transfer model has been applied to interpret the entire 0.4-2.4 micron spectral region. The diversity of the spectra suggests that these objects represent a substantial range of bulk compositions. These different surface compositions can be diagnostic of original compositional diversity, interior sources and/or different evolution paths due to different physical processes affecting the surfaces.

The photometric observations obtained in V, R, I, J, H, and K colors for a large sample of objects allowed us to enlarge the taxonomic scheme. All possible correlations between the taxonomy and dynamics have been analyzed.

The state of the art knowledge of the surface properties of the population will be presented as well as the results on the statistical analysis.