Upper Atmosphere and Plasma Imagers on SELENE

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The SELenological and ENgineering Explorer (SELENE) will be launched by the H-IIA rocket in 2007, and will be put into the orbit around the moon. In the SELENE mission, we are carried out the scientific observations of the moon, at the moon, and from the moon. The Upper atmosphere and Plasma Imager (UPI) on SELENE will take images of aurora, airglow, plasmasphere, and high-altitude ionosphere of the Earth from the lunar orbit. The component has two telescopes; one is a Telescope for VISible light (UPI-TVIS), and the other is a Telescope for EXtreme ultraviolet light (UPI-TEX).

The UPI-TEX imager is a type of normal-incidnence telescope with a split thin metal filter, which is made of Al/C and In, in order to detect the resonance scattering emissions of helium ions (He II : 30.4nm) and oxygen ions (O II : 83.4 nm). The science goals are mainly

1. To understand a global plasma distribution in the inner magnetosphere, and
2. To study outflow mechanisms of oxygen ions from the polar ionosphere.

The cold plasma in the plasmasphere also has active response at the high magnetic activity, contrary to a traditional understanding of the plasmaspheric formation. Recent observations have found that the heavy ions like oxygen ions could also flow out. However the mechanism of acceleration and/or heating oxygen ions is not clear. The remote sensing at O II by TEX is the first image all over the world and will investigate the nature. We will present calibration result and performance of the instrument.