

Development of Multi-Layer Mirror for Imager of O ions in the Polar Ionosphere.

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There are inflow and outflow of the hydrogen and oxygen ions called Polar Wind from the Polar Ionosphere. As energy of the oxygen ions, which flow out from there, is mainly several dozen eV or less, they cannot arrive to the magnetosphere. However, in the magnetotail Geotail observed the oxygen ions of the terrestrial origin, which had several keV. This acceleration mechanism of the oxygen ions after leaving the polar ionosphere is still unknown.

In order to observe the 2 dimensional structures of the oxygen ion distribution and temporal variation near the polar ionosphere, which is impossible by in-situ observation, we think to observe the resonance-scattered light (wavelength: 83.4nm) of the oxygen ion, and develop the optics that observes that light. But, as the resonance-scattered light (121.6nm) of the hydrogen atom near the polar ionosphere is intense, the light of the hydrogen atom mixes into the light of the oxygen ion. Therefore development of this optics has not completed yet.

This time, we produce the multilayer mirror which reflects the light of the oxygen ion strongly and the light of the hydrogen atom weakly. In this presentation, we report the reflectivity of this mirror, and the spatial and time resolution using this mirror for optics.