

Performance of the pyroelectric X-ray generator developed for active X-ray spectrometer on future lunar and planetary landing missions

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Planetary landing missions to the Moon and Mars have been recently performed. In Japan, future lunar landing mission have been also planned. The landing missions investigate the geology at landing site in detail. One of powerful methods to determine the elemental composition of the planetary surface is X-ray fluorescence spectrometry. We have developed active X-ray spectrometer (AXS) in order to apply the AXS for future lunar landing mission as elemental analyzer. The AXS consists of pyroelectric X-ray generators (PXG), and a silicon drift detector (SDD). Laboratory experiments have been conducted to obtain enough X-ray intensity from PXG to measure the major and important elements as Mg, Al, Si, K, Ca, Ti and Fe in short observation interval. Furthermore, we have developed a prototype of PXG with a high intensity of X-ray. In this work, the development and performance of present PXG will be reported and discussed.

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