

## Development of the Optical Blocking Layer for the X-ray CCD

*Thursday, 6 September 2012 15:10 (1 hour)*

Since an X-ray CCD, especially a Back-Illuminated-CCD (BI-CCD), has a high detection efficiency for UV light and visible light as well as soft X-ray, it is necessary for the X-ray CCD on board X-ray satellite to block visible light and UV light that become background.

The X-ray CCD cameras on board previous X-ray satellites, Suzaku, Chandra and so on, are equipped with the Optical Blocking Filter (OBF) that consists of polyimide and Aluminum to block the UV light and visible light. Therefore the OBF is a thin filter with about 250nm thick, the OBF has a risk in tearing due to the vibration during the launch.

Instead of the OBF, we have newly developed the Optical Blocking Layer (OBL), which is consisted with 110nm thick Aluminum and 140nm thick Polyimide, is coated directly to the surface of the BI-CCD in order to avoid the risk of corruption.

We have carried out a performance evaluation test, such as the measurement of the X-ray quantum efficiency and energy resolution, the UV, optical and X-ray transmission measurement of OBL, and so on. In the measurement of UV and X-ray transmission of OBL, we carried out our experiment at the KEK photon factory and measured the X-ray transmission of OBL between 0.2-2.0keV that covers the absorption edges around C-K, O-K, Al-K, and Si-K.

In this paper, we will show our results on the UV and Optical transmission of OBL.

We will also show the results on the measurement of the X-ray quantum efficiency of BI-CCD with OBL below 2keV.

**Primary author:** KOHMURA, Takayoshi (Kogakuin University)

**Co-authors:** Dr KAN, Hiroaki (Osaka University); Dr MURAKAMI, Hiroshi (Rikkyo University); Dr NAKAJIMA, Hiroshi (Osaka University); Prof. TSUNEMI, Hiroshi (Osaka University); Dr UCHIDA, Hiroyuki (Kyoto University); Mr KANEKO, Kenta (Kogakuin University); Dr HAYASHIDA, Kiyoshi (Osaka University); Mr KAWAI, Kohei (Kogakuin University); Dr OZAKI, Masanobu (ISAS/JAXA); Dr ANABUKI, Naohisa (Osaka University); Mr IKEDA, Shoma (Kogakuin University); Prof. KITAMOTO, Shunji (Rikkyo University); Mr UEDA, Shutaro (ueda@ess.sci.osaka-u.ac.jp); Prof. DOTANI, Tadayasu (ISAS/JAXA); Prof. TSURU, Takeshi (Kyoto University)

**Presenter:** KOHMURA, Takayoshi (Kogakuin University)

**Session Classification:** Poster session

**Track Classification:** X-ray imaging applications - Astronomy