QXAFS system modified by IK220 card for the SSRF XAFS station

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QXAFS (quick-scanning X-ray absorption fine structure) technique was developed very early at XAFS station in SSRF. It could get a seconds time scale structure by moving the motor of Bragg continuously. QXAFS technique plays an important role in investigating changes of fast physical reactions and chemical reactions. Besides, it provides a method to reduce radiation through reducing irradiating time when doing XAFS experiments.

The initial system was compatible with conventional XAFS method in existing hardware equipments. However, Double Crystal Monochromator (DCM) energy couldn't be real-time read. A high-speed counter called IK220 is used to solve the problem. Now, Analog Digit Converter (ADC) reads data from ion-chamber while IK220 reading data from DCM. These two events can be synchronized by a soft trigger.

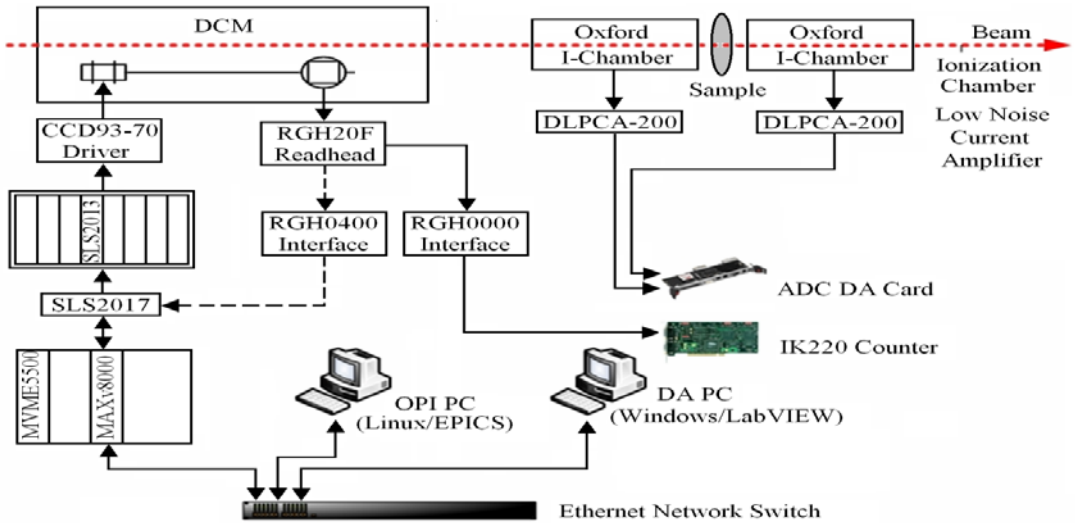

Fig.1 Schematic of QXAFS system at BL14W1

QXAFS system modified by IK220 card achieved the expected requirements. A high quality spectra can be acquired in seconds. However, there is a little deviation of peak position after comparing normalized QXAFS spectrum and normalized conventional XAFS spectrum. The possible reason is that we insert IK220 card and ADC card into the same PC. So they share the CPU bus and processor resource in the QXAFS acquisition system.

According to the problem, we are working to find out the exact reason. Besides, we will put the whole system in the real-time operating system and trigger the ADC and IK220 by a hardware in the future work.