

A02

## **Siemens SMART CCD Detector applied to protein crystallography with synchrotron and rotating anode sources**

James C. Phillips, J. Fait, M. Schuster, J. Chambers, and R. Sparks  
*Siemens Analytical Instruments, 6300 Enterprise Lane, Madison, WI 53719-1173*

The Siemens SMART CCD detector has been tested at SSRL beamline 1-5 AD. Data at wavelengths spanning the range of 1-5 AD showed that 1.1 Å. would give the best intensities and that the SMART system can efficiently detect x-rays as low as 2.06 Å. A direct comparison of data from a lysozyme crystal obtained at 1.54 Å. and from a Cu rotating anode, showed an intensity gain of 10 (35 for 1.1 Å.). Rocking curve widths were narrow which can improve signal-to-background (Phillips et al., *J. Appl. Cryst.*, Vol. 12, pp. 592-600). A 231 Å. axis was resolved at detector distance 100 mm. Anomalous dispersion enhancement close to the Fe K edge (1.74 Å.) found the Fe atom in a Patterson map. On a rotating anode various sets of optics were tested with the CCD - (1) 0.5x1 mm focus, 15 KW, graphite monochromator, (lysozyme data 4.0% Rmerge to 1.8 Å. resolution in 2 hrs) (2) double Franks mirrors 60mm 160mm, .3x3 mm focus, 5 KW (7.2% Rmerge, to 1.89 Å., 2 hr.) (3) double graded multilayer monochromators, same source as (2) (2.9% Rmerge, to 1.7 Å., 5.3 hr.). Recently, standardization of experimenter - computer interfaces have been discussed. The Siemens data collection software, with graphical user interface will be demonstrated.