CCD Detectors: What is Important for Good Data?

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Obtaining the best data with a CCD detector involves understanding the importance of various detector features. Data collected on a phosphor-coupled CCD detector passes through a serial information chain, beginning with x-ray conversion to light in a phosphor and progress through fiber optics, the CCD, readout electronics and calibration and analysis software. Since different manufacturers choose different options at each step in this information chain, it is important for users to understand the range of available options, and the likely effects on the data, in order to make intelligent choices between options. We overview the various components of a typical CCD detector and discuss the usual options and consequences of various choices. Special emphasis will be placed on the primary phosphor and calibration procedures, since these components most critically affect the primary diffraction data and also seem to vary most from one manufacturer to the next. Tests will be presented that can be readily performed by users to assess the quality of a CCD detector [1].

References

[1] – S.M. Gruner, M.W. Tate and E.F. Eikenberry, Rev. Sci. Instr., **73**, 2815, (2002)