

## **ASPECTS OF A SIMULTANEOUS XRD/XRF INSTRUMENT DESIGN**

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An instrument capable of capturing both x-ray diffraction (XRD) and x-ray fluorescence (XRF) using a charge-coupled device (CCD) as the x-ray detector is being developed. NASA is funding the instrument's construction because of its capabilities and small size. This task involves mechanical, electrical and software challenges. Previously, a test bench has been constructed to examine the various factors in designing a successful instrument. We are currently incorporating the information learned into a prototype instrument. The instrument's basic concept consists in exposing a powdered mineral sample, placed in front of a CCD, to a collimated x-ray beam. The CCD detects both the energy and position information of incoming x-rays. In this paper we will examine techniques for the optimization of the software, the CCD electronics and the x-ray optics.