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**An intensity enhanced high-resolution spectrometer in “Water Window”****Zhuo Li<sup>1,2</sup> and Bin Li<sup>1,2,3</sup>**<sup>1</sup>Shanghai Institute of Applied Physics, People's Republic of China<sup>2</sup>University of Chinese Academy of Sciences, People's Republic of China<sup>3</sup>ShanghaiTech University, People's Republic of China

A novel scheme for design of a grazing incidence spectrometer is introduced. The optical properties of the system are investigated and optimized, to create an excellent meridional flat field in its detector domain to deliver the desired spectral resolution throughout the full designated spectral range, while eliminate the sagittal astigmatism to enhance the spectral intensity simultaneously (see Figure.1). We demonstrated within the “water window” (i.e. 2-5nm wavelength range), the resolving power of 6000-15000 could be achieved at the effective meridional source size of 200 $\mu$ m (rms) (see Figure.2); and it would be further enhanced to 10600-24000 if a convex mirror is added in the system (see Figure.3). The design parameters of the original and enhanced spectrometer are shown in Table.1. This scheme owns universal adaptability, which could be easily extended in much broader photon-energy (or wavelength) range through an appropriate modification to the design parameters. And it is also feasible to utilize the scheme to develop a high-performance grating monochromator simply by putting a fine slit right across the focal curve of the diffraction beam.

**Biography**

Zhuo Li is a PhD student from Shanghai Institute of Applied Physics, Shanghai. He is mainly engaged in the design of X-ray grating spectrometers.

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