

PRELIMINARY OBSERVATIONS OF X-RAY TRANSITIONS FROM MIDDLE CHARGED TUNGSTEN IONS ON SHANGHAI EBIT

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Tungsten has created great interest in spectroscopy as it is a hopeful candidate for the plasma facing material in future Tokamaks like ITER. Much effort is being made by various groups to provide spectroscopic data for W in many charge states and over wide spectral regions [1]. As a very high resolution X-ray spectrometer has been built in JET and has made a lot of observations, and JET has equipped divertors made by tungsten[2], which would be the same with ITER's, we started to devote much time and effort on the X-ray observations of tungsten on Shanghai EBIT[3].

In the recently work, we aligned a flat crystal spectrometer[4] to an observation window of Shanghai EBIT. The energy of electron beam of Shanghai EBIT could smoothly cover a range from 1keV to 150KeV, and the flat crystal spectrometer could reach at least more than 3000 resolving power. This is an ideal facility set for studying the X-ray spectroscopy of middle charged tungsten ions.

Using this setup we have made several measurements of tungsten spectra in the region around 5.0 Å to 6.0 Å for different electron beam energies. Systematic calculations of the atomic structure giving rise to such transitions were done. A preliminary identification of tungsten spectral lines was done by comparing the spectroscopic data obtained in our experiments with the calculation results. But further confirmation of these data is still required and after that the confirmed data can be published.

References

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