VUV - EUV FOURIER TRANSFORM ABSORPTION SPECTROSCOPY WITHOUT A BEAM SPLITTER

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A new Fourier transform spectrometer without a beam splitter has been designed to operate on a VUV synchrotron beam line. It is based on a modified Fresnel bimirror configuration controlled by an original optical system. This system keeps the mirror tilt error to a negligible value (much lower than 1 μrad) during the mirror translation. It also controls the sampling of the interferogram (1 sample per 15 nm) with the required accuracy, producing a sampling error less than a few nanometers over the scanning range. An absorption spectrum of the Schumann-Runge band system of molecular oxygen has been recorded at around 200 nm with a resolving power of about 150000. It shows great promise in terms of extension of the technique towards the VUV range. This spectrum will be presented and compared to the calculated spectrum obtained by using a published database[a].

[a] http://cfa-www.harvard.edu/amdata/ampdata/o2pub92/S-R.html