SOPHIA European Research Infrastructure	**Thin Films**	**Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (HZB)** **CISSY synchrotron end station**
Location of the infrastructure :	**Berlin, Germany**	**http://www.helmholtz-berlin.de/forschung/enma/heterogene-materialsysteme/arbeitsgebiete/synchrotron-analytik-bei-bessy/index_de.html**
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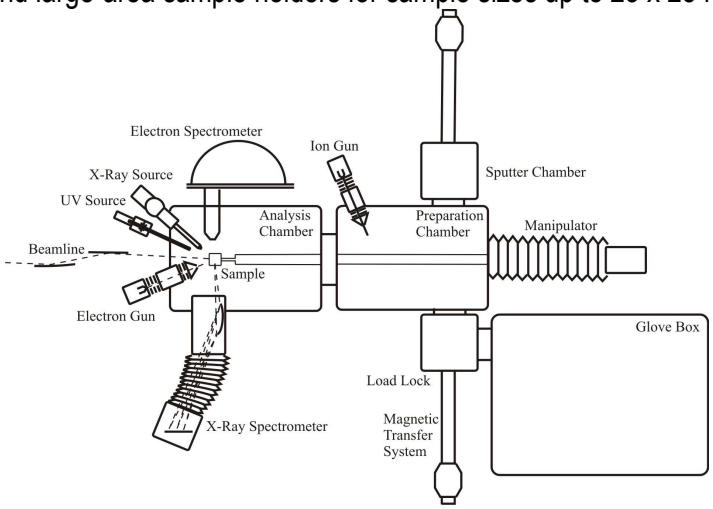
Objectives :	Surface and interface characterization of thin film solar cell components by x-ray based spectroscopy using synchrotron radiation or x-ray lab sources
Main features :	The experimental set-up "CISSY" at the BESSY II synchrotron combines X-ray emission spectroscopy (XES), X-ray absorption spectroscopy (XAS) and photoelectron spectroscopy (PES) with ex-situ, in-system preparation of buffer and window layers for chalcopyrite solar cells. Depending on the excitation energy used, the information depth provided by these methods ranges from a few monolayers up to microns. Any type of thin films can be analyzed with regards to chemical, electronic and partly structural properties. The unique features of this analysis tool are the combination of state-of-the-art, synchrotron-based analytics with versatile layer preparation methods, a fast load-lock with rapid sample turnover and large-area sample holders for sample sizes up to 25 x 25 mm^2.
Limitations or contraints :	No in-situ preparation inside the analytical UHV chamber. The energy range for the CISSY set-up is 20-2000 eV while with a different end-station at BESSY II 2010 eV to 10 keV can be used. For PES, moderately conducting samples are needed.
Typical services or results :	Surface characterization (elemental composition, purity, compounds, work function, valence band position) Interface characterization (interdiffusion, chemical reactions)
Examples of research projects :	Development and characterization of Cd-free buffer layers in chalcopyrite solar cells



Top view of the CISSY-end station (by J. Reichardt)