



HESEB End Station Design

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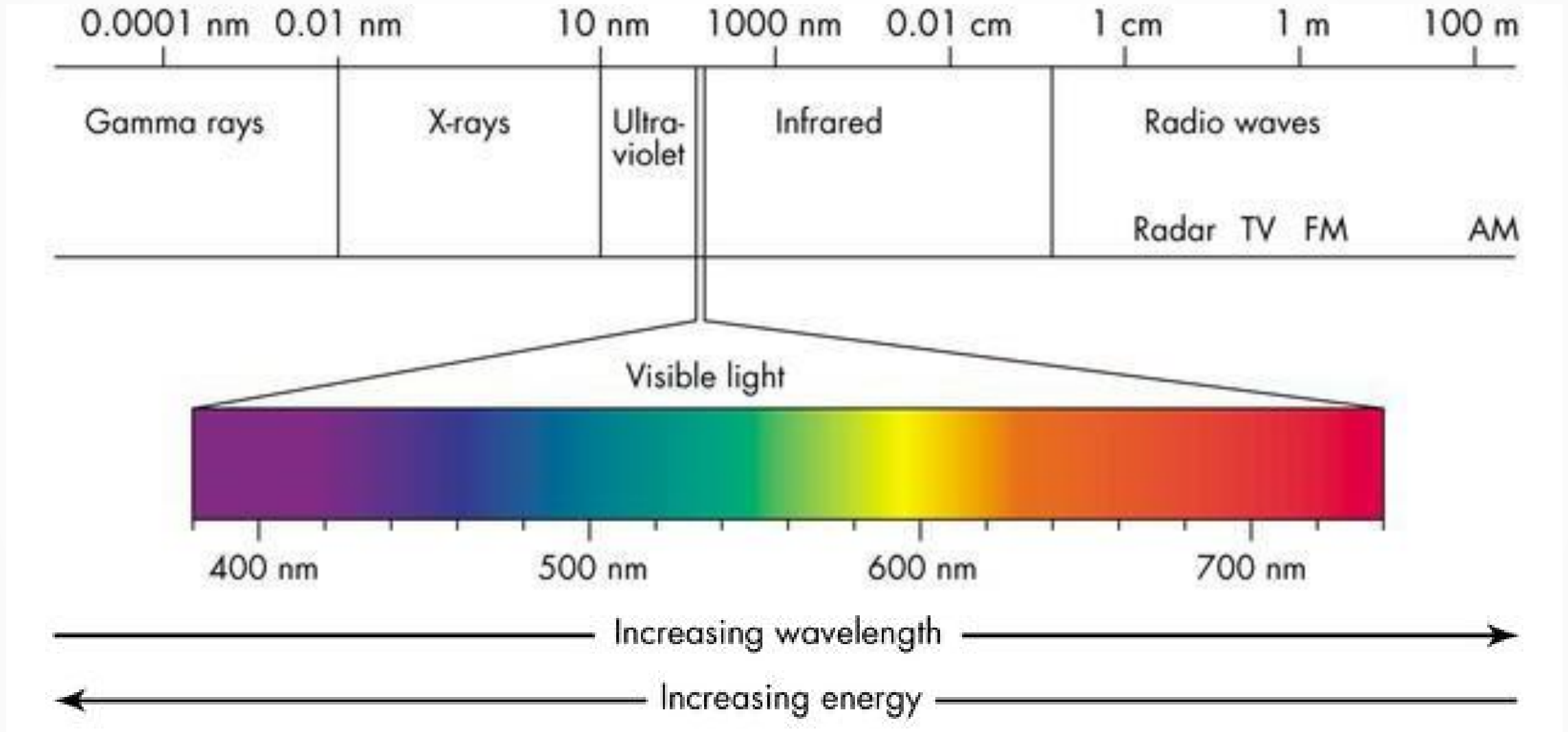
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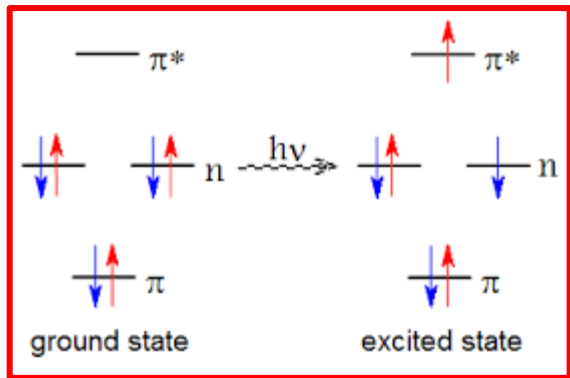


Outline of The Presentation

- Soft X Ray- Matter Interaction
 - Full Spectrum and X Ray
 - X ray Matter interaction
 - X Ray Absorption Spectroscopy
- HESEB End Station; up to date
- TXPES End Station; up to date

Electromagnetic Spectrum

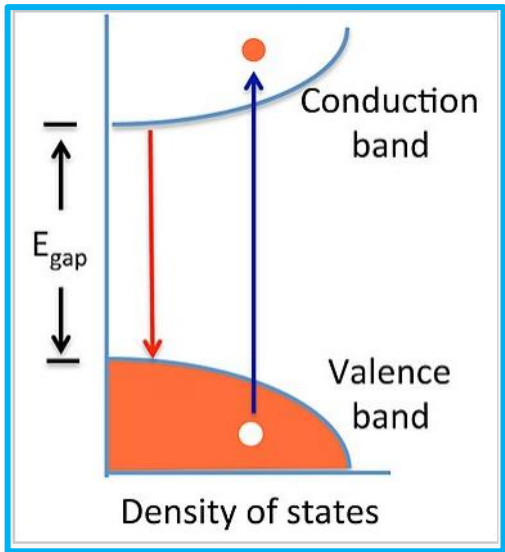




In Molecules;
HOMO - LUMO
Transition

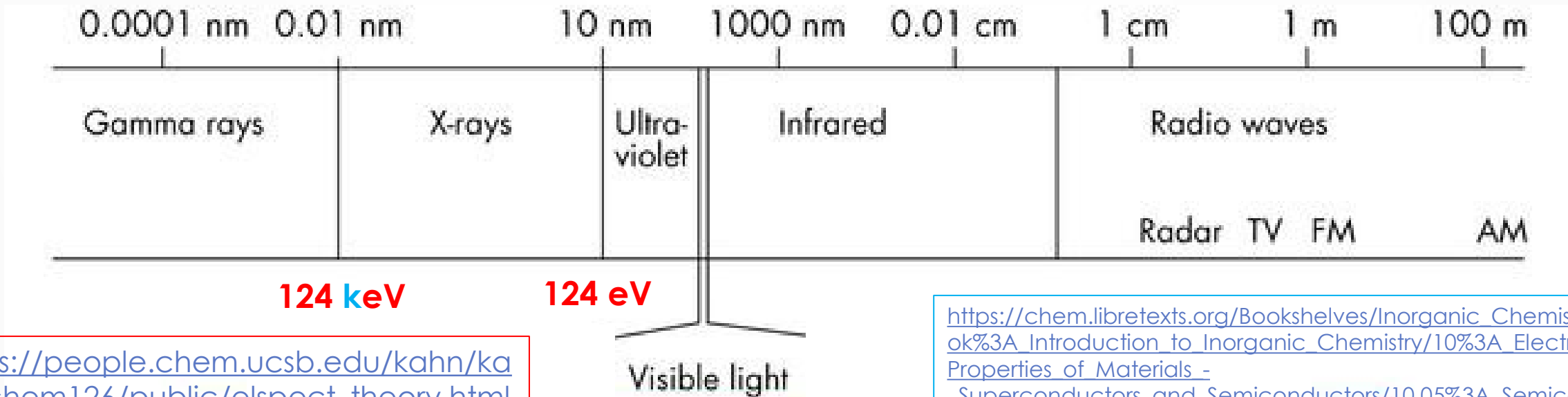
In Solids;
Valance Band -
Conduction Band
Transition

Electronic
Configuration of
Valance Electron



Electronic
Configuration
Of Core Electron

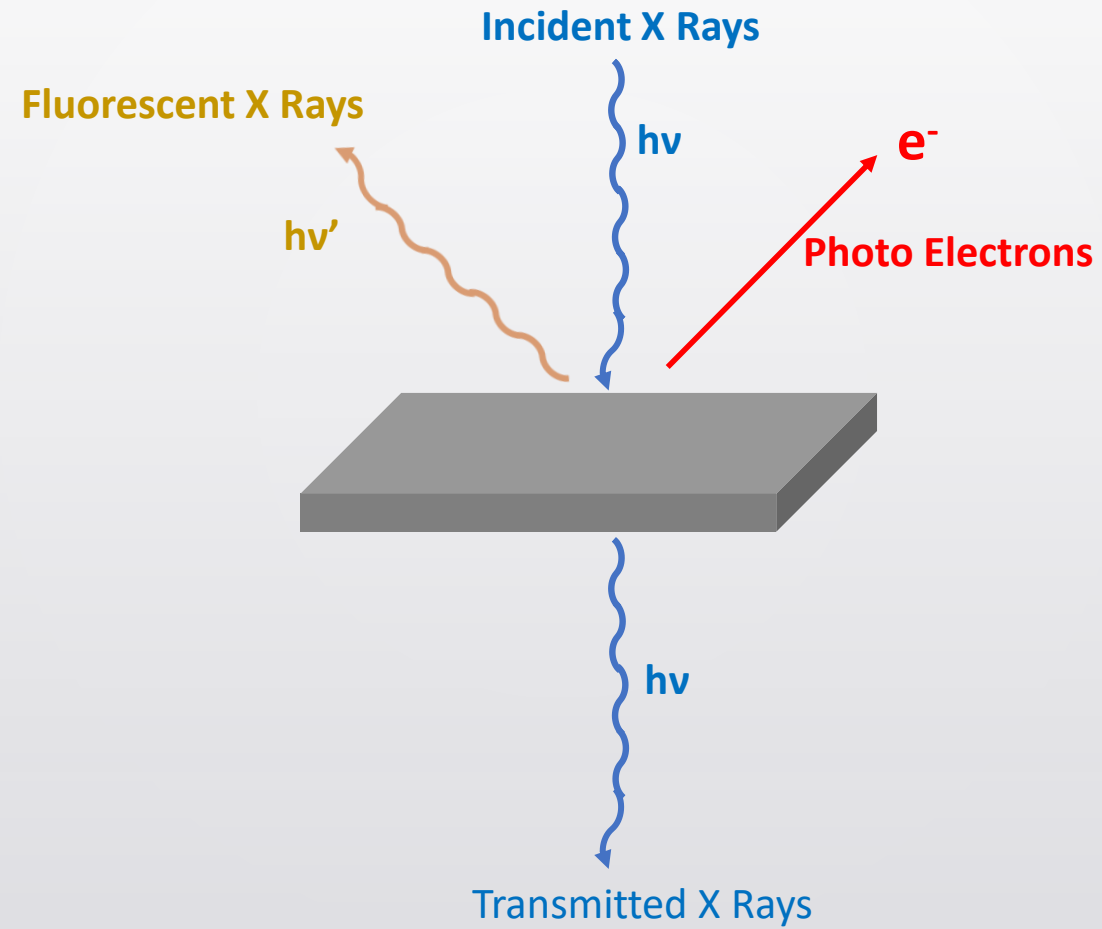
Vibrational Rotational
Motion Motion



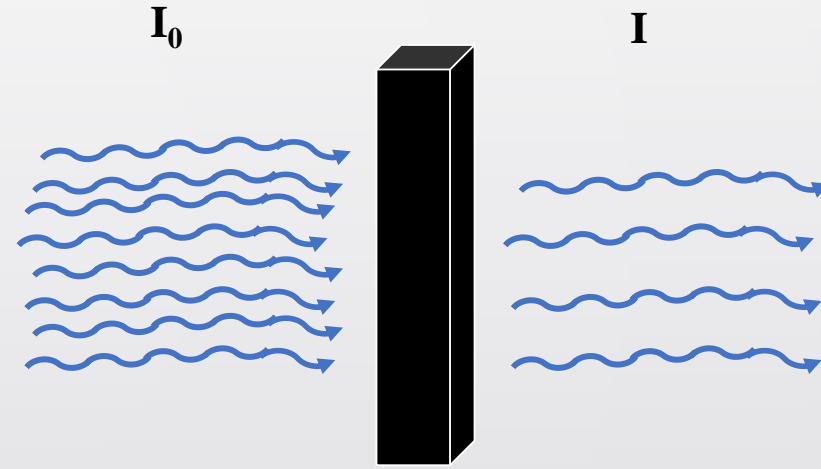
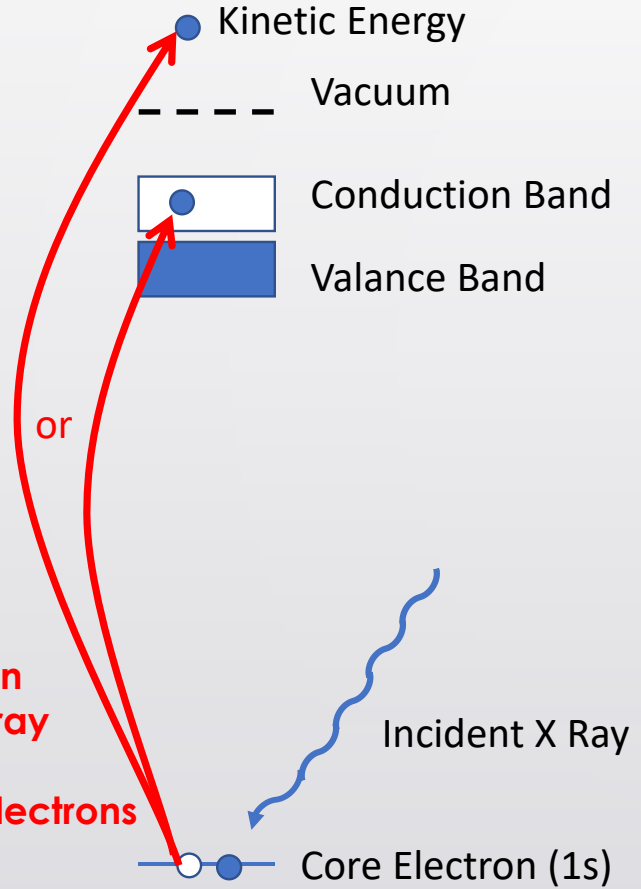
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Interaction of X Ray and Matter

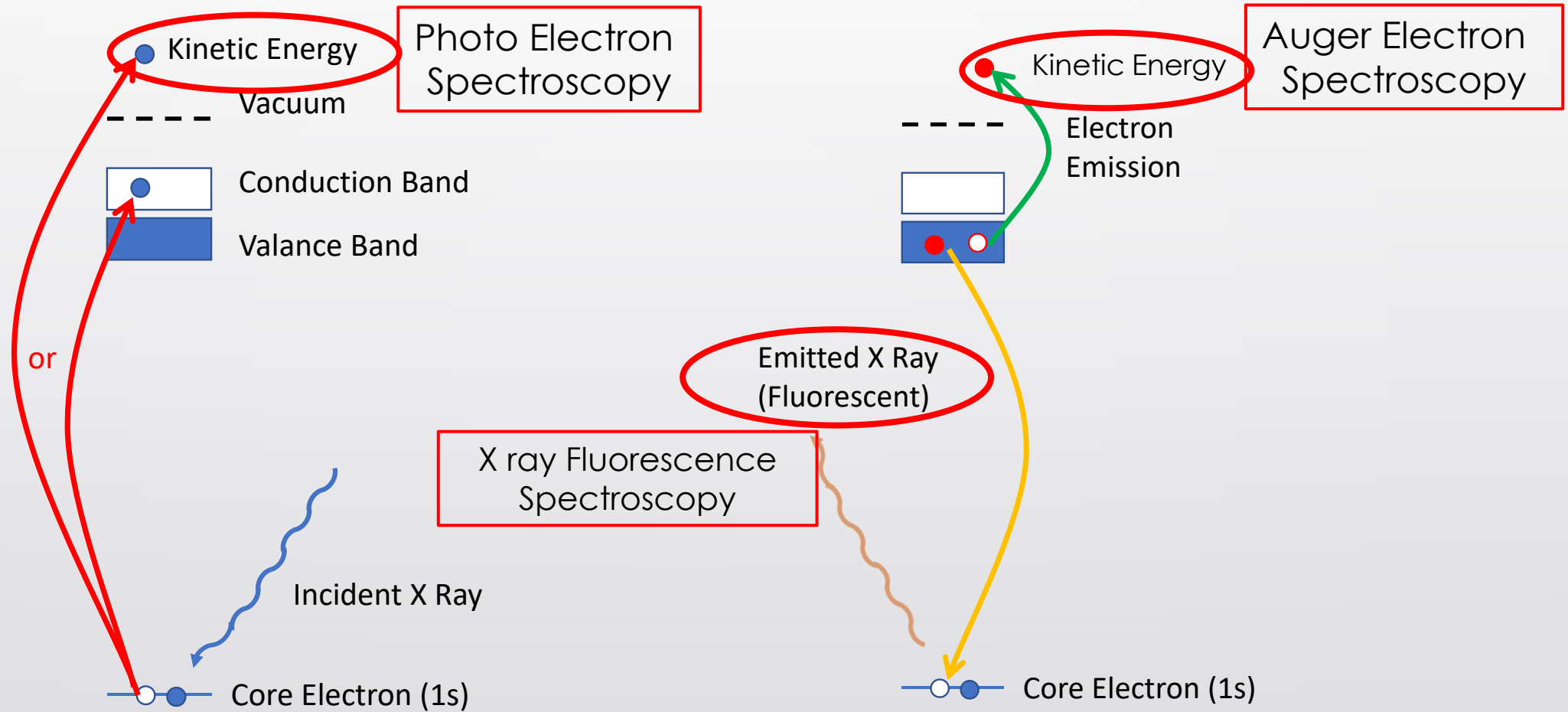


Soft X Ray – Matter Interaction and X ray Absorption Spectroscopy

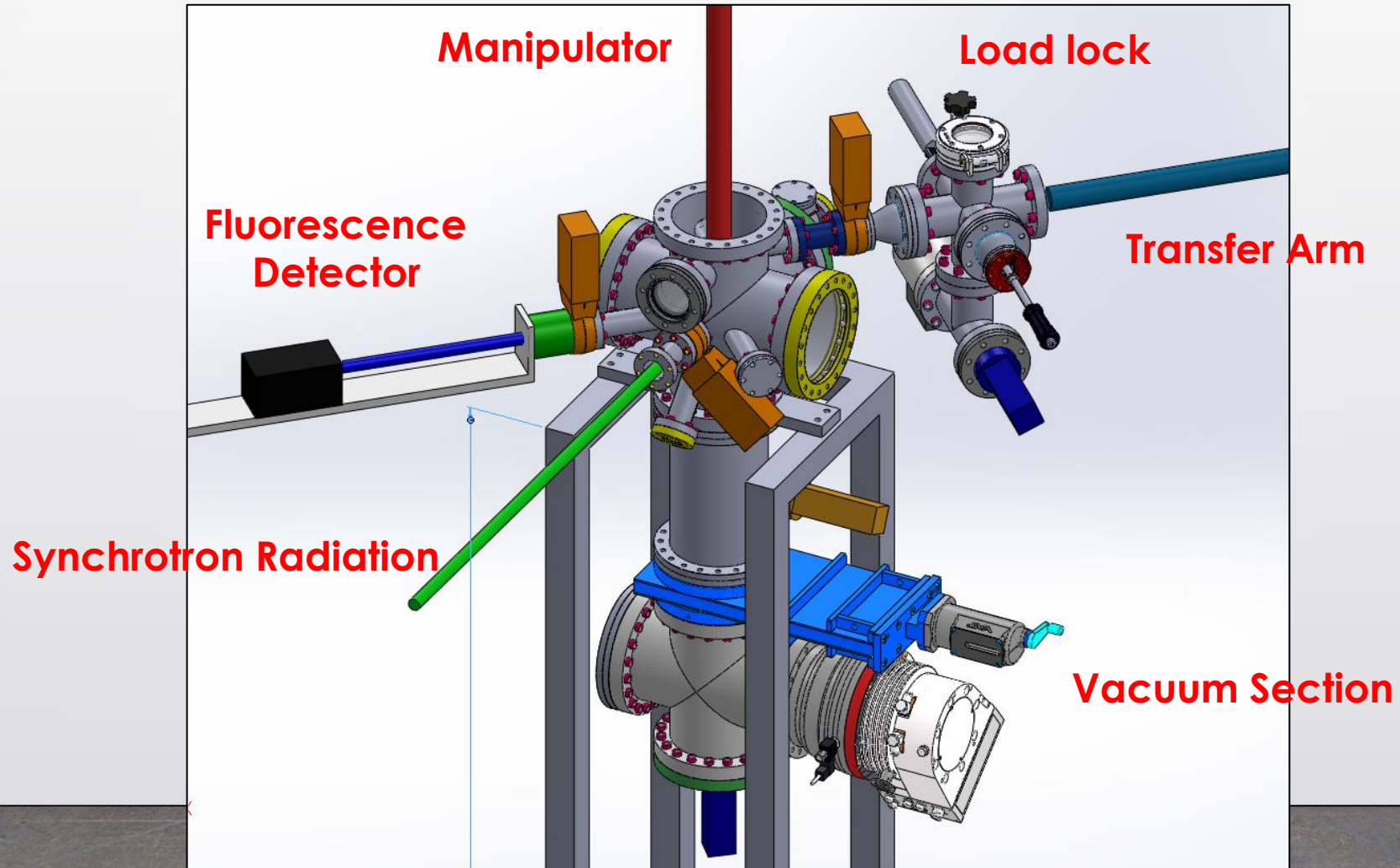


But Soft X Rays interact strongly with matter in order to obtain I, Sample must be extremely thin. Sub micrometer range

X Ray Absorption Related Spectroscopies



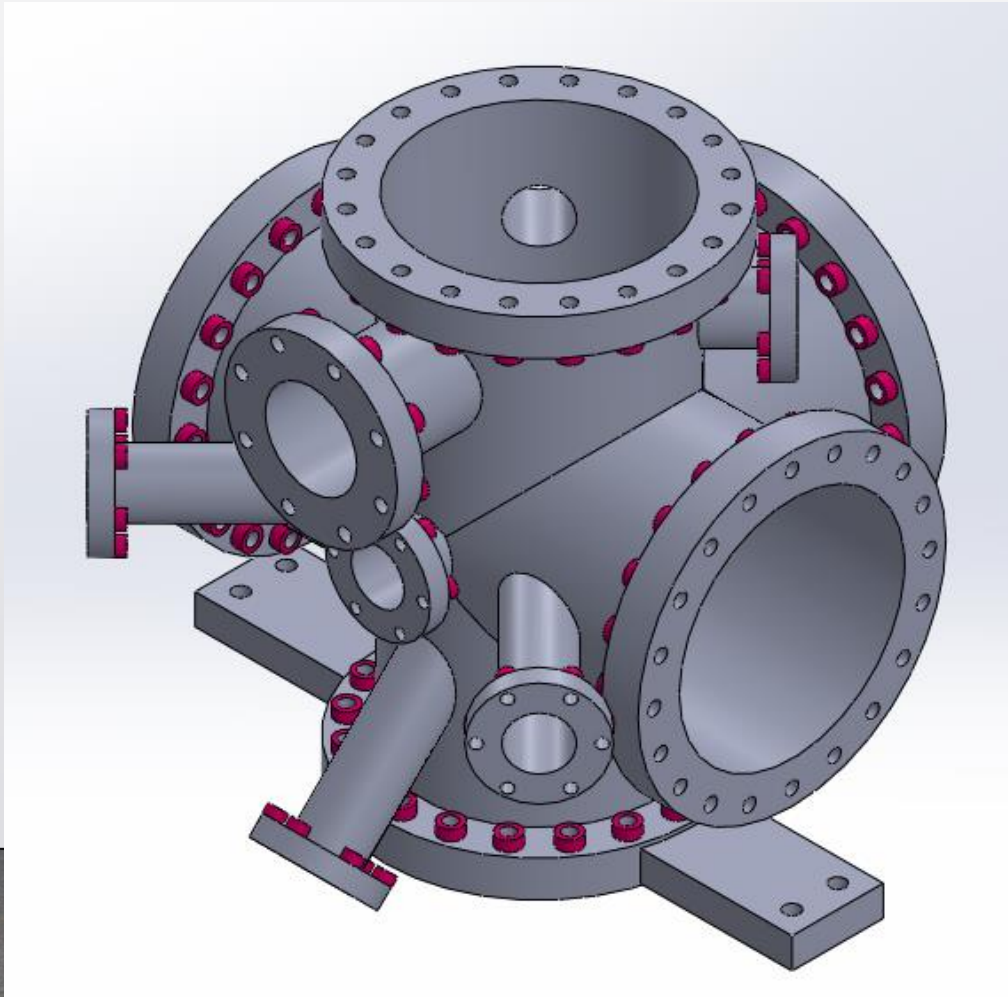
HESEB End Station; Preliminary Design



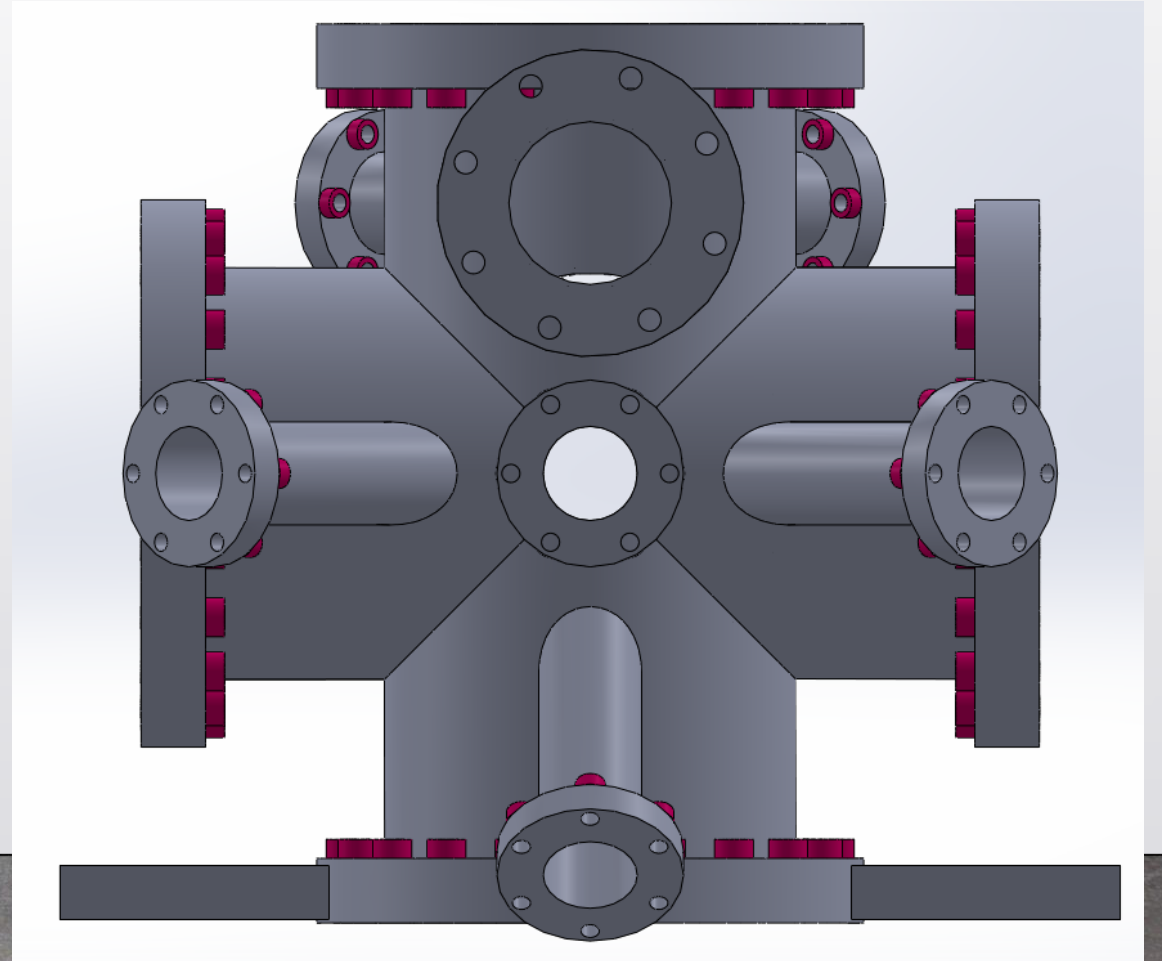


HESEB Experimental Chamber Final Design

Isometric View



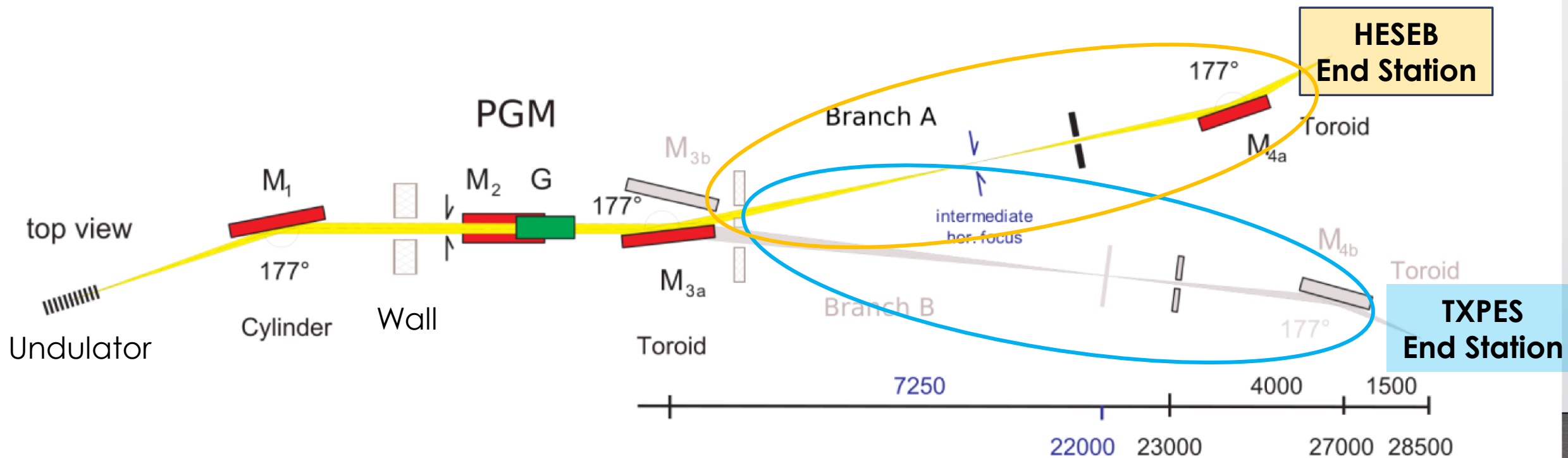
Front View



Plan View of HESEB and TXPES

Inside the Synchrotron Tunnel

Experimental Hall





Turkish Soft X-ray Photoelectron Spectroscopy End Station (TXPES) Project

- Analyze Chamber; Tentative System Components
 - XPS/UPS/AES Spectrometer
 - Containing benchtop UV and X Ray Sources
 - LEIS/ISS: Low Energy Ion Scattering/ Ion Scattering Spectrometry
 - Variable-Temperature Sample Manipulator (w/ Liq. He cooling), Angle-Resolved Sample Holder (w/ Liq. N₂ cooling)
 - Ion Gun for Depth profiling
 - Electron Flood gun



Turkish Soft X-ray Photoelectron Spectroscopy End Station (TXPES) Project

- Sample Preparation Chamber; Tentative System Components
 - e-Beam metal evaporators x4,
 - Gas Dosers x2,
 - Atomic Hydrogen cracker,
 - QCM (Quartz Crystal Microbalance)
 - RGA (Residual Gas Analyzer)
 - Atomic layer deposition valve



Thank You!