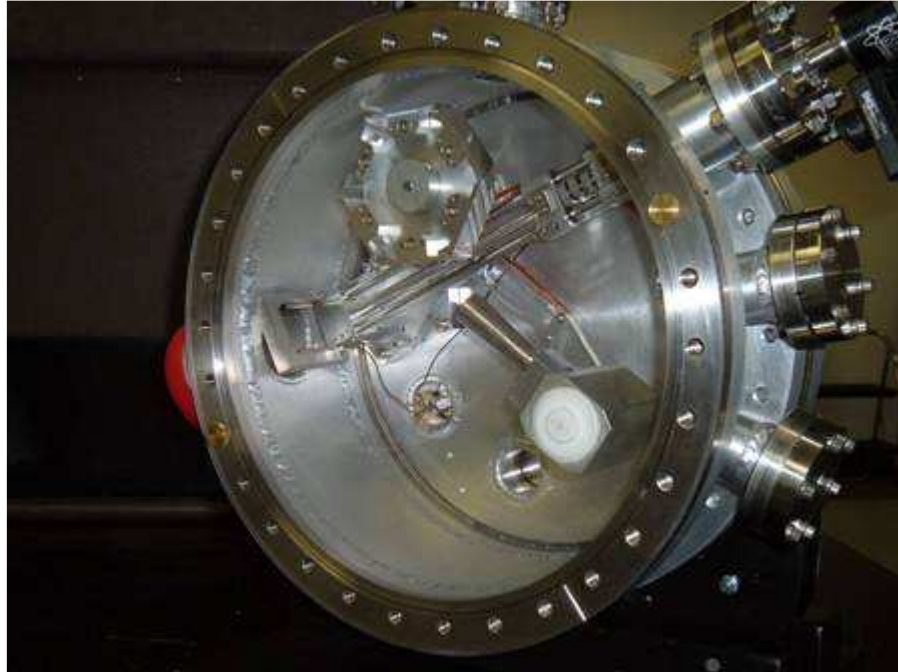


Parallax UHV-WDS

Ultra-High Vacuum -- Wavelength Dispersive Spectrometer

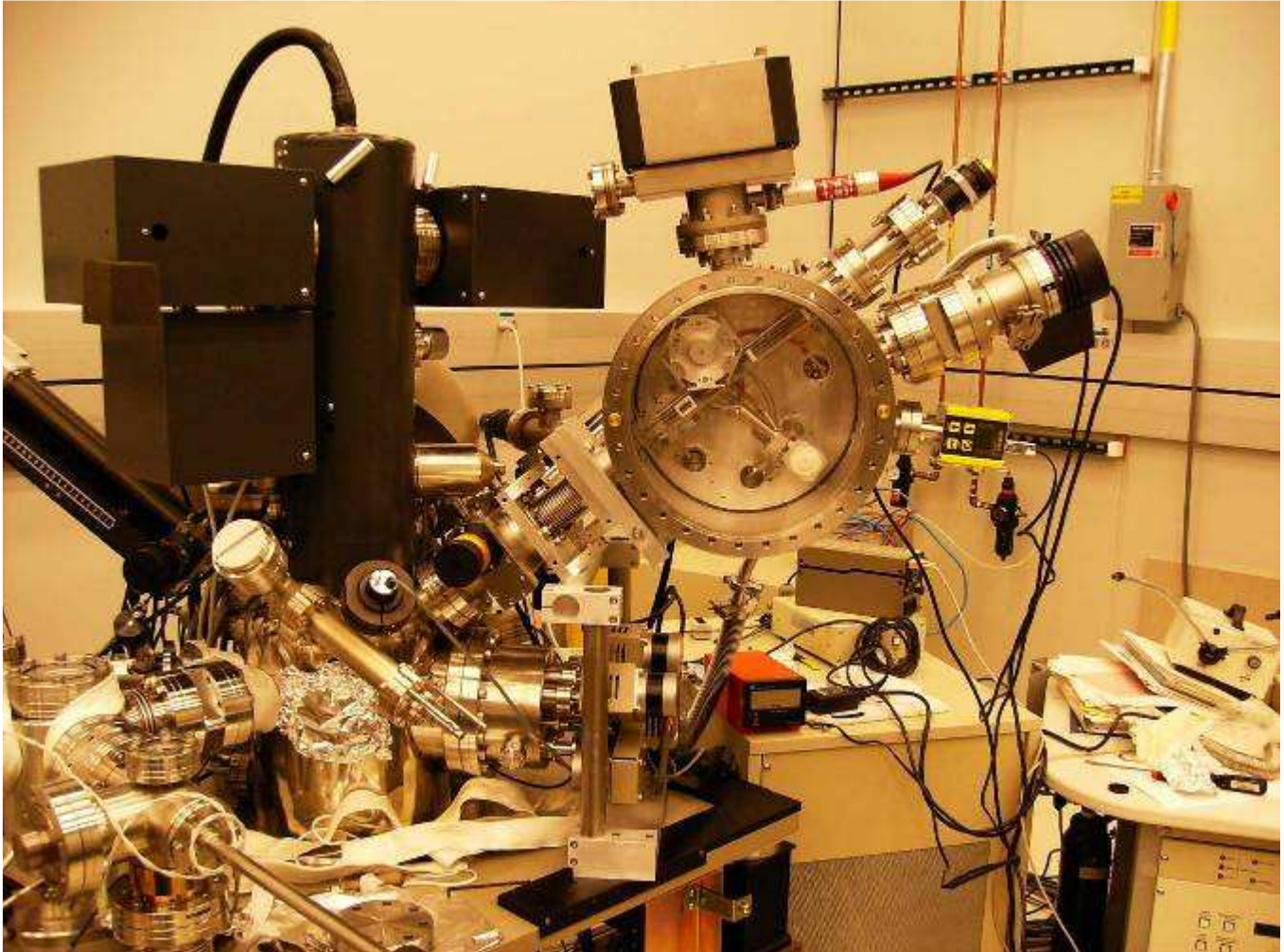


Internal parts of the UHV compatible HEXS Wavelength Dispersive Spectrometer

Previous WDS systems could not be used on Ultra-High Vacuum systems such as Auger, XPS, or some TEMs because it was thought that the flow proportional counters would leak. Although Parallax essentially solved this problem with the LEXS and further improved it on HEXS, it remains a small problem for UHV. A bigger problem has been that WDS systems were not specifically designed for UHV so they outgassed a lot. Parallax's new UHV-WDS has been designed from ground up to be UHV compatible with all metal seals and UHV components. In spite of being UHV compatible, we managed to keep the weight to less than 60 lbs

Loosely based on the HEXS spectrometer concept, the UHV-WDS has similar optics and drive system as the HEXS. It features a retractable collimating optic, a UHV gate valve and a pumping system for achieving UHV levels. This system IS NOT DIFFERENTIALLY PUMPED; our pumping system is used to insure that the large volume of the spectrometer can be pumped down to less than $1E-9$ Torr and be kept isolated when the main chamber is opened. The UHV-WDS uses the same software as the HEXS. For

more information, contact Parallax.



UHV Compatible WDS installed on the JAMP 7830 at NIST. The WDS is the round object at center that is open to show its internal components. The JAMP 7830 electron column is the tall black cylinder with two black squarish ion pumps on either side. The sample chamber is directly below the electron gun. A gate valve with black and gold handle is between the WDS and JAMP 7830 and behind that is the flexible bellows. Directly below the bellows is the stand we fabricated to hold the weight of the WDS. Clockwise around the WDS on various ports are: Ion pump (with red electrode), x-ray collimator extraction mechanism, turbo pump with gate valve and the yellow ion gauge. Inside the WDS can be seen the hexagonal diffractor turret. The diagonal carbide steel rods that carry the x-ray collimating optic are below the diffractor turret. At the 4:30 position is the sealed proportional counter. Between the counter and the diffractor turret is the x-ray concentrating optic that allows us to use a smaller detector window.