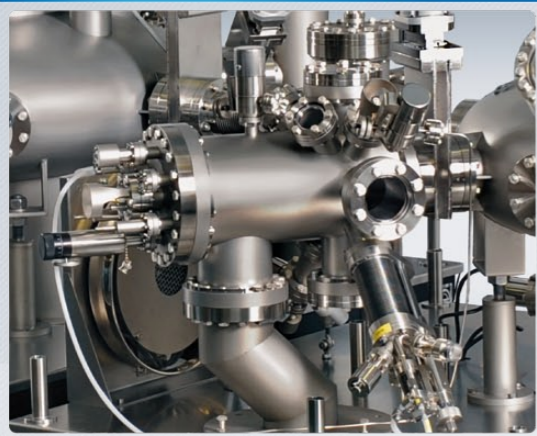




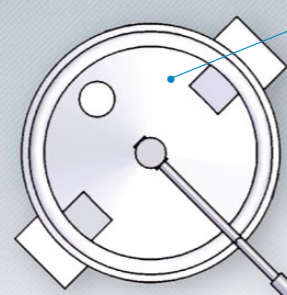
UHV MULTICHAMBER XPS - IR SYSTEM

PRECISION AND VACUUM TECHNOLOGY

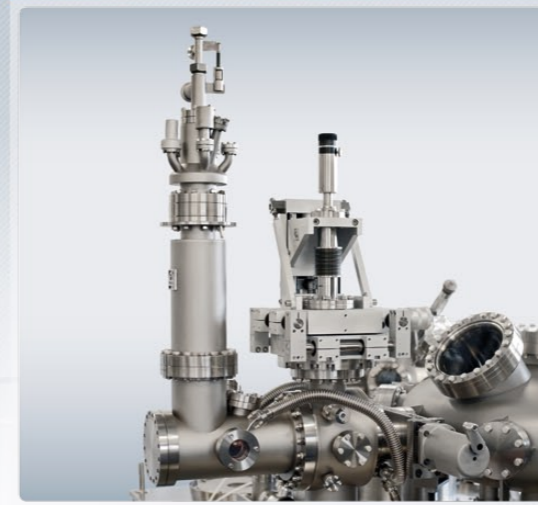
Preparation chamber



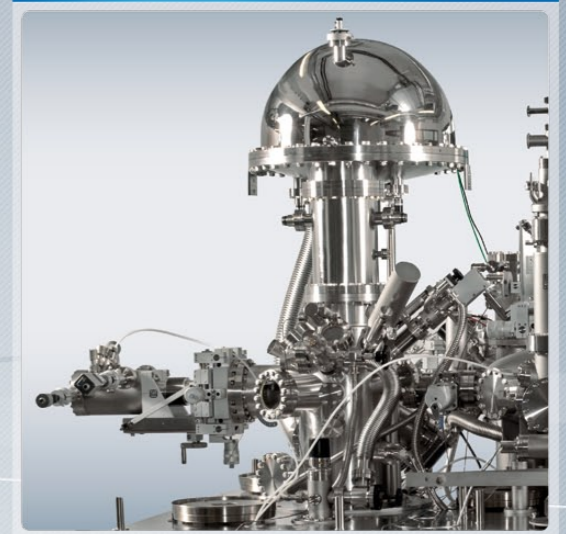
Liquid helium tank (Dewar)



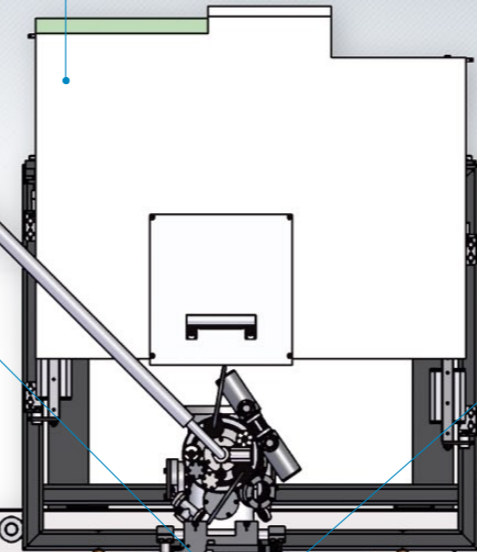
UHV chamber dedicated for Infrared (FT-IR) measurement



Analysis chamber

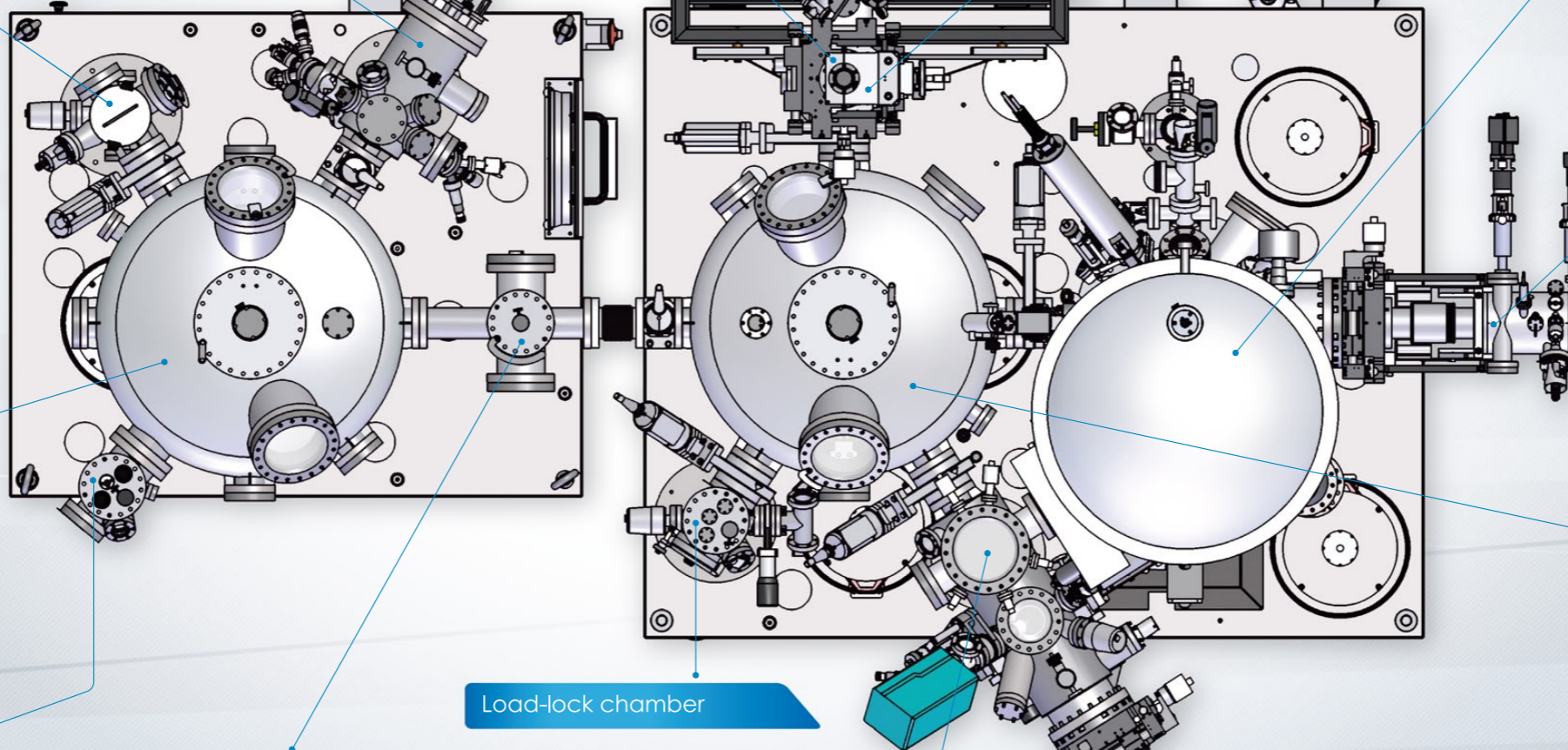


Infrared fourier vacuum spectrometer VERTEX 80v



4 axes IR helium manipulator

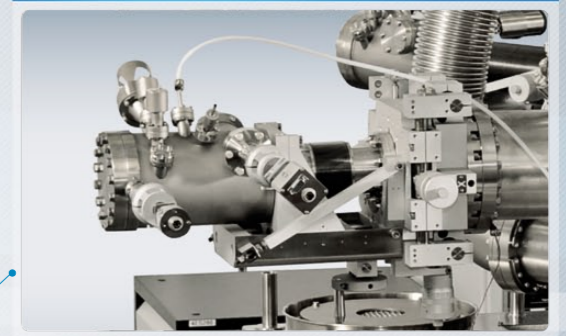
1 axis manipulator



Load-lock chamber



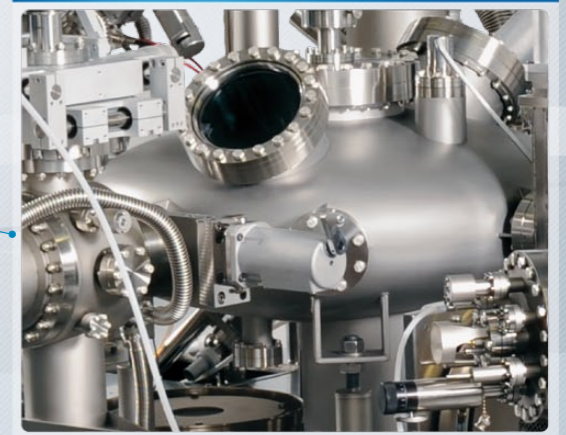
5 axes manipulator



Radial distribution chamber



Radial distribution chamber



Load-lock chamber

Storage chamber



Reorientation chamber



Preparation chamber



4 axes manipulator



DESCRIPTION

Multitechnique IR-UHV system offering a wide range of surface characterisation techniques, including:

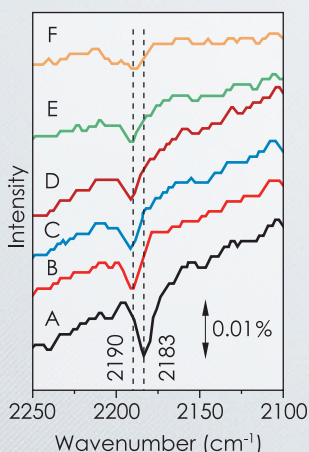
- X-Ray Photoelectron Spectroscopy (XPS),
- Ultraviolet Photoelectron Spectroscopy (UPS)
- Angle-Resolved Photoemission Spectroscopy (ARPES).

The setup is optimized for Infrared (IR)-spectroscopy, it is the first UHV-system on the market allowing to record data using IR reflection-absorption spectroscopy (IRRAS) on dielectric substrates (oxides, nitrides) in a routine fashion.

A flexible sample holder with integrated heating allows for the application of a variety of sample preparation procedures. A sample transfer system and two radial distribution chambers offer a maximum of flexibility.

FEATURES

- FT-IRRAS for wide range of sample temperatures: 28 K - 2200 K (depending on sample holder) - 28 K are reached in less than 15 min
- Separate sample preparation chamber equipped with a low energy electron diffraction (LEED) system
- Multitechnique analysis chamber with high-performance electron-energy analyser R4000
- High-performance Vertex 80v IR spectrometer



FTIR data for CO / rutile TiO₂ (110)

RAIRS data of CO adsorbed on the TiO₂ (110) single crystal surface at 110 K

A PCO = 10⁻⁷ mbar

B after evacuation to 10⁻¹⁰ mbar

C after exposing for 8 min to UV light (3.2 eV) in the presence of 10⁻⁷ mbar of O₂

D after a total exposure of 24 min to UV light

E after a total exposure of 40 min to UV light

F after a total exposure of 56 min to UV light the CO₂ region; labels correspond to those of panel

Wang et al., Rev. Sci. Instrum., 80, 113108 (2009)

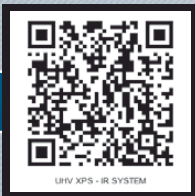
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UHV XPS - IR SYSTEM