

# X-RAY PHOTOELECTRON SPECTROSCOPY

## PHI 5000 VERSAPROBE II, PHYSICAL ELECTRONICS

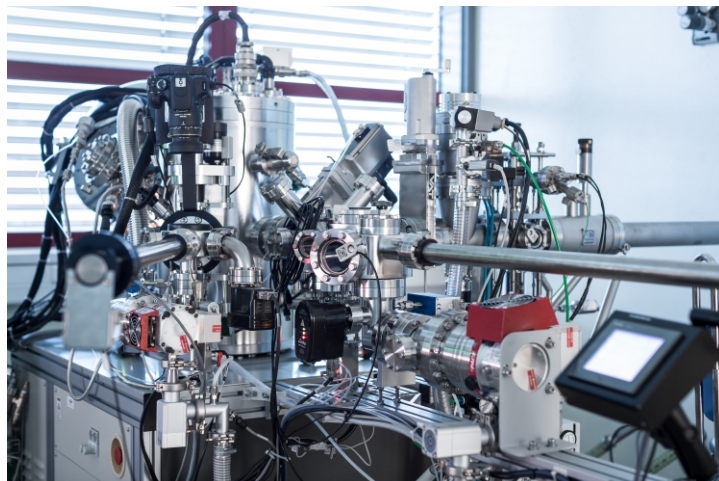
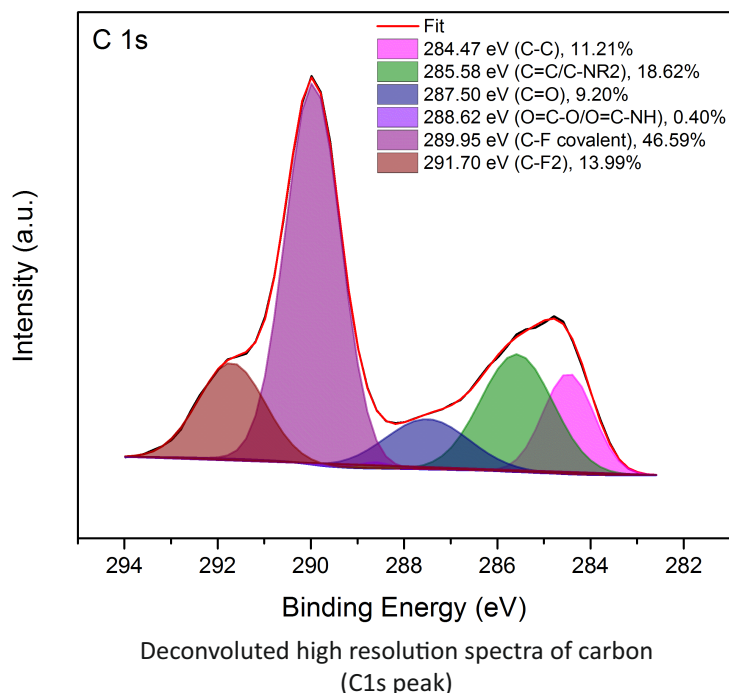
X-Ray Photoelectron Spectroscopy (XPS) is an advanced non-destructive technique for investigation the chemical composition of surfaces (so-called ESCA – electron spectroscopy for chemical analysis). It has powerful and unique ability to explore the first few atomic layers of studied materials and assign chemical states to the detected atoms.

## ACQUIRED INFORMATION

- > Determination and quantification of chemical composition of surfaces (max. depth 10 nm)
- > Determination of valence states of atoms
- > Chemical composition depending on the depth (depth chemical concentration)

## SAMPLE TYPES

- > Bulk or powder solid materials
- > Thin films
- > Liquids and solutions are possible in dried or in frozen state
- > Maximum sample size:
  - o Diameter 60 mm/thickness 8 mm
  - o Diameter 25 mm/thickness 13 mm



X-Ray photoelectron spectroscopy  
(PHI 5000 VersaProbe II, Physical Electronics)

## MODES, CONDITIONS AND PRECISION

- > Monochromatic Al K<sub>α</sub> X-ray source
- > Energy resolution on Ag 3d<sub>5/2</sub> peak: 0.5 eV
- > Analyzed area geometry:
  - o Spots from 9 μm to 200 μm
  - o Lines
  - o Areas (mapping) up to 1 x 1 mm
- > Depth profiling:
  - o Sputtering (destructive) up to 10 μm
  - o Angle resolved XPS (non-destructive) up to 10 nm
- > Dual beam charge compensation system
- > Flow through high pressure reactor:
  - o From 25 °C to 650 °C, gas pressure up to 20 bar, gases: N<sub>2</sub>, Ar, O<sub>2</sub>, CO, CO<sub>2</sub> and H<sub>2</sub>
- > Hot/Cold sample handling (-120 °C up to 500 °C)
- > Possibility of sample transfer under vacuum or inert gas from another instrument or glove box

DETAILED INFORMATION ON REQUEST



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