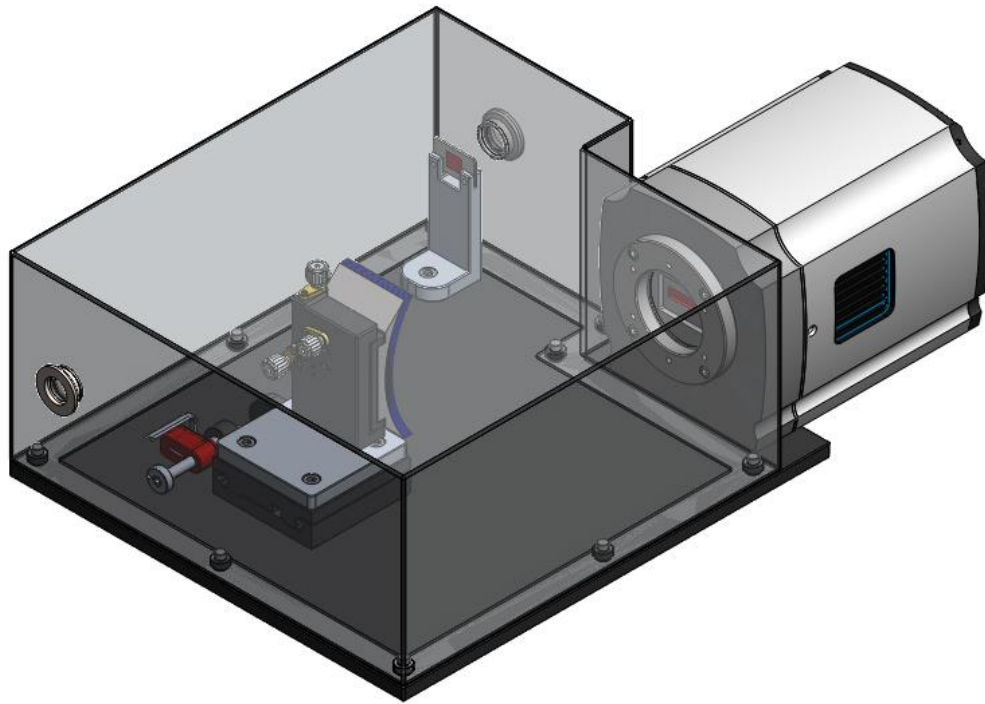


## TENDER X-RAY SPECTROMETER

X-ray



## Features

### Diagnostic operation mode

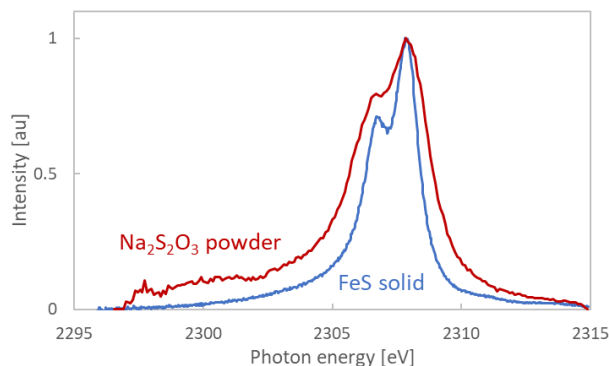
- online beam characterization at HHG beamlines, X-ray free-electron lasers, table-top X-ray lasers
- non-interfering architecture with backscattering probe
- high transmission >90%

### XES operation mode

- emission spectroscopy in the tender X-ray range 2-4keV
- integrated sample mount
- high energy resolution of  $10^{-4}$  in a bandwidth of 2%

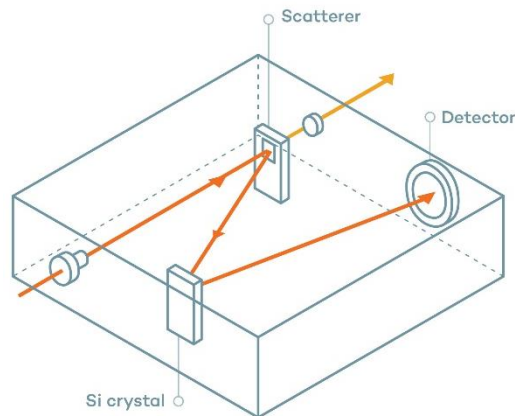
### Versatility

- small footprint
- easily transferred between experimental stations
- intuitive operation



X-ray absorption spectroscopy (XAS) at the sulfur K-edge

The tender X-ray range provides sensitive access to the chemical state of many materials, e.g. investigations of sulfur at 2keV allow for important insights for battery research  
(data courtesy of Dr. W. Malzer, TU Berlin)



Operation modes of hardLIGHT: non-interfering online beam characterization by high transmission scattering probe and emission spectroscopy mode

## Specifications

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Topology	von Hamos
Energy range	2-4keV
Source distance	flexible
Detector	CCD or MCP/CMOS or hybrid
Operating pressure	$<10^{-6}$ mbar (UHV version available)
Crystal positioning	motorized closed-loop
Spectral filter insertion unit	optional
Control interfaces	USB or Ethernet
Software	Windows UI and Labview/VB/C/C++ SDK
Customizable	fully customizable

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