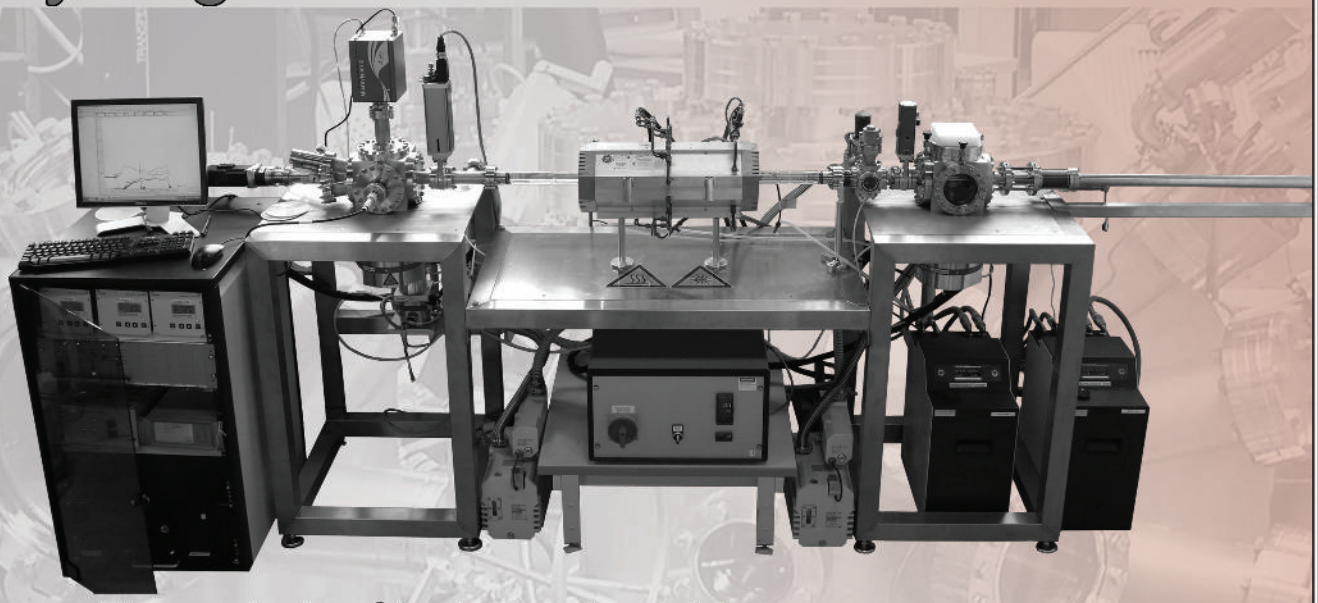
OmniVac

Surface Analysis and Vacuum Technology

Thermal desorption mass spectroscopy setup with precise temperature control and low background pressure for hydrogen detection in metals



The analysis of hydrogen in metals is an important part of scientific research for many applications such as hydrogen induced embrittlement of steels and hydrogen storage

- fast entry load lock
- UHV conditions
- low background hydrogen pressure
- precise temperature control
- calibration with certified gas leaks
- quartz glass reactor chamber
- non-metal materials in the analysis volume
- fast cooling rates

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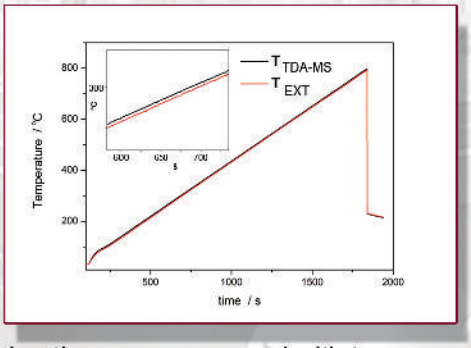
TDA-MS setup with precise temperature control and low background pressure for hydrogen detection in metals

The analysis of hydrogen in metals is an important part of the scientific research for many applications such as hydrogen induced embrittlement of steels and hydrogen storage.
The thermal desorption method is a powerful tool for hydrogen analysis in metals. The measurements of hydrogen desorption flux under controlled temperature ramping conditions can give information not only about the hydrogen content of the metal but also about the density of hydrogen trap sites and corresponding binding energies.

main properties:

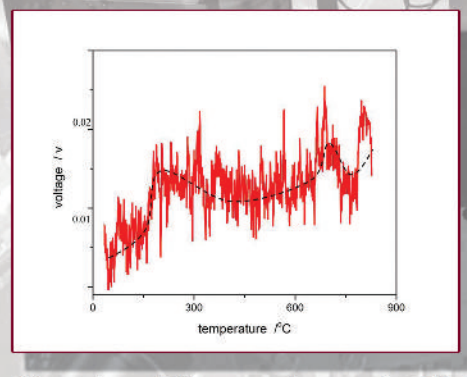
- fast entry load lock
- UHV conditions
- low background hydrogen pressure
- calibration with certified gas leaks
- quartz glass reactor chamber
- non-metal materials in the analysis volume
- precise temperature control
- fast cooling rates
- determined limit of detection of 5.9×10^{-3} µg/g hydrogen

Precise temperature controlled heating ramps

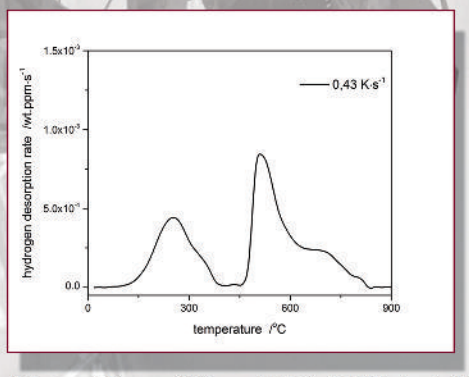


heating ramp measured with two thermoelements
T_{EXT} – external reference control
T_{TDA-MS} – TDA-MS temperature control

Comparison of the measurement quality from the new OmniVac TDA-SM with those from a standard thermal conductivity detector



Standard thermal conductivity detector (TCD)



New OmniVac UHV TDA-MS

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