

PCTPro-2000

Measurement of small hydrogen sorption quantities by the Sievert's method

**Introduction:** With the recent advances in solid state research and the development of new synthesis paths, only small amounts of material are produced. To investigate the sorption properties of these small samples an accurate tool for measurement is required. The PCTPro-2000 can measure sample quantities down to mg's thank to its Microdoser attachment.

Measurements provided courteous of Y.W.Lee, and Prof. B. Clemens Stanford University

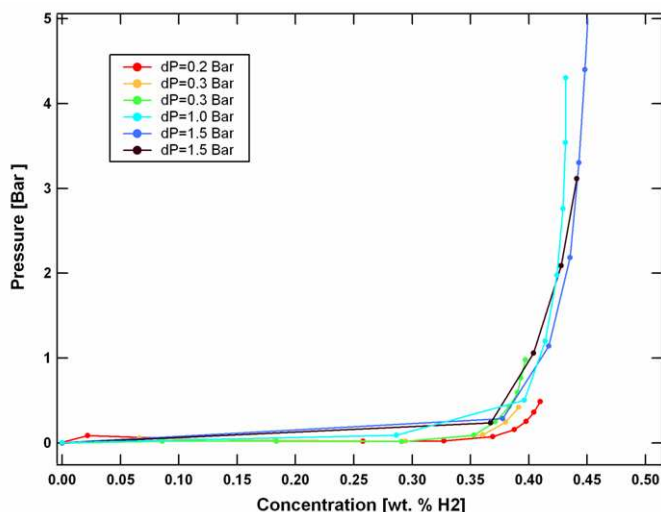


Fig 1: Measured PCT isotherm with Pd nanoparticles grown by LVCC (laser vaporization controlled condensation) from Virginia Commonwealth University  
**Sample mass 20 mg**  
**T=RT**

**Experimental**

Two types of samples were investigated with the Microdoser. Firstly some Pd nanoparticles (fig. 1) which is a classic hydride example and then an activated carbon sample (fig. 2), which is a classic example of high surface area adsorbent, are investigated. Both PCT isotherms were obtained at temperature close to RT. The results demonstrate that reliable PCT measurements can be obtained with small sample size. Therefore comparison with bulk samples can be easily made.

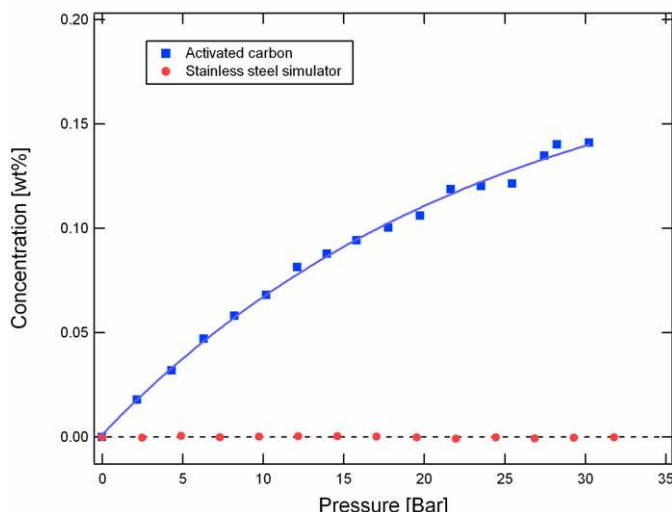


Fig 2: Measured PCT isotherm with Activated Carbon  
**Sample mass 39 mg**  
**T=22.5 °C**

**Conclusion**

The PCTPro-2000 can measure PCT isotherms of very small sample sizes. It demonstrates that the Sievert's technique is ideally suited to compete with gravimetric methods for small quantification of ad/absorbed gas.



**Instrument**  
**PCTPro-2000 +**  
**Microdoser**  
**-196°C / 400°C**