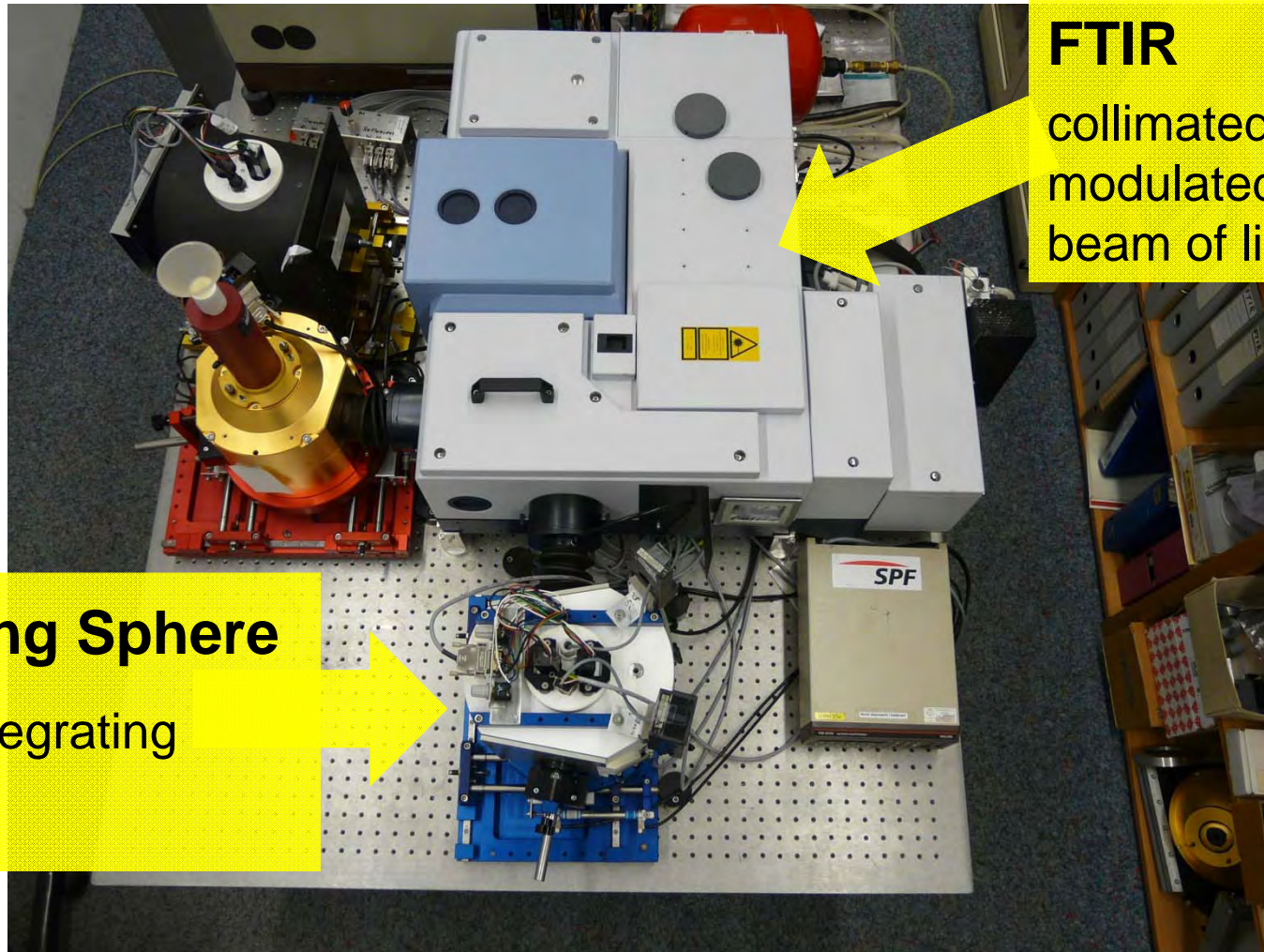


Material Characterization

- Glass

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FTIR Spectroscopy using Integrating Spheres



FTIR
collimated
modulated
beam of light

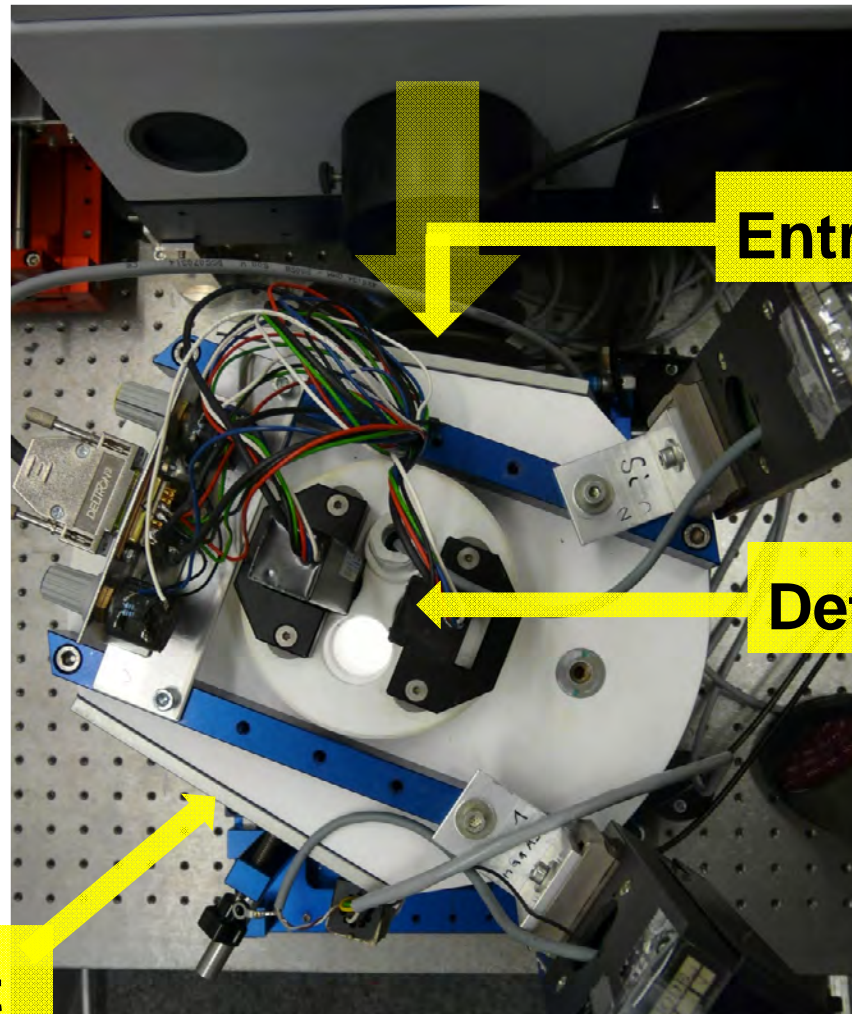
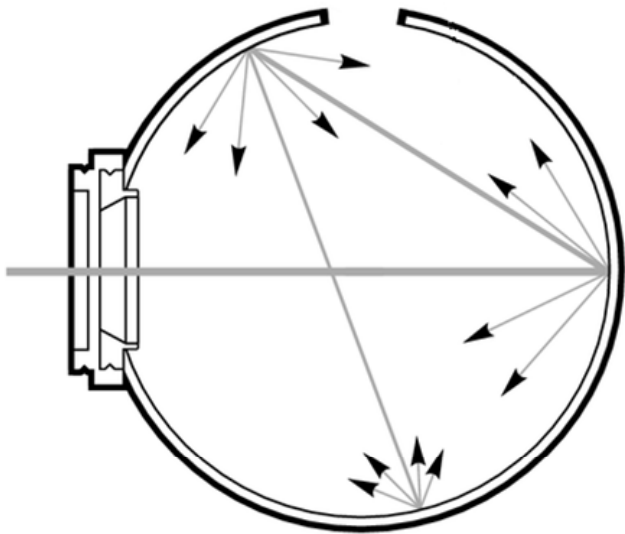
Integrating Sphere
spatially integrating
detector

FTIR Spectroscopy using Integrating Spheres



Surface:

- high reflectance
 - diffuse characteristics
- = homogenous illumination



Entrance Port

Detector Port

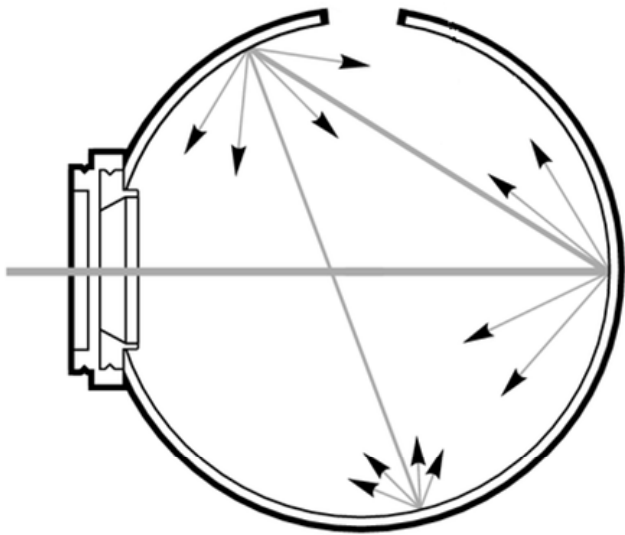
Sample Port

FTIR Spectroscopy using Integrating Spheres

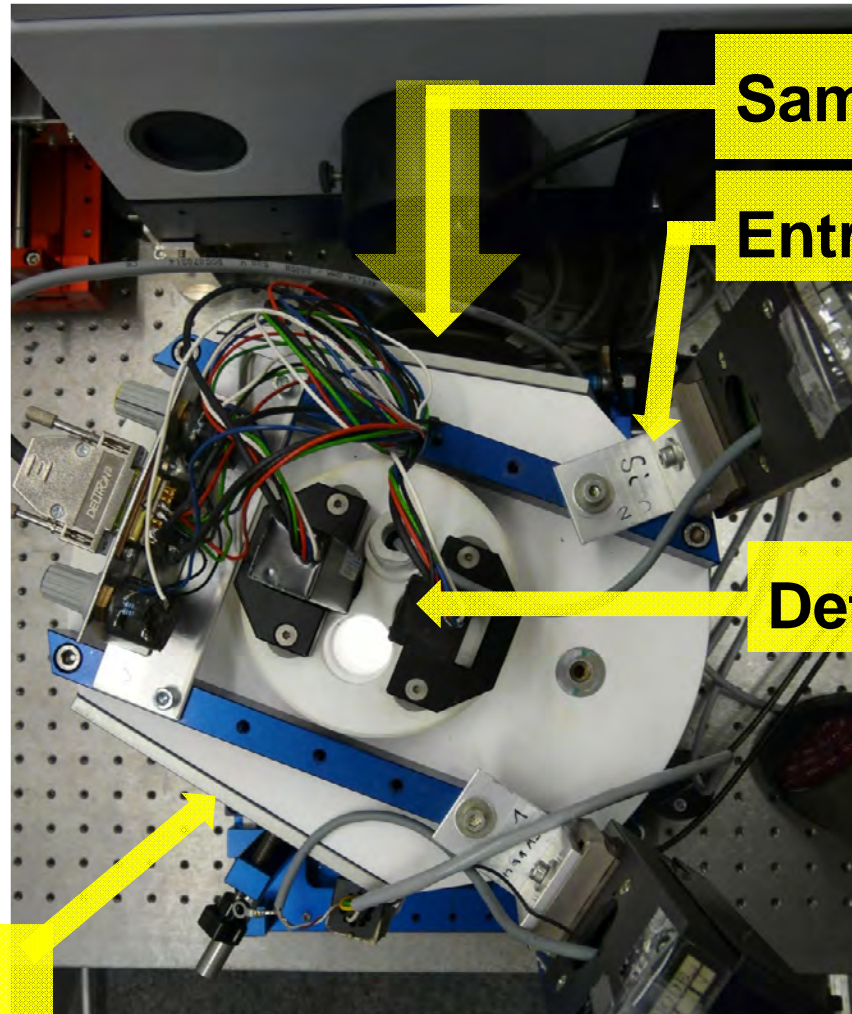


Surface:

- high reflectance
 - diffuse characteristics
- = homogenous illumination



Closed Port



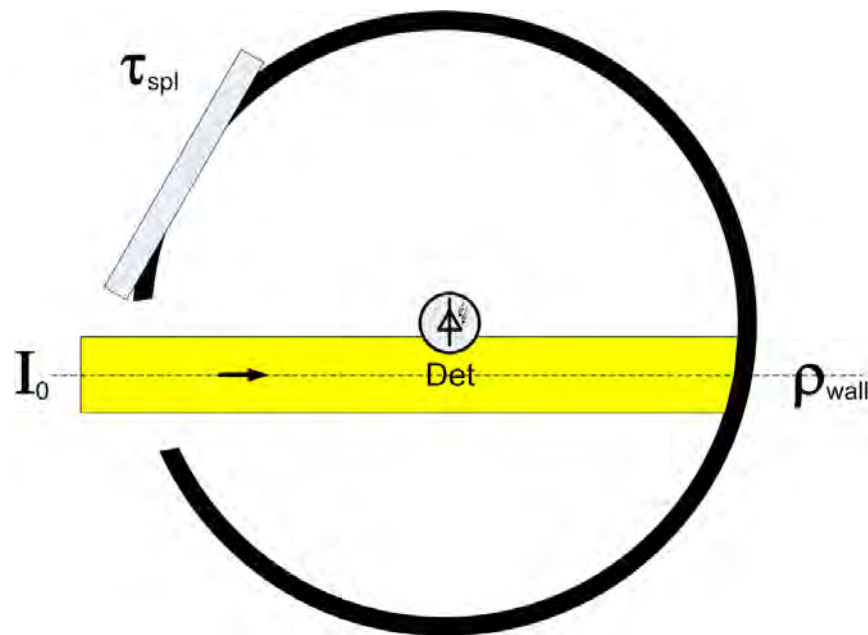
Sample Port

Entrance Port

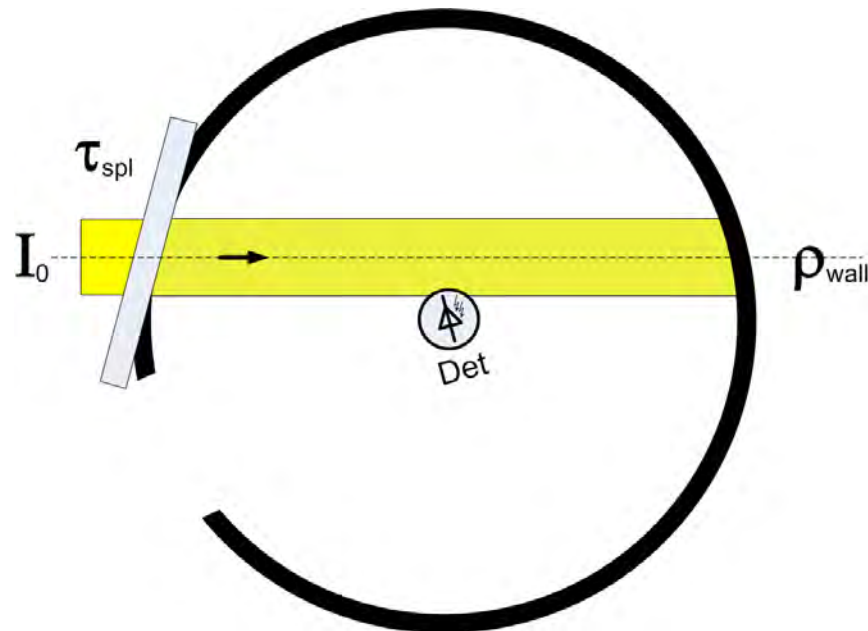
Detector Port

Reference Measurement

$$S_{\text{det,ref}} = I_0 \cdot \rho_{\text{wall}} \cdot f_{\text{sphere}}$$



Sample Measurement

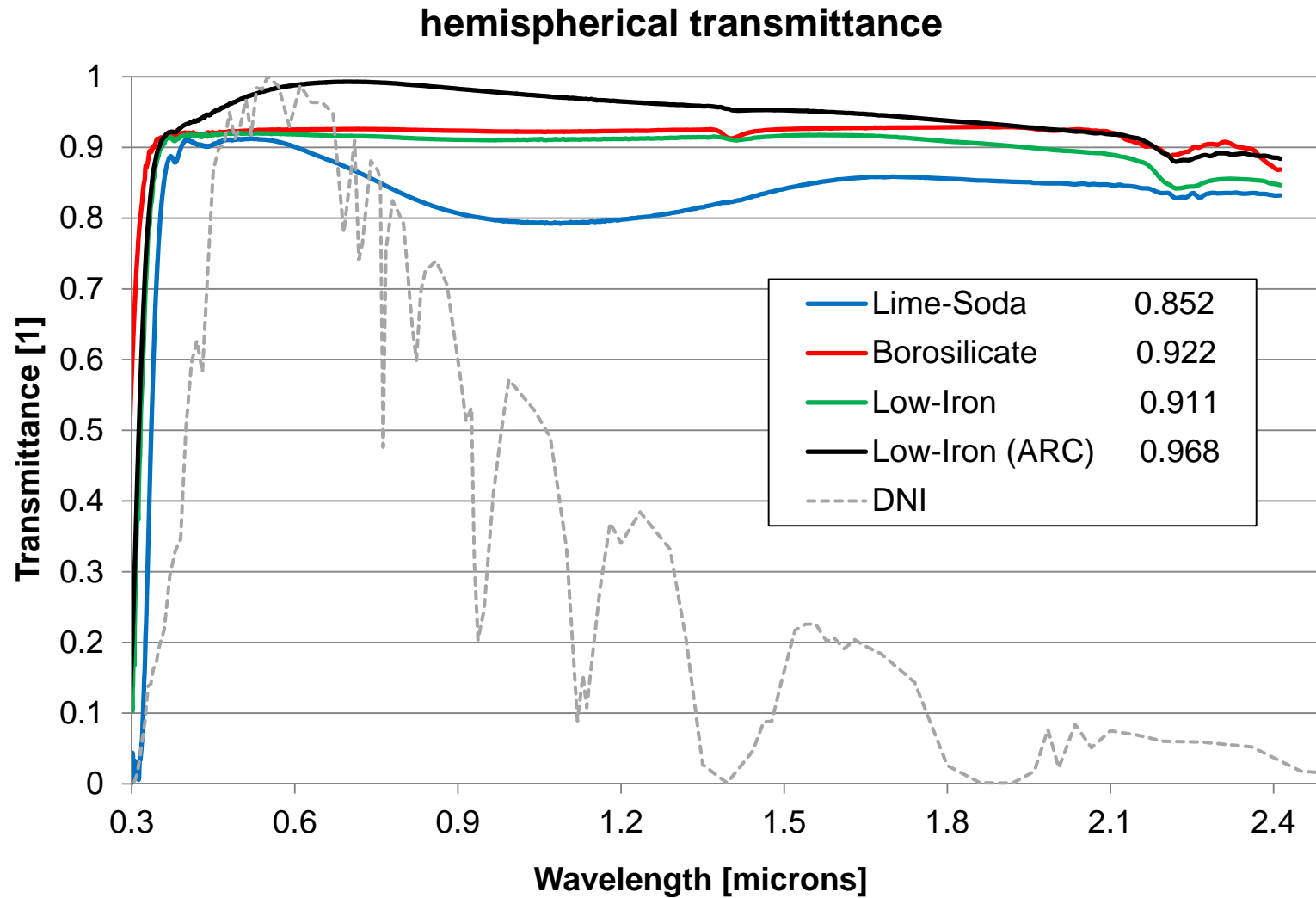


$$S_{\text{det,ref}} = I_0 \cdot \rho_{\text{wall}} \cdot f_{\text{sphere}}$$

$$S_{\text{det,spl}} = I_0 \cdot \tau_{\text{spl}} \cdot \rho_{\text{wall}} \cdot f_{\text{sphere}}$$

$$\tau_{\text{spl}} = S_{\text{det,spl}} / S_{\text{det,ref}}$$

FTIR Spectroscopy using Integrating Spheres



Thank you for your attention!

