dRICH radiator gas activities

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and Trieste technicians:

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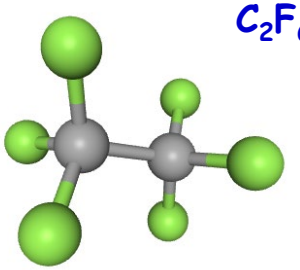
Contributions from INFN Ferrara

External contributions from:

- CERN-EP-DT-FS Gas Team
- Liberec Technical University
- Belgrade Institute of General and Physical Chemistry

dRICH gas system activities

Study of the Radiator gas properties



C_2F_6 molecular weight: 138.01 g/mol

boiling point: -78.1 °C

melting point: -100.6 °C

density: 5.734 kg/m³ at 24 °C

density: 16.08 kg/m³ at -78 °C

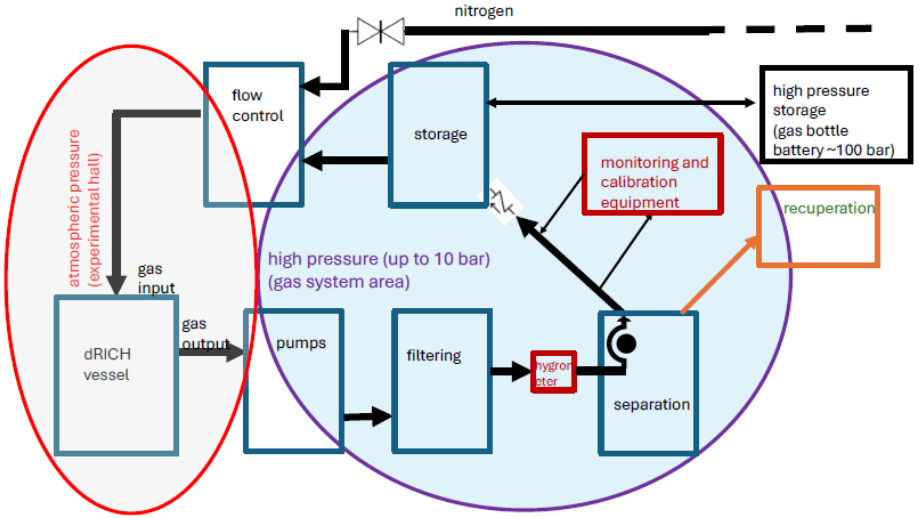
C_2F_6 scintillation characteristics, C_2F_6 refractive index

C_2F_6 molecular diameter, zeolites or membranes filtering

C_2F_6 chemical properties and interactions with materials

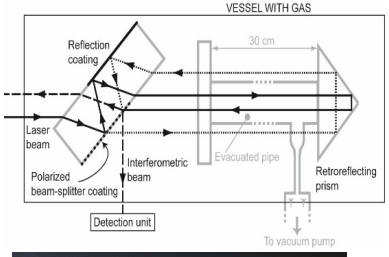
Thermal effects, condensation/evaporation in mixtures

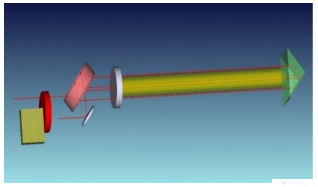
Gas system design and prototyping



Radiator gas monitoring

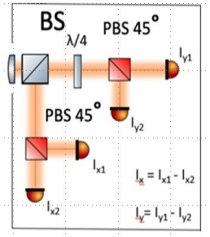
Interferometer system (bachelor thesis)

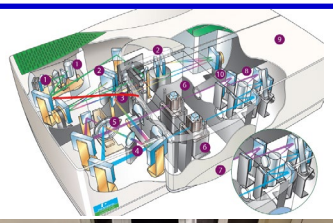


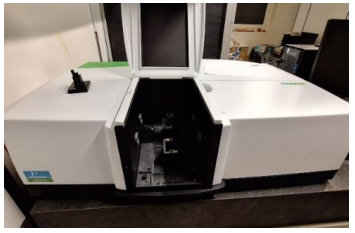


$$I = I_1 + I_2 + 2\sqrt{I_1 I_2}\,\Delta\phi(t)$$

$$\Delta\phi(t) = \left(2\pi\ell/\lambda\right)\Delta n(t)$$

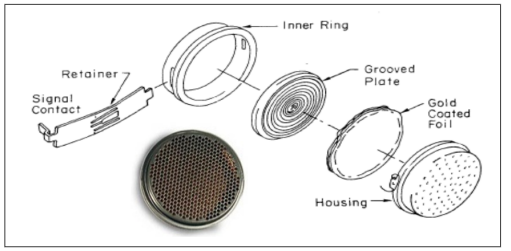






Spectrophotometer

Polaroid Capacitative transducer components



Capacitative 350V activation/ bias → rapid response
37mm diameter determines 50 kHz dominant frequency: can operate over wide pressure range (50mbar →>35 bar…)

Sonar System