LKB

HELION 02
International Workshop on Polarized 3He Beams and Gas Targets and Their Applications

PHIL (FP5)

Gas production results

Initial measurements with 20 cm OP cell:
M_{OP} ~ 30 to 35% M_{acc} ~ 25 to 30%

final dose ~ 50 to 100 standard cm^3 of gas (30 min)
~ 15 to 25 eq. cm^3 of fully polarised gas

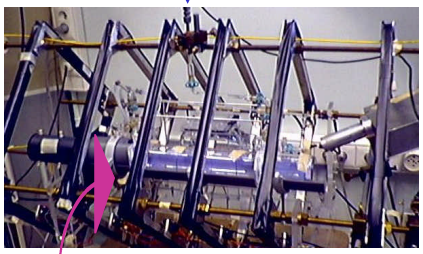
Current measurements with 50 cm OP cell (2W laser):
M_{OP} (no flow) ~ 60% at 1.3 mbar
M_{OP} (2scc/min flow) ~ 45% at 3 mbar → **M_{acc} ~ 40%**

T_1 ~ 10 h (fused silica storage cell) → constant M_{acc} for ~ 1 h
Reliability : >1 year operation of 2 devices
~ 2 h compressor servicing every ~ 50 h of operation

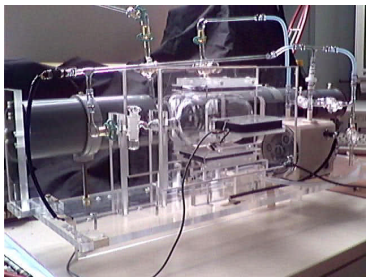
Prospects:
with 5W laser + higher compressor pumping speed
M_{acc} > 50% at 3scc/min? - M_{acc} ~ 40% at 5scc/min?

Cost of components:
~ 50k€ without ^{3}He, including 2W laser

^{3}He gas inlet, controlled flow rate



Optical polarimeter: polarisation M_{OP} in **OP cell** (plasma discharge on)



NMR measurement of M_{acc} in **0.5 litre storage cell** (FID after 5° tipping, 28 kHz)