Radon exhalation in zeolite and Cu getter

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We measured the radon exhalation from two Ar purifiers, zeolite and Cu getter

	zeolite	Cu getter
Mass	71.5 g	76.5 g
^{226}Ra activity	20 Bq / kg	2 Bq /kg

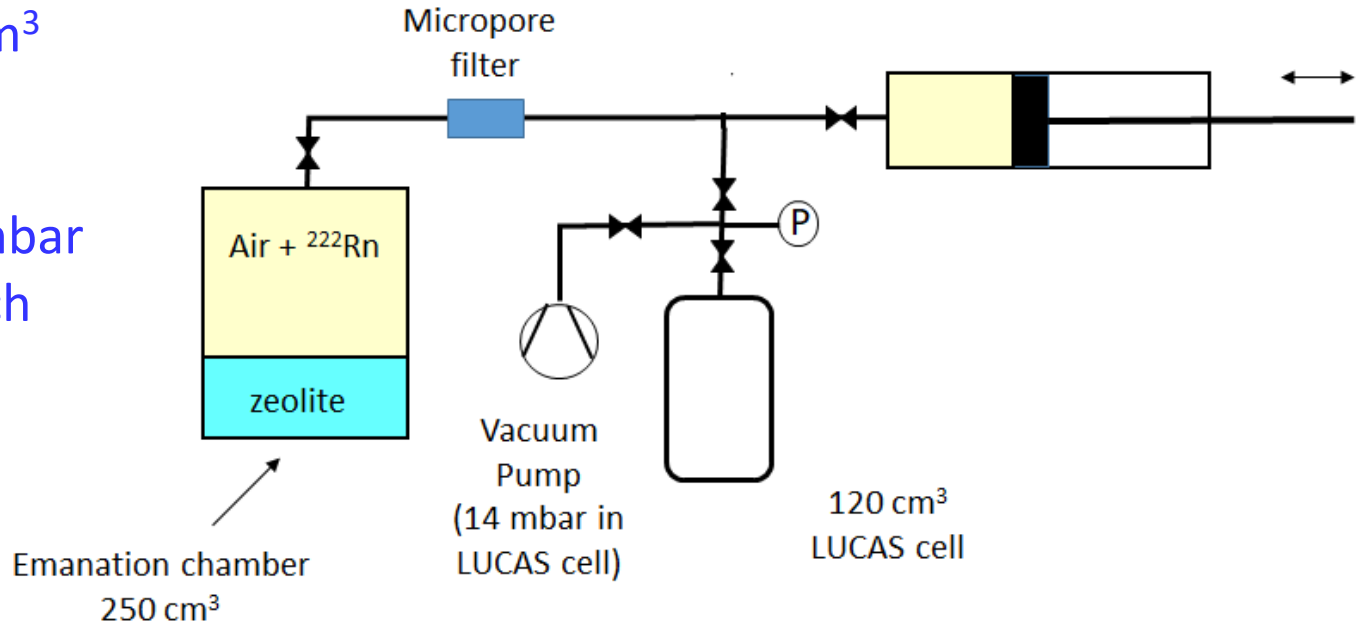
Radon extraction setup

- The radon is extracted from an emanation chamber with a syringe and introduced into a commercial Lucas cell.

- Volume of Lucas cell is 120 cm^3 and the background ~ 20 Bq/m^3

- Emanation chamber is a 250 cm^3 stainless steel.

- Lucas cell is evacuated @ 14 mbar before Rn introduction up to reach 1 bar



Radon exhalation in air

@ 20 ° C

	Zeolite	Cu Getter
^{226}Ra in emanation chamber	1.43 Bq	0.15 Bq
Rn concentration in the gas from Lucas cell	40 ± 12 Bq/m^3	20 ±7 Bq/m^3
Rn activity in emanation chamber	0.010 ± 0.003 Bq	0.005 ±0.001 Bq
Ra/Rn ration in emanation chamber	0.9 to 0.5 %	4.0 to 2,6 %

Important Rn exhalation from Cu getter

Radon exhalation in Ar

Cu getter

Cu getter	20 ° C	- 30 ° C
^{226}Ra in emanation chamber	0.15 Bq	0.15 Bq
Rn concentration in the gas from Lucas cell	26 ± 18 Bq/m^3	35 ± 10 Bq/m^3
Rn activity in emanation chamber	0.006 ± 0.004 Bq	0.009 ± 0.002 Bq
Ra/Rn ration in emanation chamber	6.7 ± 1.3 %	7.3 ± 4.7 %

Acquisition problem : big error bar

This measurement must be repeated

Remark : Range of alpha particles is larger in Ar than in air
=> higher counting rate expected in Ar from Lucas cell

Conclusions

- Measurement at 20 ° C must be repeated in order to understand the effect of exhalation as function of temperature (- 30 ° C)

- Next measurements in August : emanation @ - 50° C and - 80° C

- We need larger sample of Cu getter to increase our sensitivity.