

# *Detector and Conventional Facilities Materials Assay Results: Filter, APA & Others*

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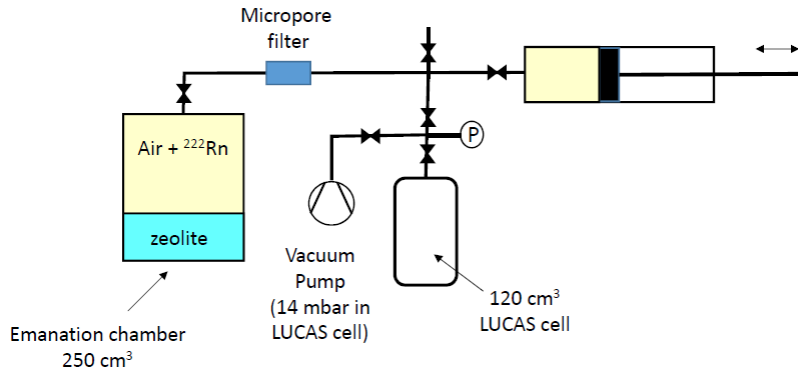


DUNE Backgrounds Mitigation Strategies Workshop

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# Internal Backgrounds: Radon Emanation into LAr from Filter Materials

Jose Busto (CPPM Marseille)



	Zeolite	Cu Getter
Mass	71.5 g (20Bq/kg)	76.5g (2Bq/kg)
Ra in emanation chamber	1.44 Bq	0.153 Bq
Rn in Lucas cell	40.1 Bq/m <sup>3</sup>	20 Bq/m <sup>3</sup>
Rn in emanation chamber	0.01 Bq/m <sup>3</sup>	0.0052 Bq/m <sup>3</sup>
Ration Rn in air chamber	0.7 %	3.4 %

=> 0.55 mHz/kg alpha-ray activity in our LAr corresponding to a Rn-222 level of only 0.14 mBq/kg

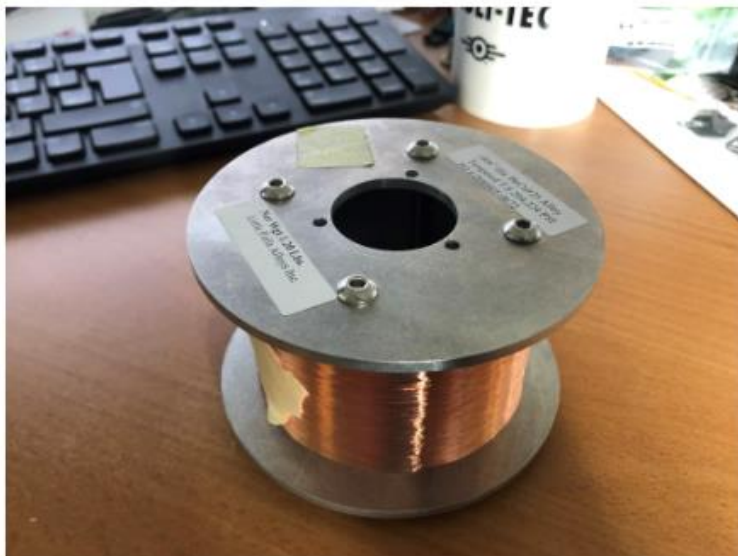
This would already meet our Recommendation!

=> **0.1 mBq/kg goal** of Rn-222 in LAr seems feasible (especially with further cold suppression)!

Plans for unique cold emanation measurement into Ar

⇒ Asks for extensive emanation assays of “2<sup>nd</sup> order” components (e.g. large cables @ Sheffield?)

# DUNE APA Wire (BeCu)



- HPGe testing at Boulby BUGS Facility.
- An empty spool of the same design used to perform blank subtraction.
- 567g of BeCu wire.
- Thanks to Paul Scovell & Emma Meehan from Boulby Lab.

<b>Wire Mass</b>		
Wire diameter	0.1524	mm (0.06")
Wire length	27	km per APA
#APAs	150	APA per 10kt module
<b>Total mass</b>	<b>616.9</b>	<b>kg per 10kt module</b>

<b>Wire Composition (Tempered, 25 Alloy - C17200 ?)</b>		
<a href="http://www.lfa-wire.com/tempered-alloy-25_c17200.htm">http://www.lfa-wire.com/tempered-alloy-25_c17200.htm</a>		
Cu	98.1	percent by weight
Be	1.9	percent by weight
Density	8.35	g/cm <sup>3</sup>

**Dave Waters**

