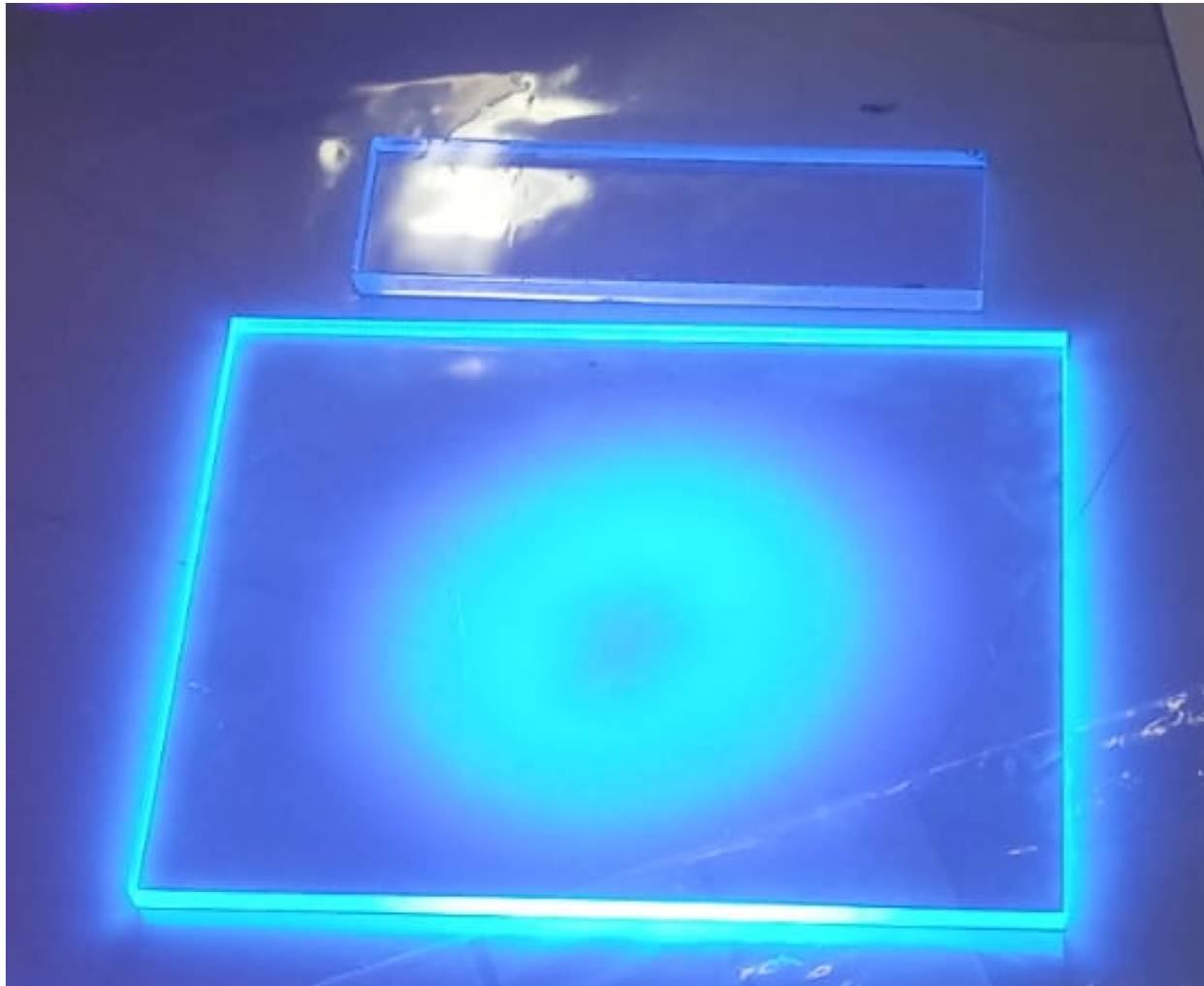
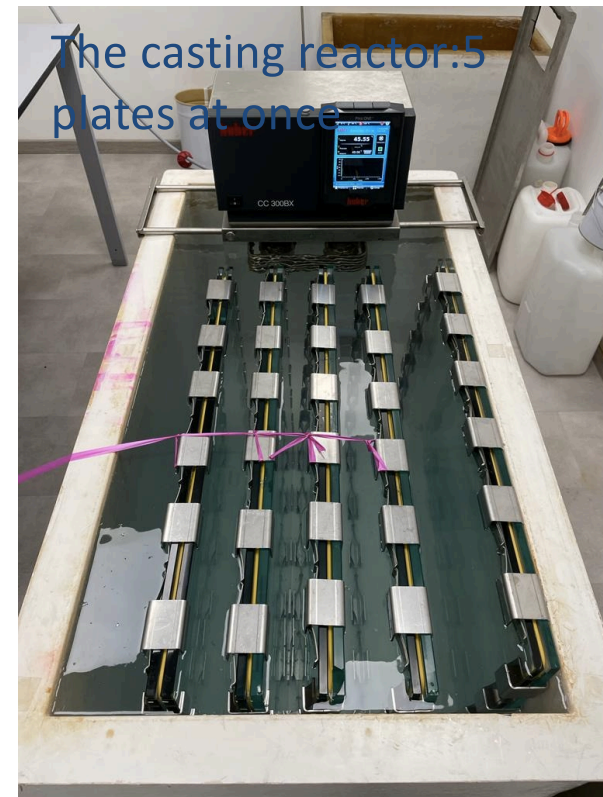
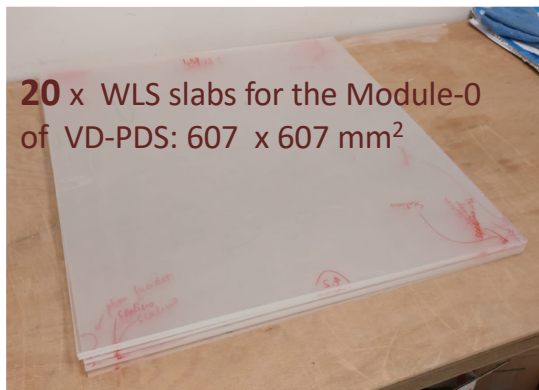
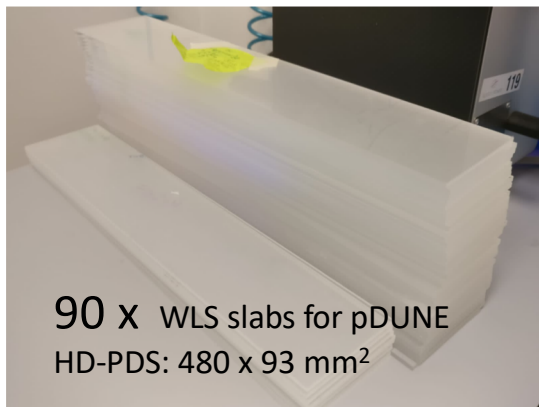


Q1: WLS Lightguides

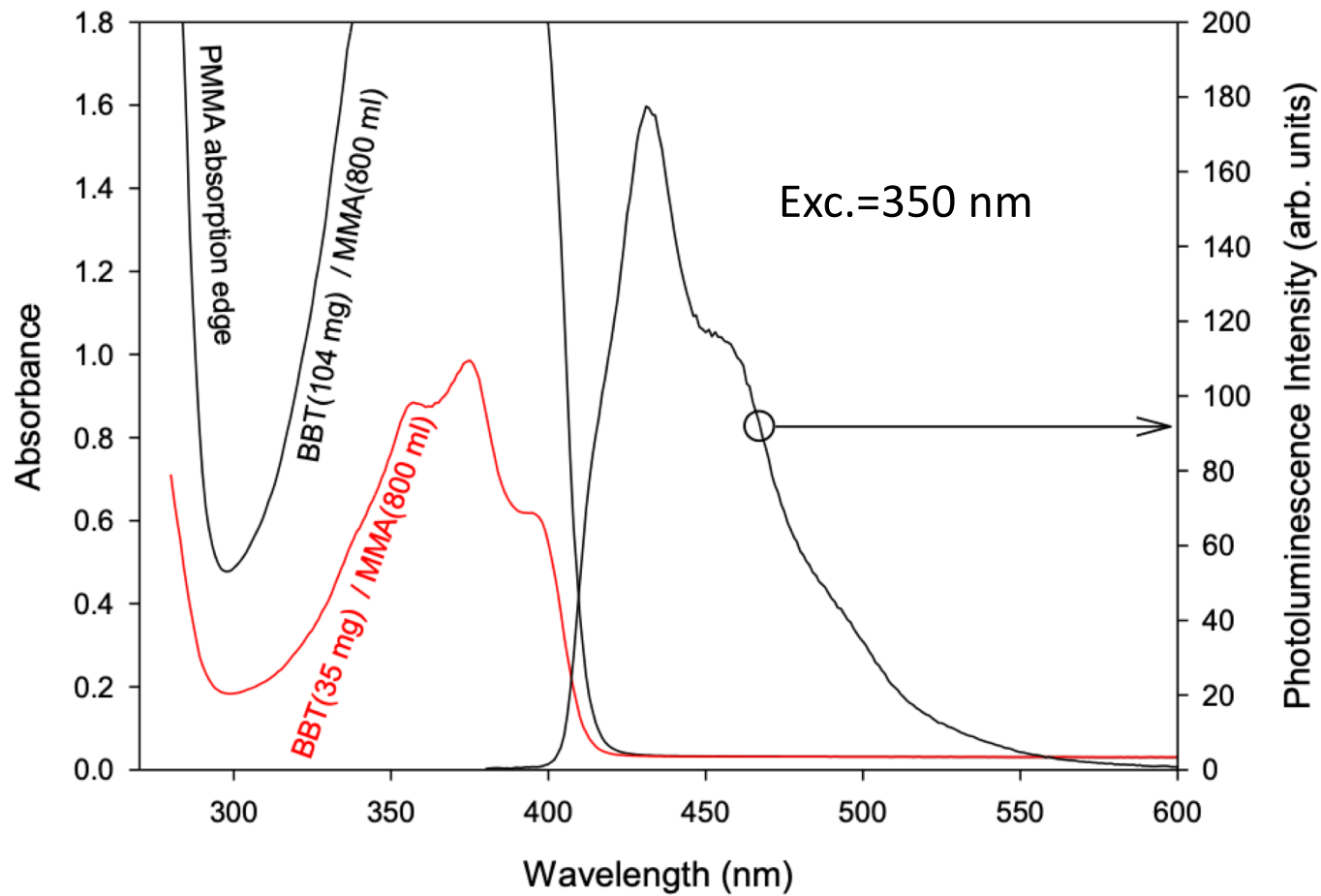


WLS manufacturing capabilities

- Manufacturer (Glass to Power Co.): Former start up of Uni MiB, now quoted at Eurostock: <https://www.glasstopower.com/>
- Core business: PV windows. PMMA based on QD embedded (Absorb white emits IR), R&D Department at UniMib, skills and know-how in light down-shifters compounds. Collaboration since 2019.
- Casting capability: 6600 units in ~one year=220 working days →
- Two casting reactors ~ 500 x 600 mm: five plate 500 x 600 mm/day →
25 x 480 x 93 mm² plates/day

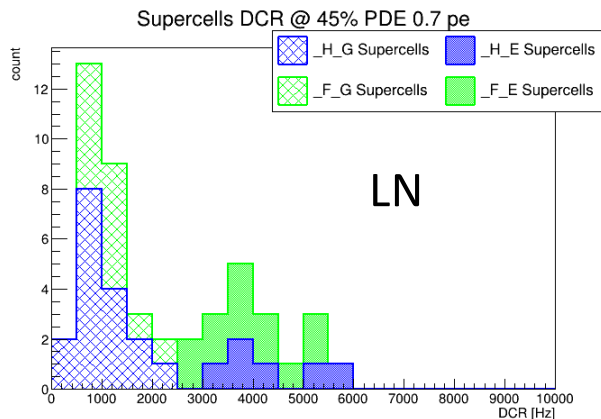


Absorption and PL of G2P WLS sample

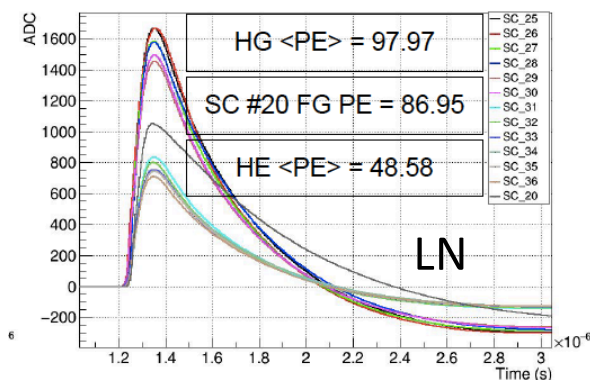


WLS features & Performances

- **Superior Cryoresilience:** No cracks or failures in cooling/warming cycle at rate of 3-4 mm/sec of the 80 + prototype plates
- **Stress tests:** Prototype plates underwent 15-20 thermal cycles: no failures/deformations
- **Superior light guiding surfaces as casted**
- **Laser cut and edge polishing** procedures to cut out the casted plates in tiles defined and validated.
- **Superior DCR and LY**



3rd run of SC tests: 6HG+6HE (+ 1FG from run 2)

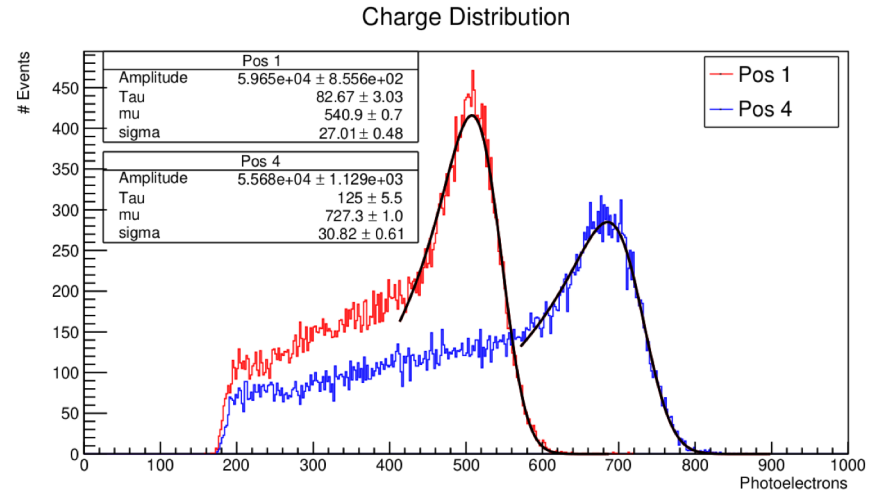
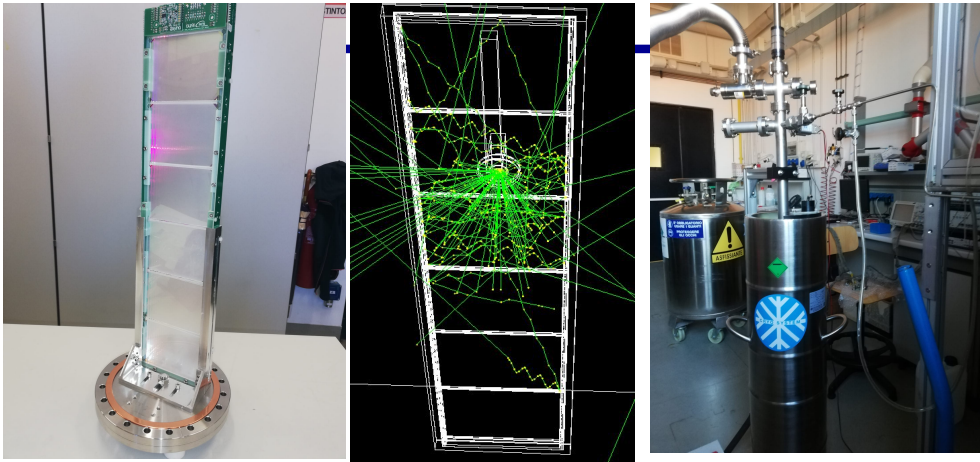


Assessment of radiocontaminants (γ -ray spectrometry of 800 g plate measured over 19 days) in a plate casted and exposed to air over several months:

- Ra-226 <math><160 \mu\text{Bq/kg}</math> (from Bi-214)
- K-40 <math><1.7 \text{ mBq/kg}</math>
- Cs-137 <math><44 \text{ mBq/kg}</math>
- U-238 and Th-232 concentration are $\leq 15 \text{ ppT}$ (ICPMS)

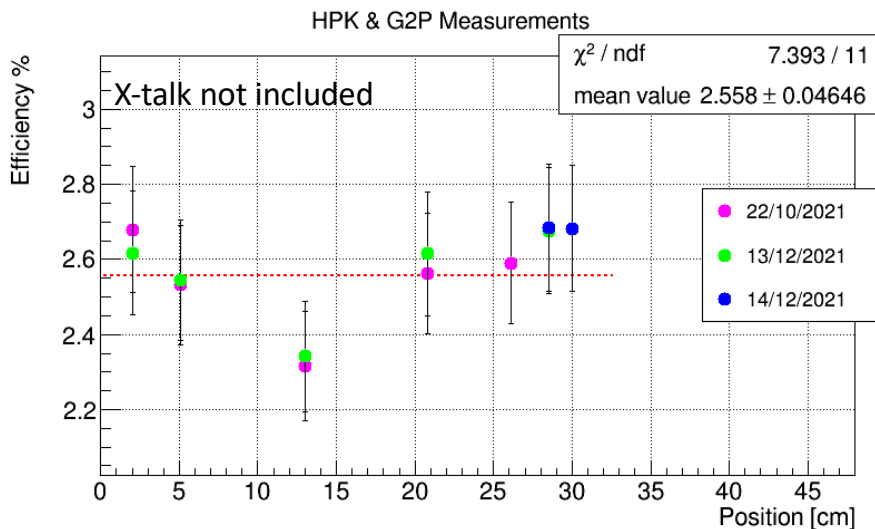
To be compared with Ar-39 (1 Bq/kg) and FR4 (O(10mBq/kg))

XA-PDE measurements



Method: z-scanning of the whole cell (~ 2 Sr)
with an ^{241}Am exposed α source
(JINST 16 (2021)09027).

$$\epsilon = \frac{4\pi \cdot \alpha \text{ peak(ADC)}}{\text{s.ph.e.(ADC)} \cdot f_{int} \cdot LY_{\text{LAr}} \cdot En_{\alpha} \cdot q_{\alpha} \cdot \Omega}$$



No correction for LAr purity applied.
Expected: +2% to +5%

	SiPM PDE	XA PDE MiB Xtalk corr.	XA PDE CIEMAT Xtalk corr.
HPK & G2P	50%	2.2 (0.15)	2.51 (0.21)
FBK & G2P	50%	1.9 (0.14)	
FBK & Eljen	50%	1.7 (0.14)	1.56 (0.12)