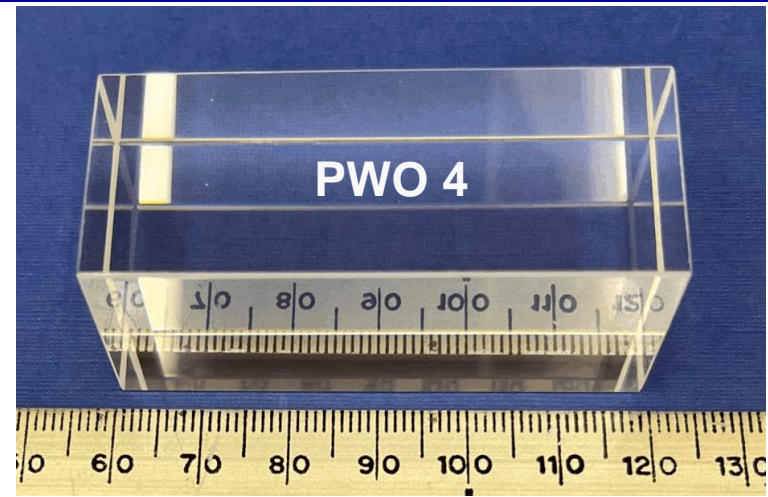
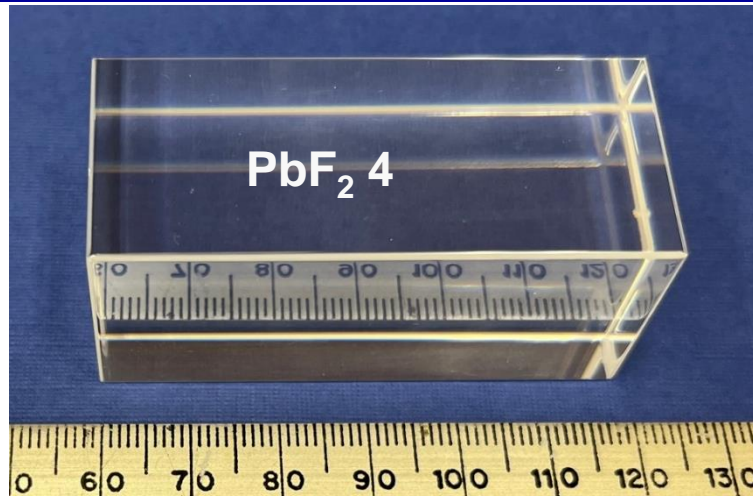


CalVision PbF₂ and PWO Crystals



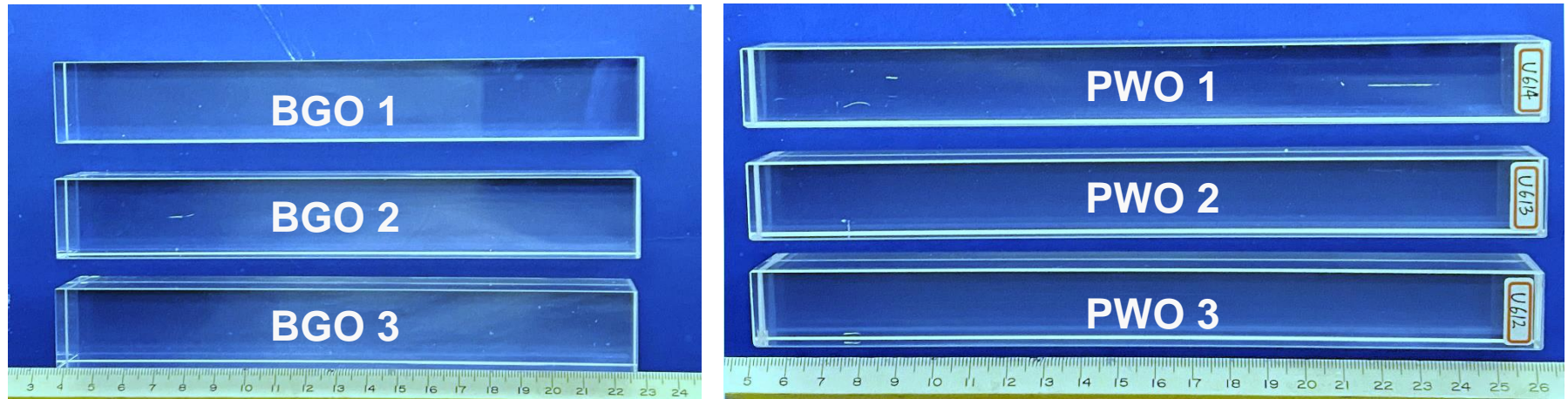
ID	Dimension (mm ³)	Qty.	Polishing
PbF ₂ -4	25x25x60	1	All faces
PWO-4	25x25x60	1	All faces

Two samples from U. Maryland received on Oct. 28, 2022

Experiments

Measured at room temperature: X-ray excited luminescence (XEL), Longitudinal/Transverse transmittance (LT/TT), Emission Weighted Longitudinal transmittance (EWLT), Pulse Height Spectra (PHS), Light Output (LO) & Decay Time (τ), Light Response Uniformity (LRU). Light Yield (LY) with Emission Weighted Quantum Efficiency (EWQE) taken out.

The March Batch of BGO and PWO Crystals



ID	Dimension (mm ³)	#	Polishing
BGO-1,2,3	25x25x180	3	All faces
PWO-1,2,3	20x20x200	3	All faces

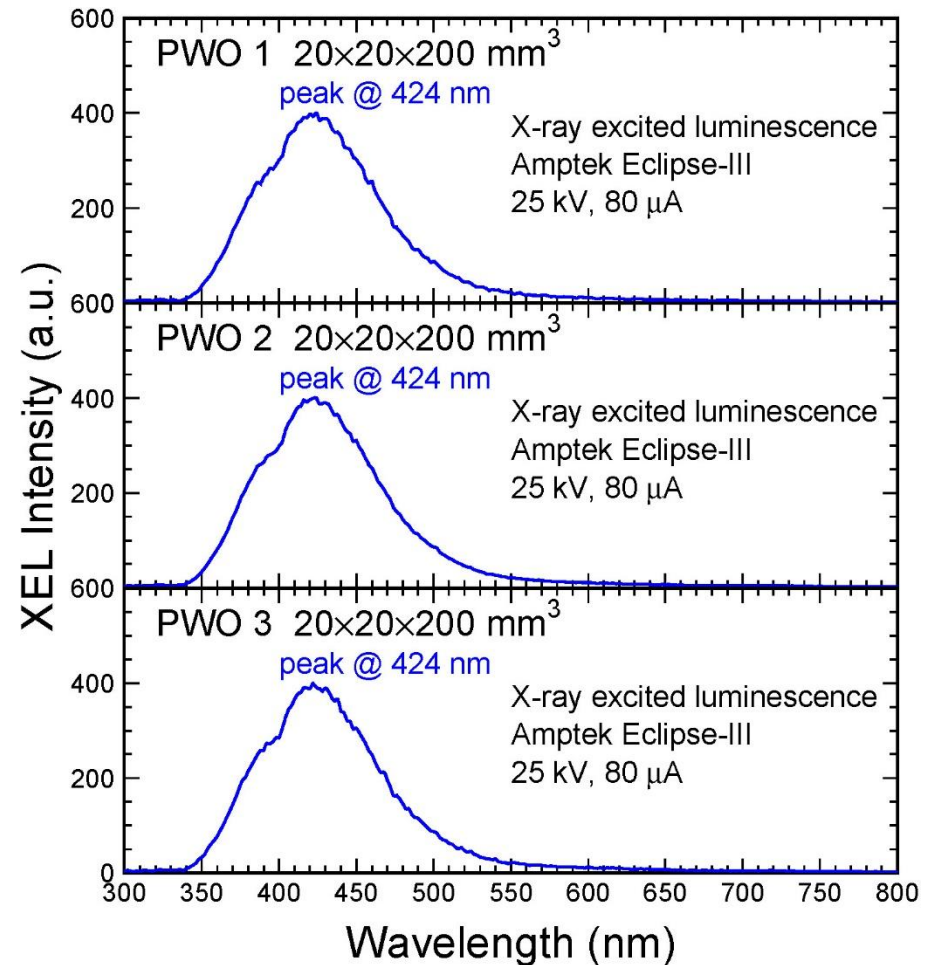
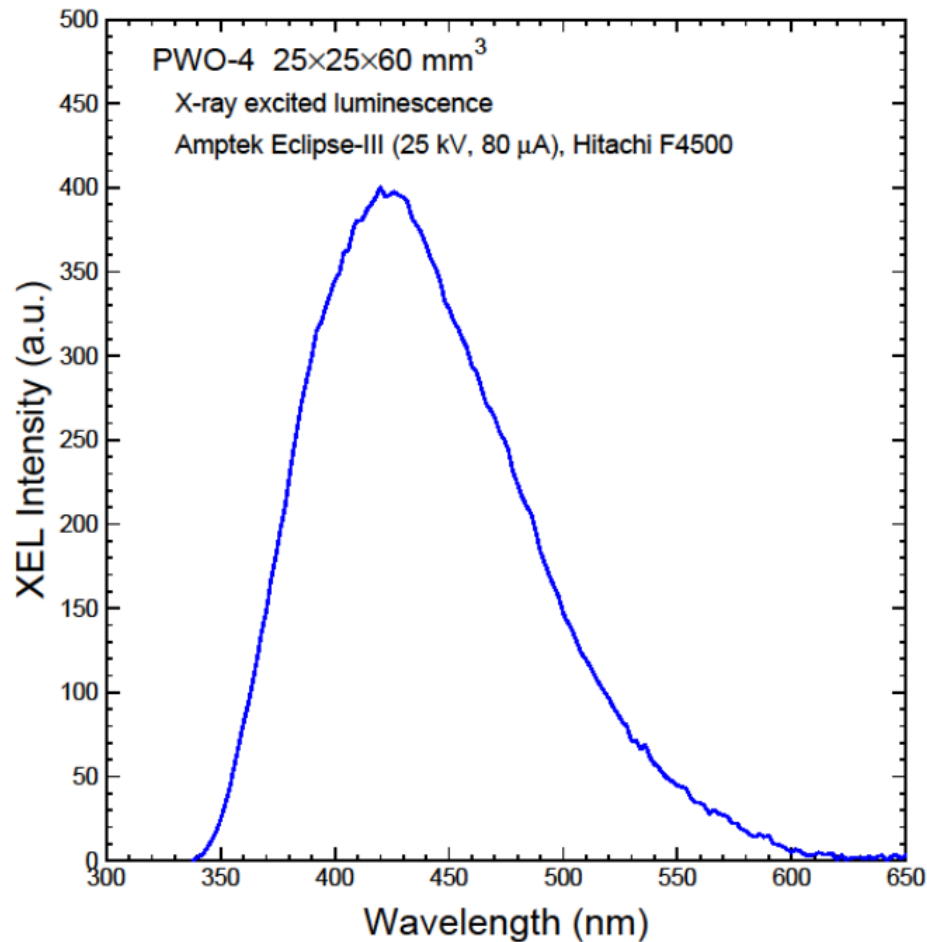
Six samples from U. Michigan received on March 2, 2022

Experiments

Measured at room temperature: X-ray excited luminescence (XEL), Longitudinal/Transverse transmittance (LT/TT), Emission Weighted Longitudinal transmittance (EWLT), Pulse Height Spectra (PHS), Light Output (LO) & Decay Time (τ), Light Response Uniformity (LRU). Light Yield (LY) with Emission Weighted Quantum Efficiency (EWQE) taken out.

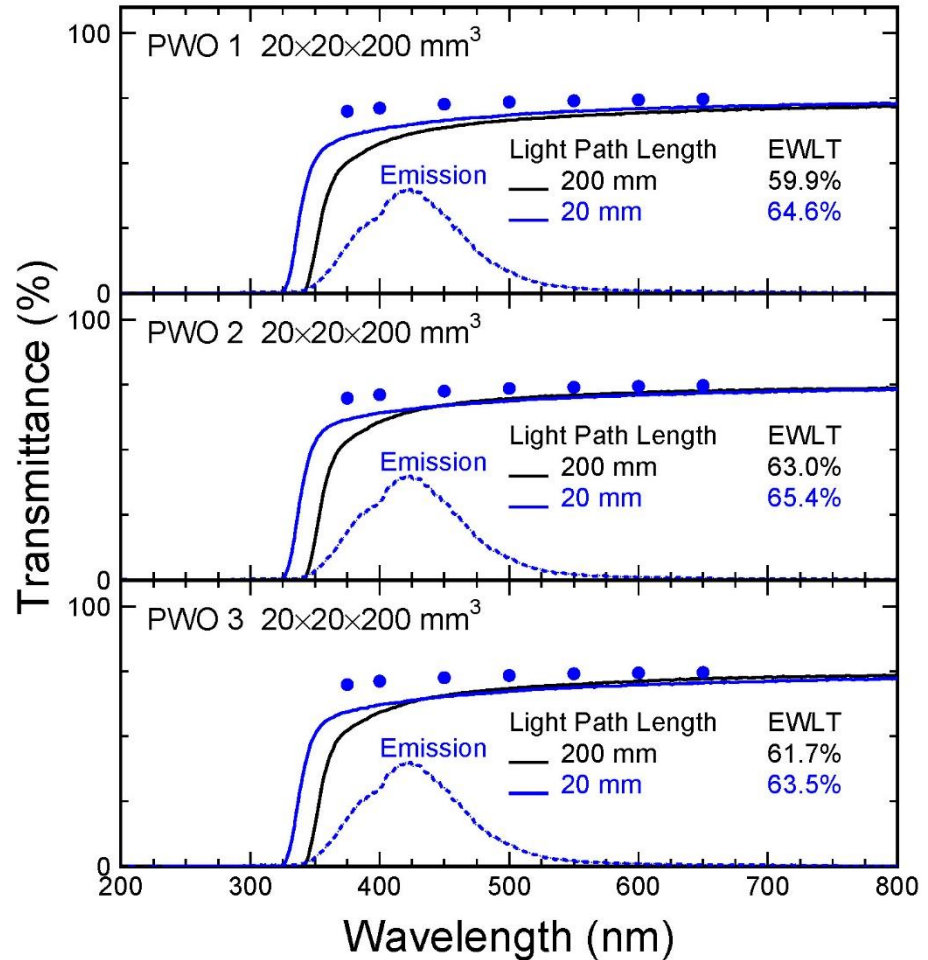
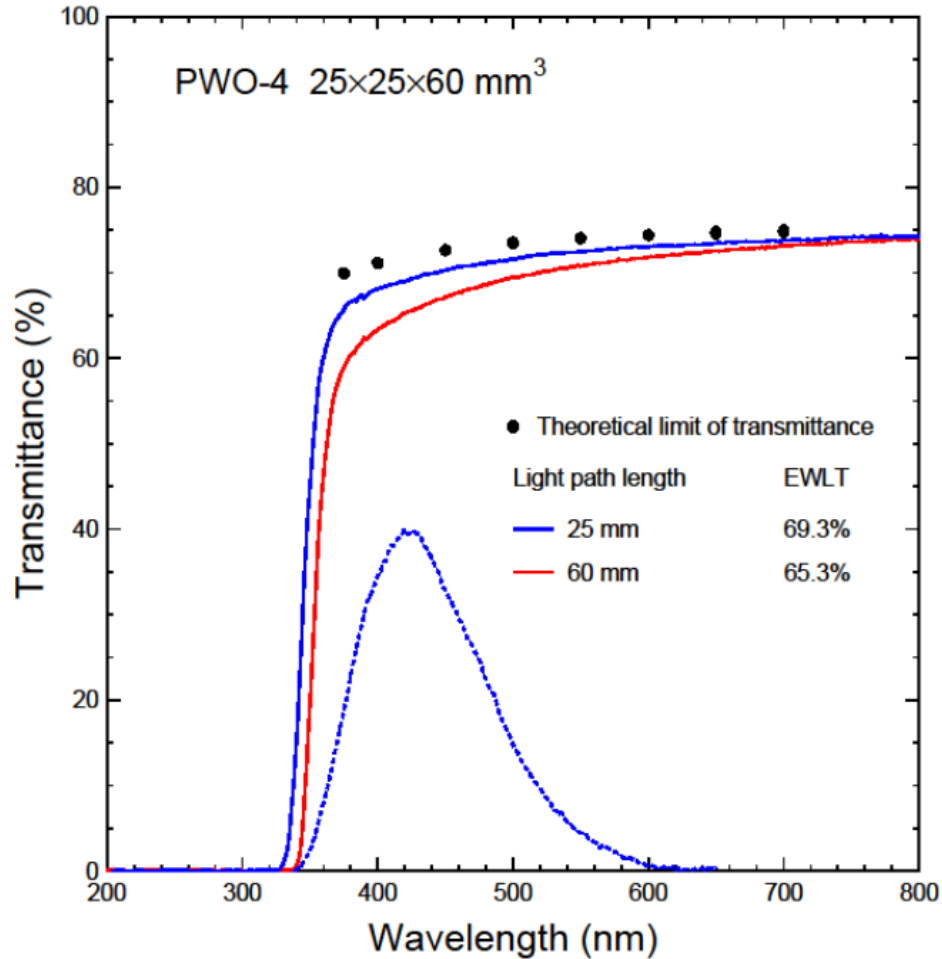
PWO X-ray Excited Emission Spectra

XEL peaked at ~ 424 nm, which is consistent with the previous batch



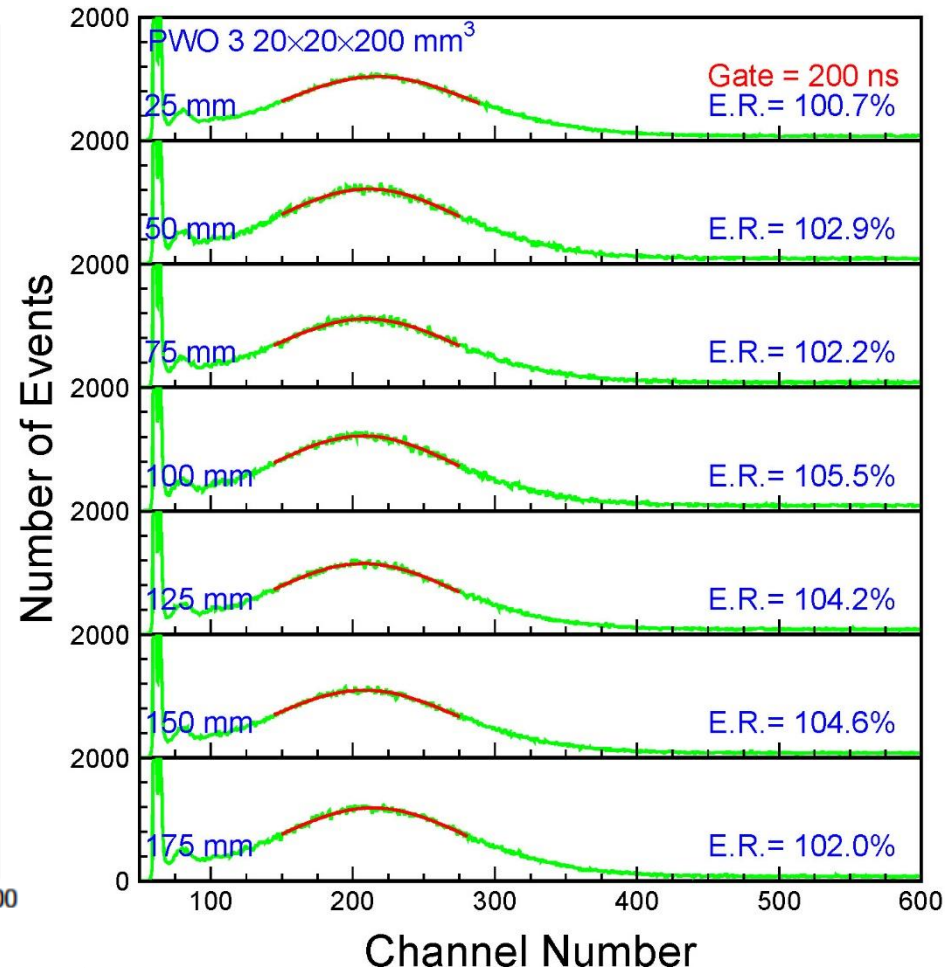
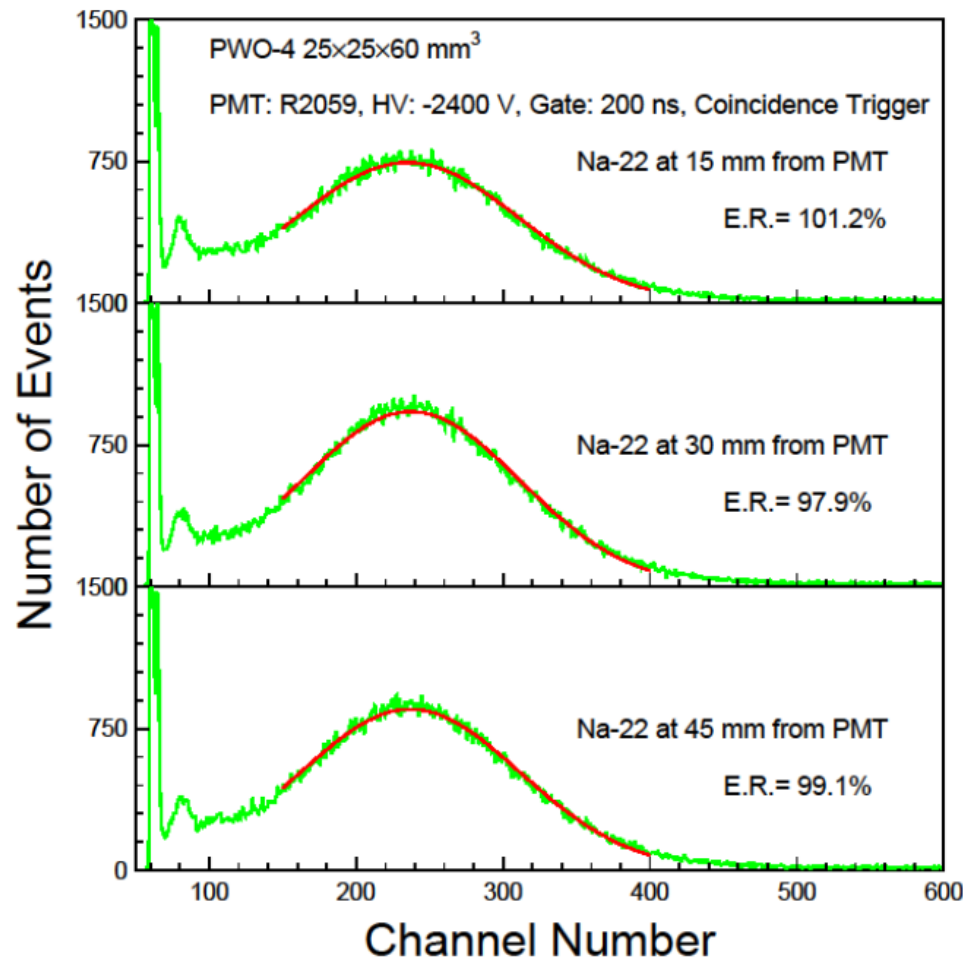
PWO Longitudinal Transmittance and EWLT

LT and EWLT are better than the previous batch



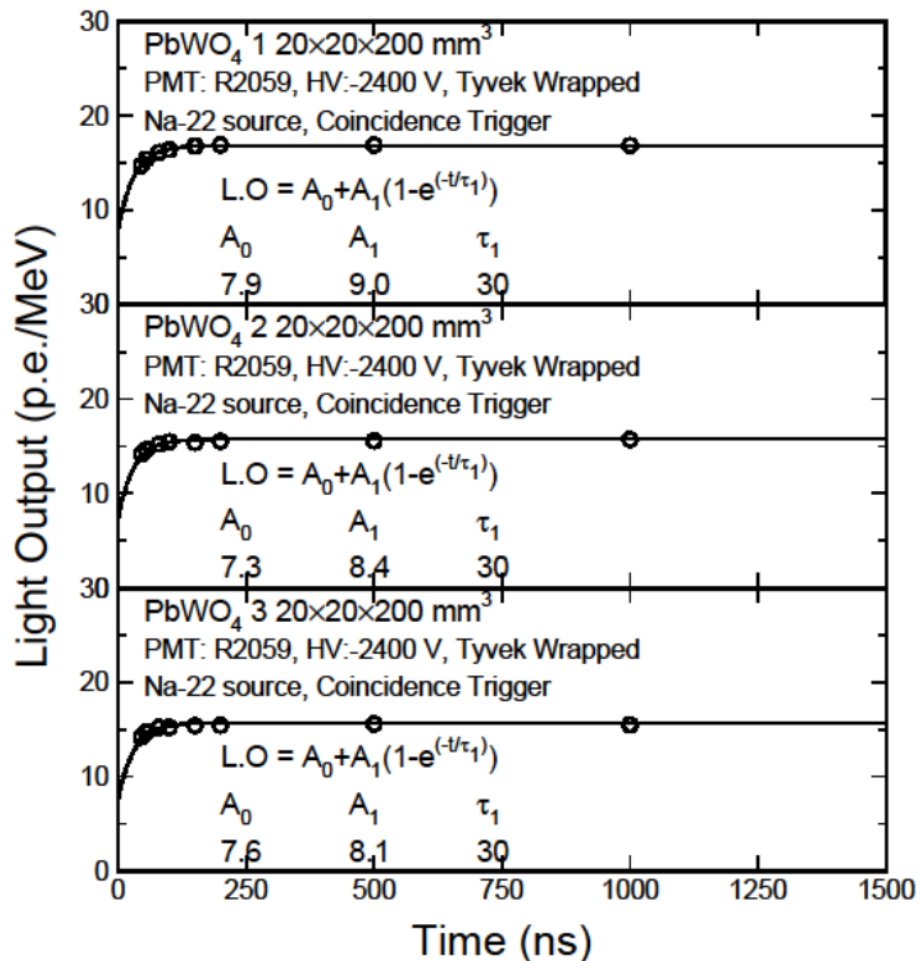
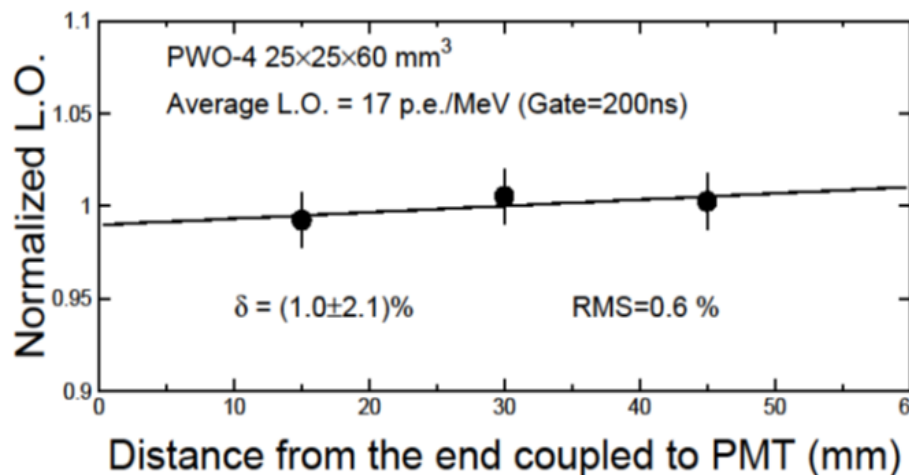
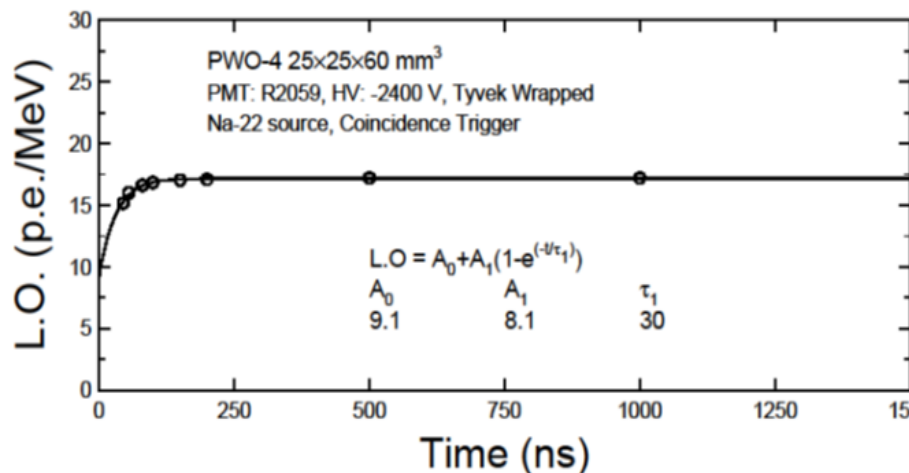
PWO Pulse Height Spectra

Na-22 resolution is better than the previous batch



PWO Light Output, LRU and Decay Time

LO and decay time are consistent with the previous batch
Excellent LRU of 0.6% is due to its short length



PWO Summary: EWLT, LO, ER and LRU

LO & ER: Average of 7 points with 200 ns gate

ID	Dimension (mm)	EWLT (%)	Light Output (p.e./MeV)	Energy Resolution (%)	Light Response Uniformity (%)
PWO-1	20x20x200	59.9	15	101.4	5.1
PWO-2	20x20x200	63.0	14	107.2	4.5
PWO-3	20x20x200	61.7	15	103.2	2.6
Ave		61.5	15	103.9	4.1
rms (%)		2.1	3.9	2.4	26
PWO-4	25x25x60	65.3	17	99.4	0.6

Because of its short length the sample PWO-4 is consistent with or better than previous batch

PbF₂ Transmittance Spectra

TT along 25 mm is consistent with 14 mm cube along three directions
Consistent TT observed at three longitudinal locations and three directions
Discrepancy between TT and the theoretical limit is due to slightly hygroscopic surface

