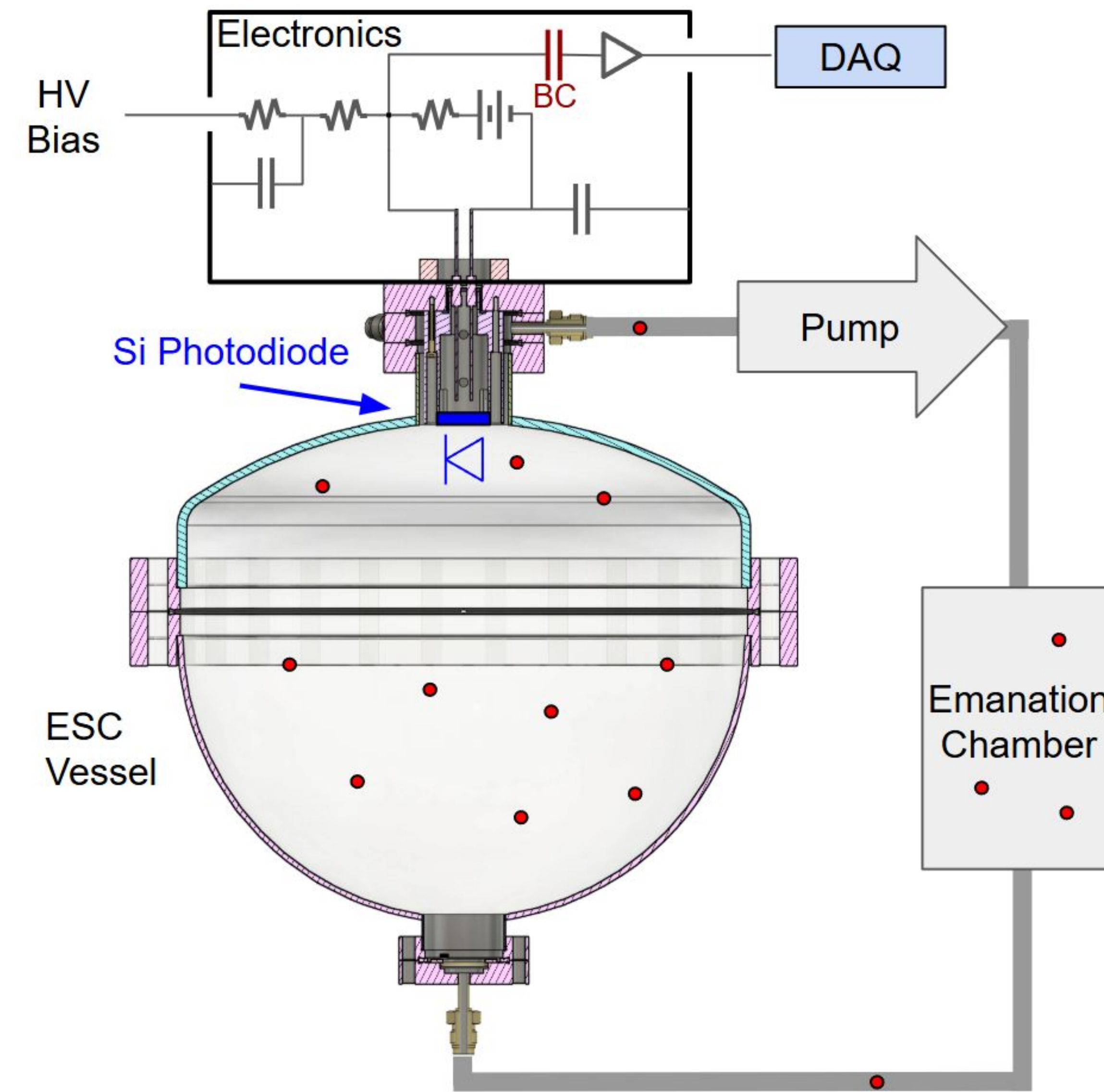
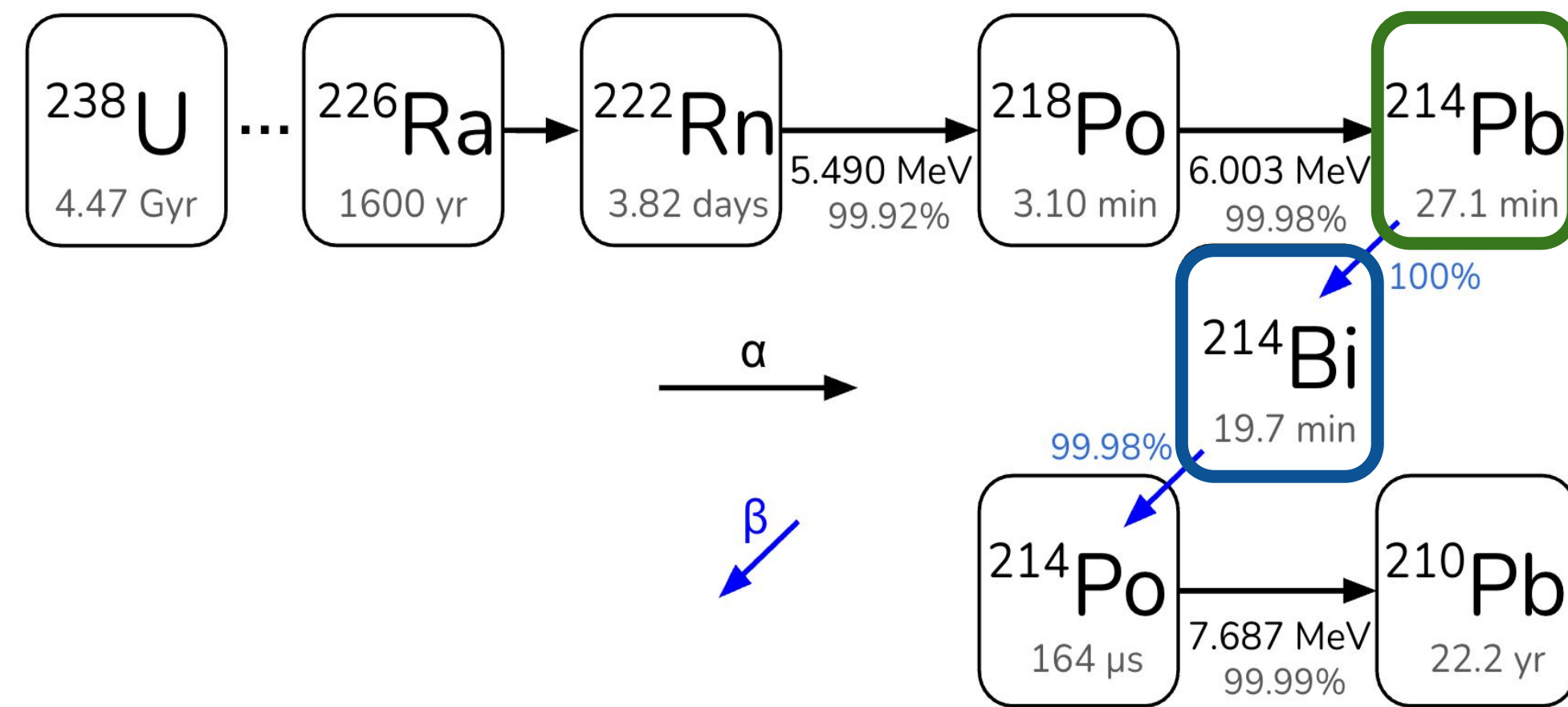
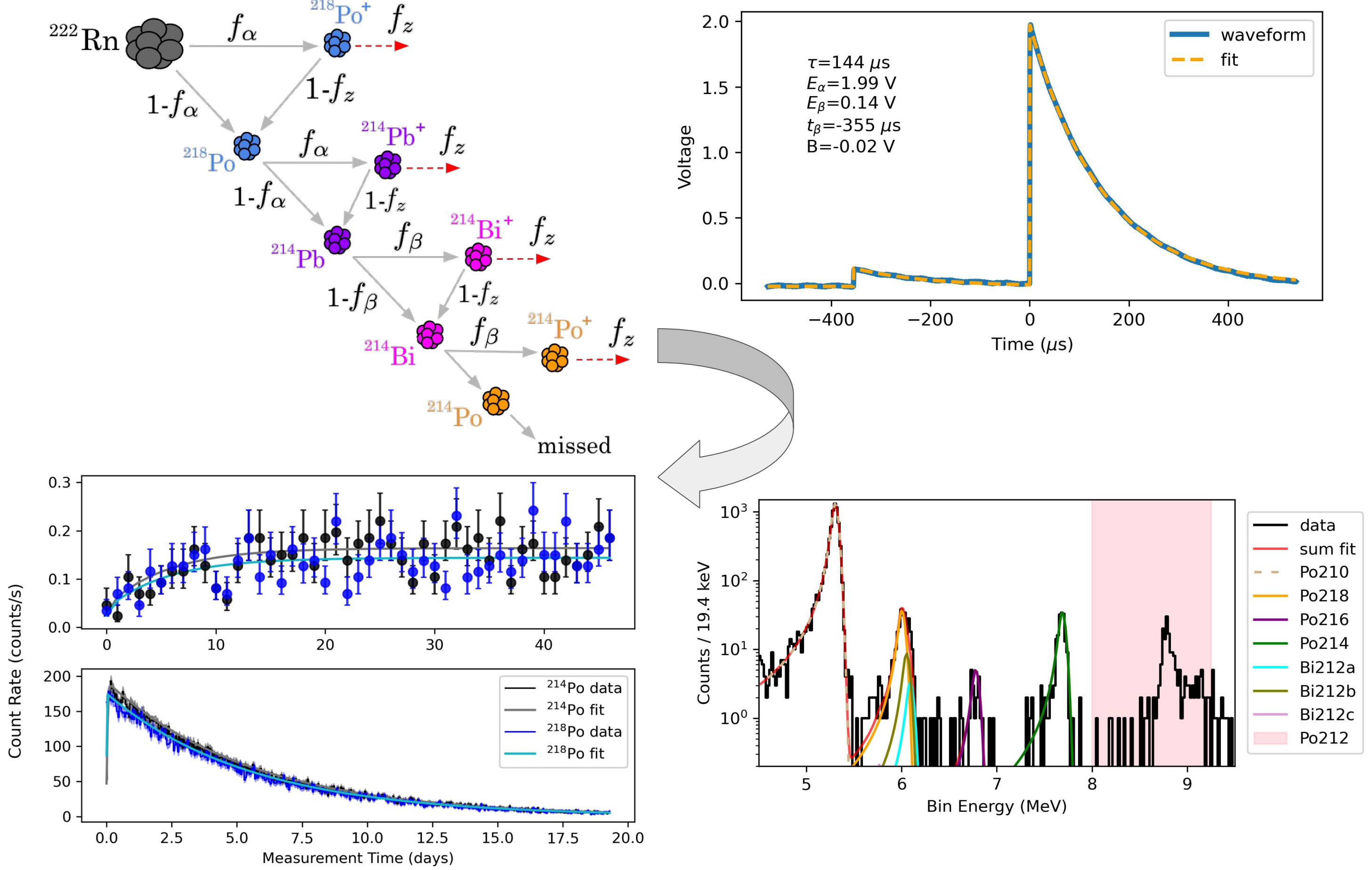


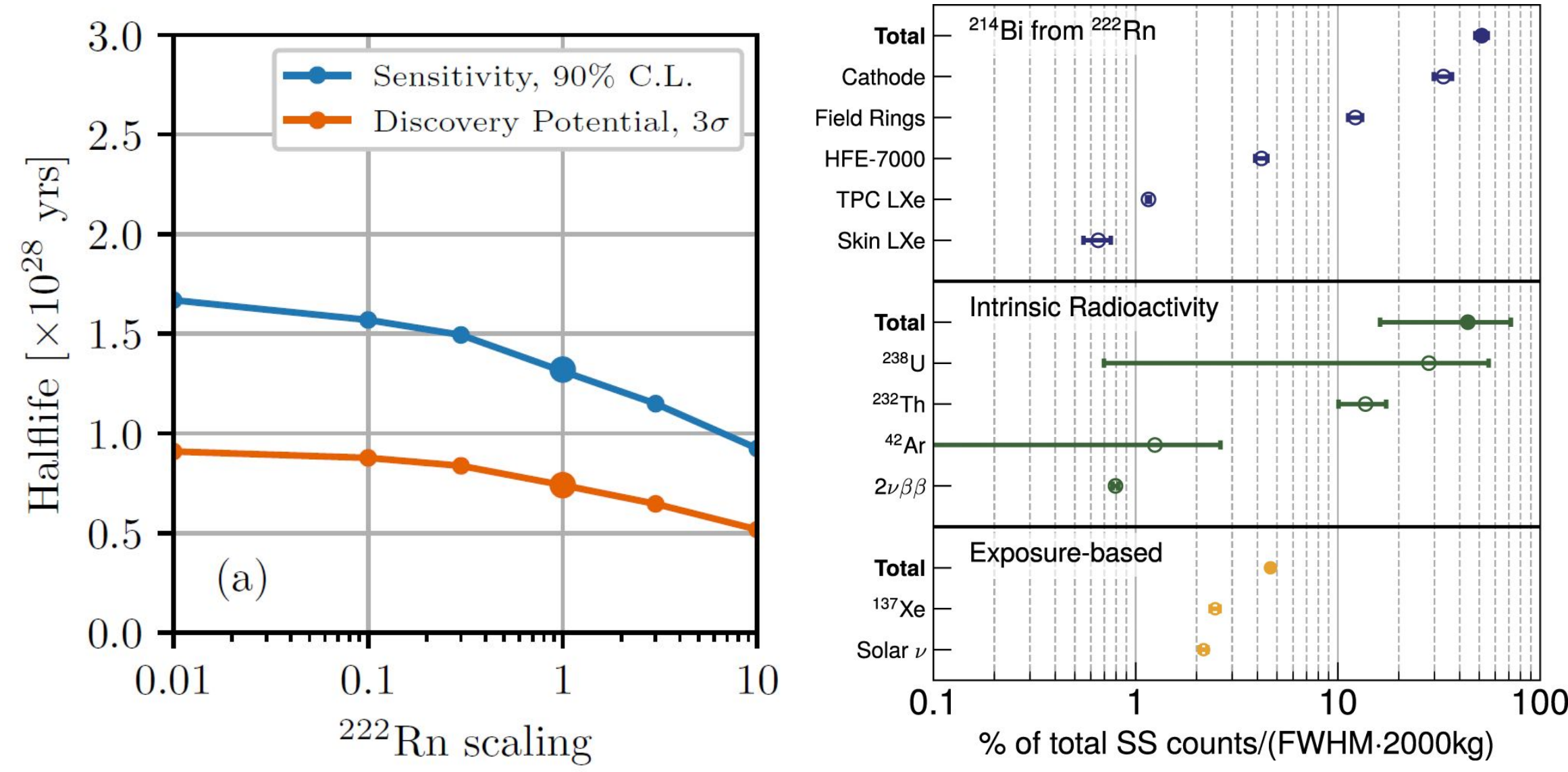
$^{222}\text{Rn}$  originates from  $^{238}\text{U}$ , emanation into the LXe system where it creates backgrounds  
 $^{214}\text{Pb}$  for WIMP  $^{214}\text{Bi}$  for OvBB (in  $^{136}\text{Xe}$ )



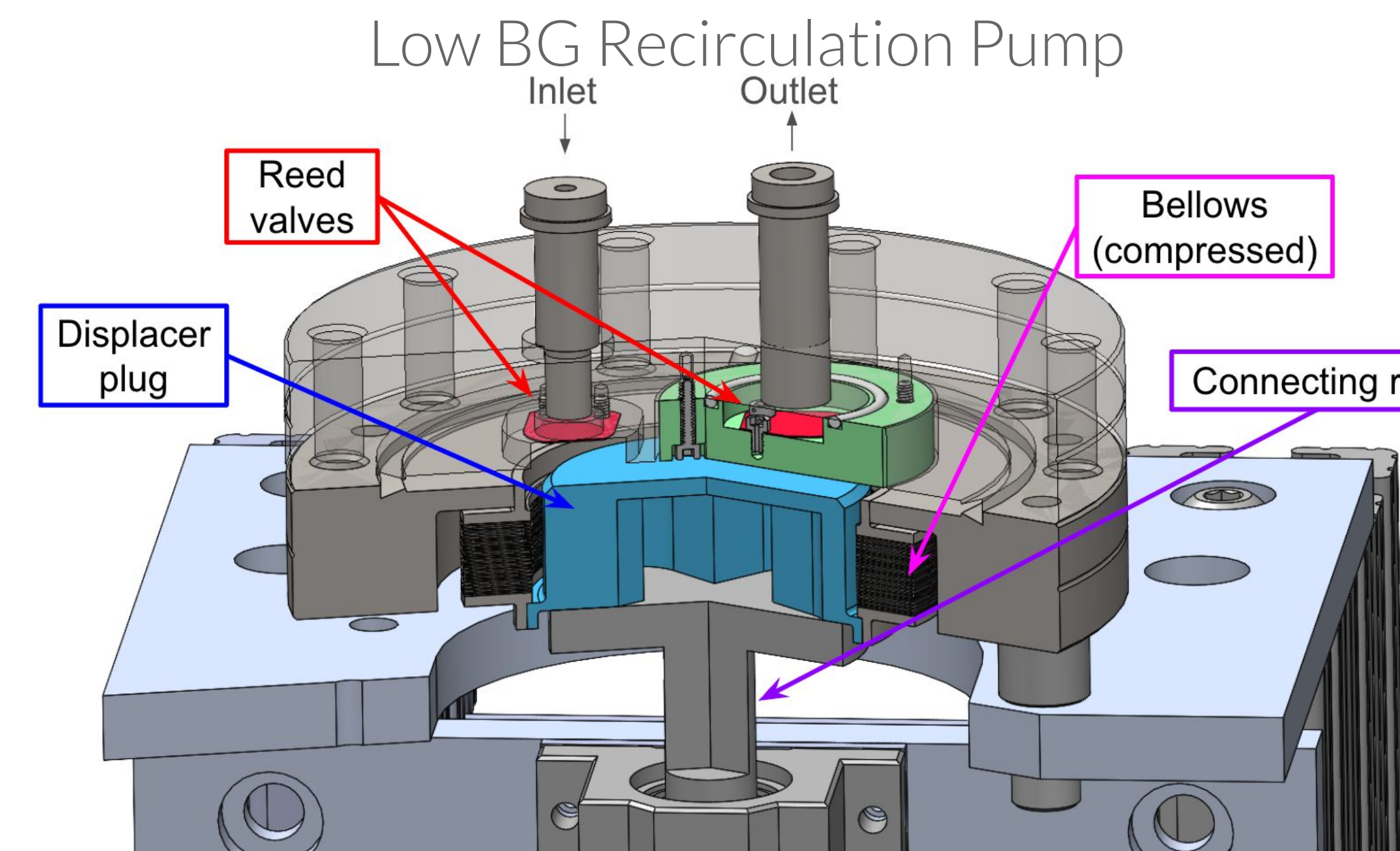
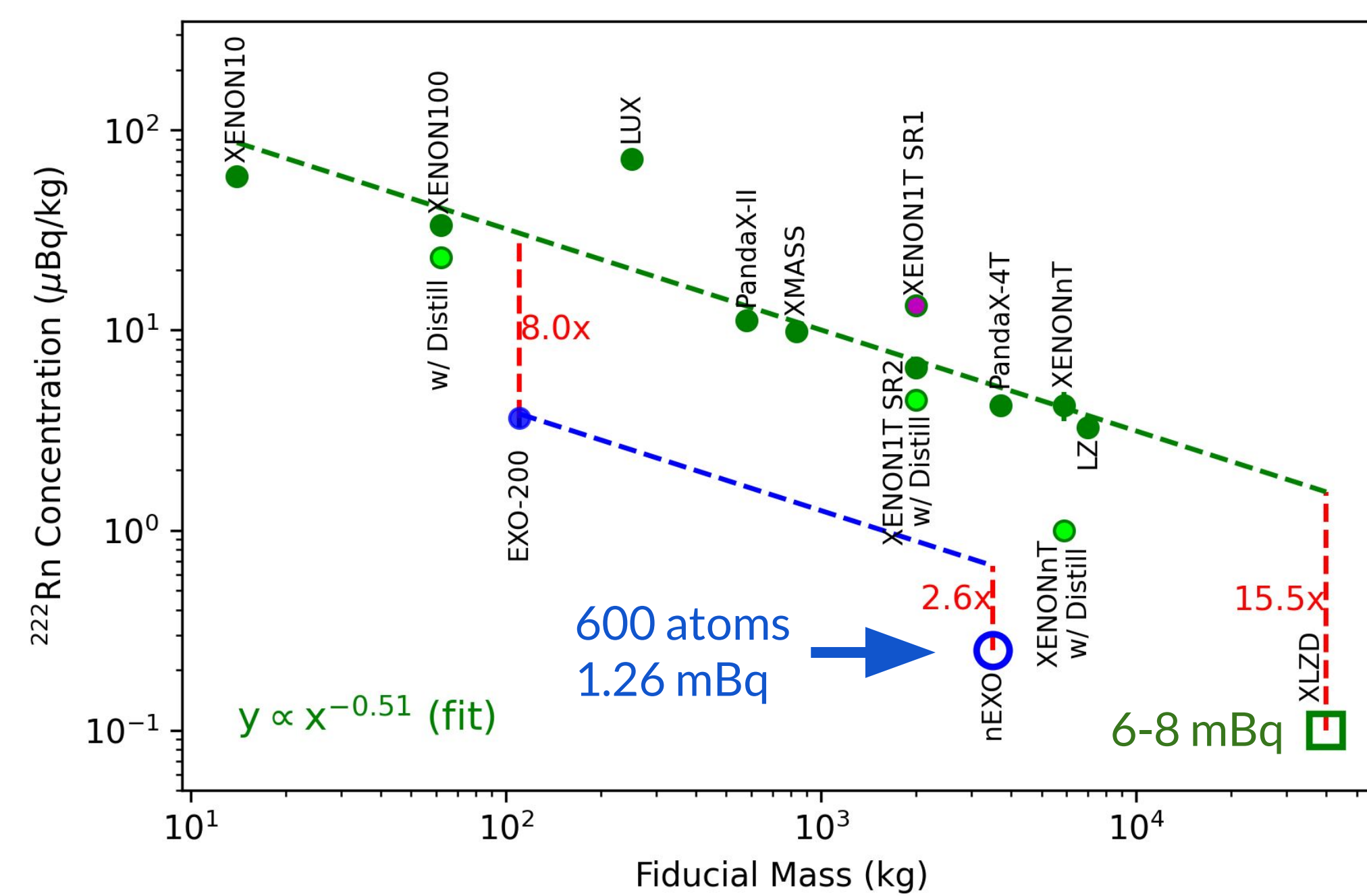
Electrostatically collect daughter ions → DAQ captures waveforms from alpha entering diode → events are binned in energy and time → then Bateman equations fit



nEXO Sensitivity to OvBB vs  $^{222}\text{Rn}$  and BG sources



Historical scaling of  $^{222}\text{Rn}$  with LXe mass



Measurements with new instrument ( $1\sigma$  or 90%CL):

Sample	Description	Emanation [ $\mu\text{Bq}$ ]
Beryllium Copper springs	10 springs O.D 0.5 in and 4 in length. MFG Century Spring, PN 10693CS	$42 \pm 29$
GetterMax 133	357 g copper coated beads. MFG Research Catalysts	$1840 \pm 150$
SAES PS4-MT3	Purifier assembly containing 500 g of ST707	heaters ON*: $< 70$ heaters OFF: $< 73$
SAES PS4-MT50-R-535	Purifier assembly containing ~ 4.4 kg ST707	heaters ON: $428 \pm 61$ heaters OFF: $176 \pm 48$
Dielectric Science HV cable	Two 5 m pieces Polyethylene HV cable stripped of braid and jacket procured by PNNL, PN 2353	$< 81$
Ceramic beads	Alumina vacuum insulator beads totaling 200 g. MDC CB-1 680600	$290 \pm 29$
Zirconium pellets	ALB Materials (99.95% 2x2 mm cylinder) totaling 438 g	$168 \pm 45$

In nEXO our assay sensitivity needed improvement to scrutinize potential construction materials, thus new instruments were built at SLAC

