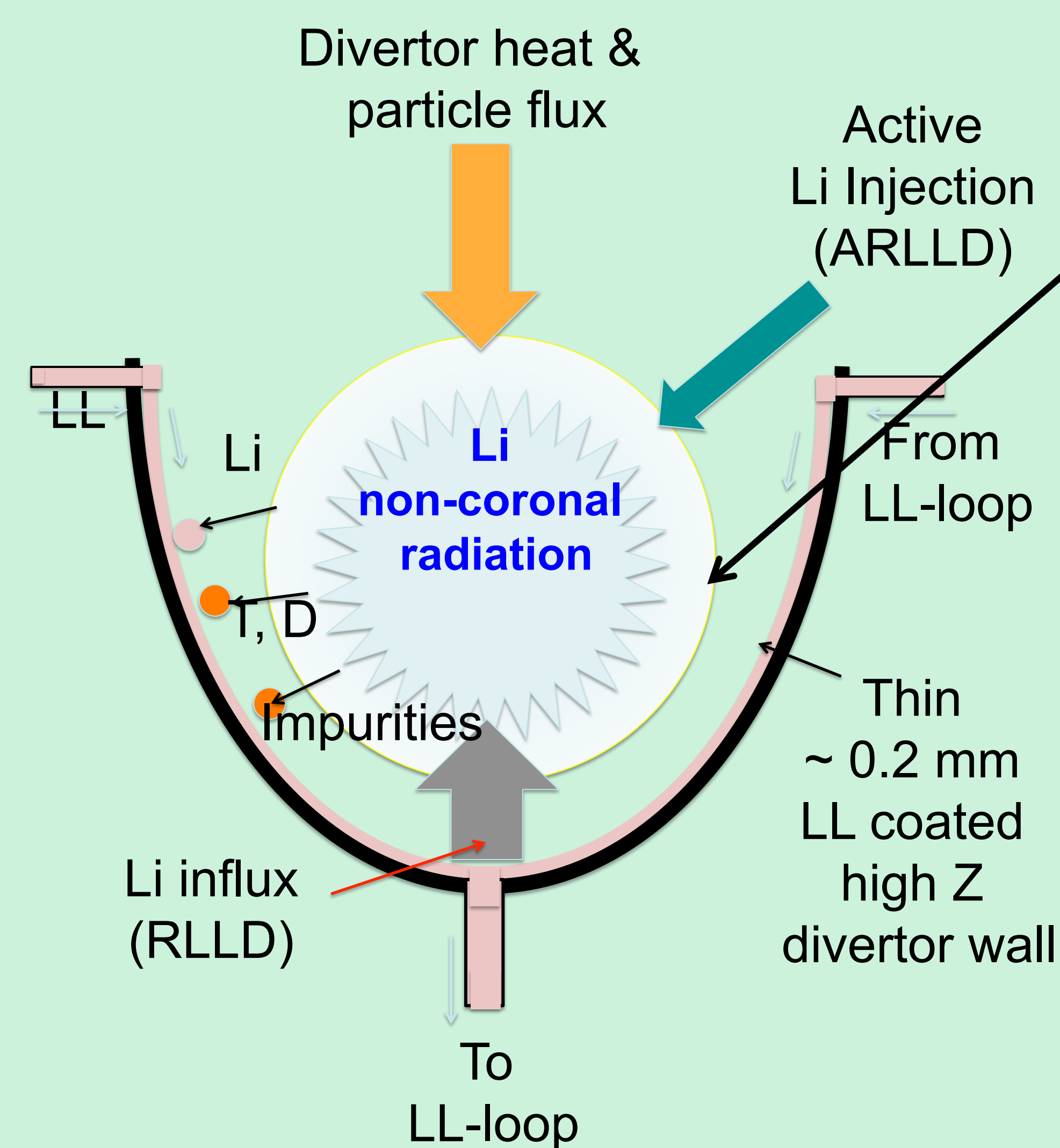


NSTX-U Mission Elements:

- Explore unique ST parameter regimes to advance predictive capability - for ITER and beyond
- Develop solutions for plasma- material interface (PMI)
- Advance ST as Fusion Nuclear Science Facility and Pilot Plant

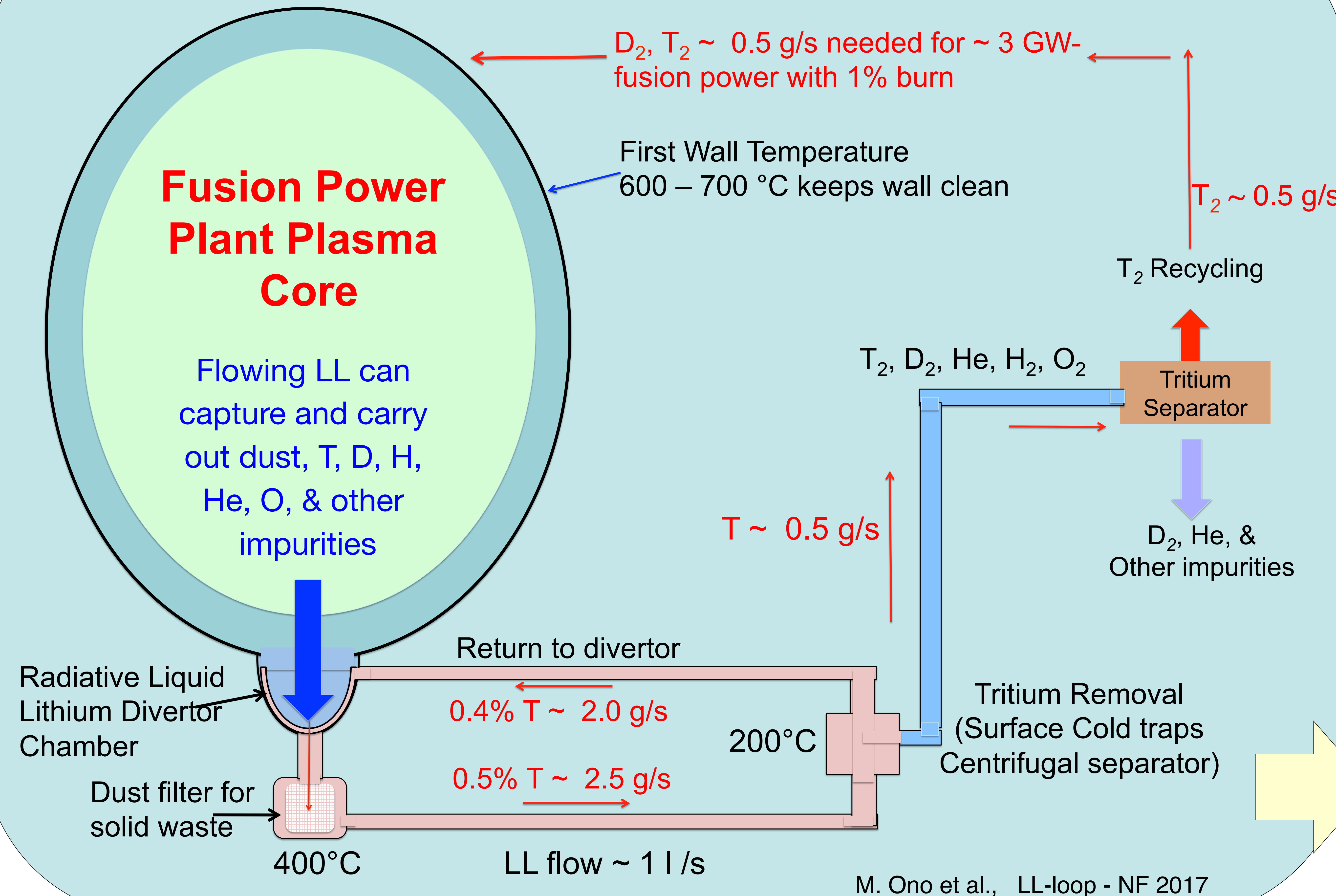


Radiative Liquid Lithium Divertor Concept



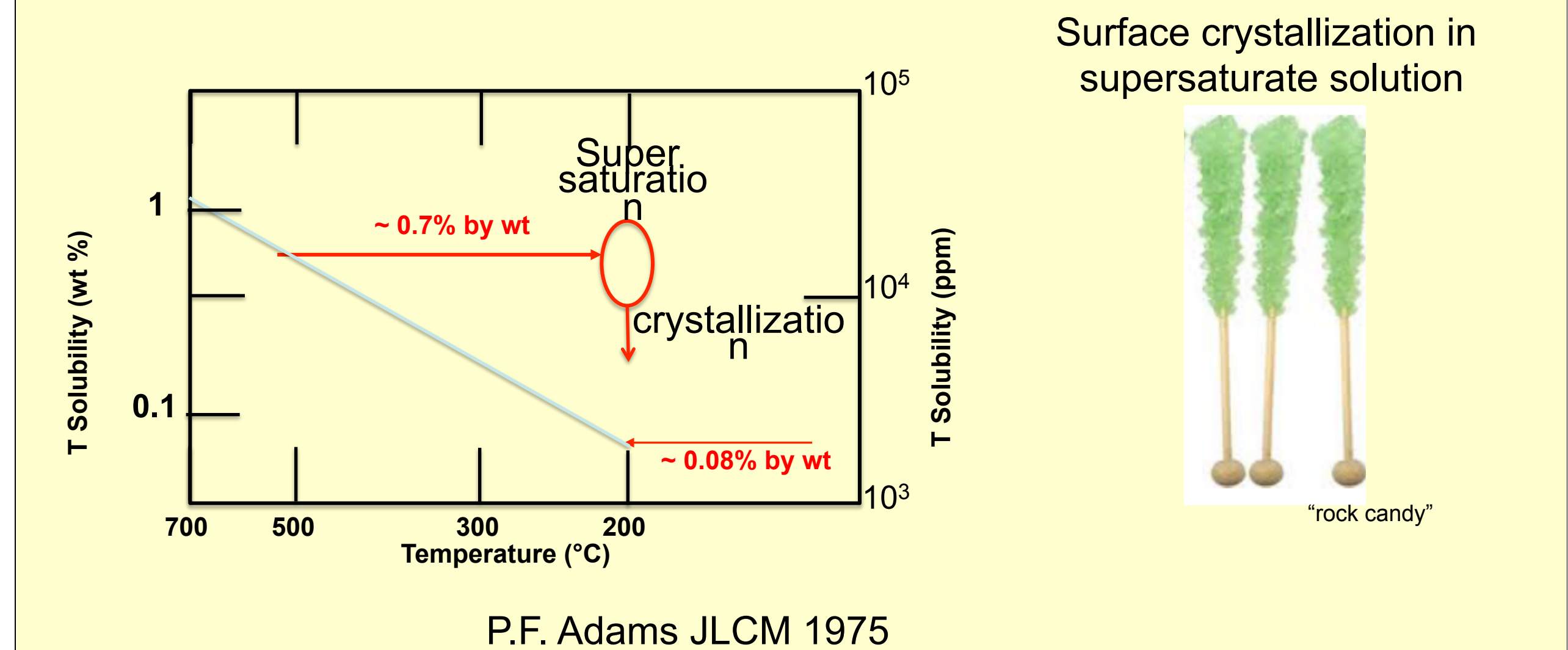
M. Ono et al., RLLD - NF 2013, ARLLD - FE&D 2014

Liquid lithium loop system



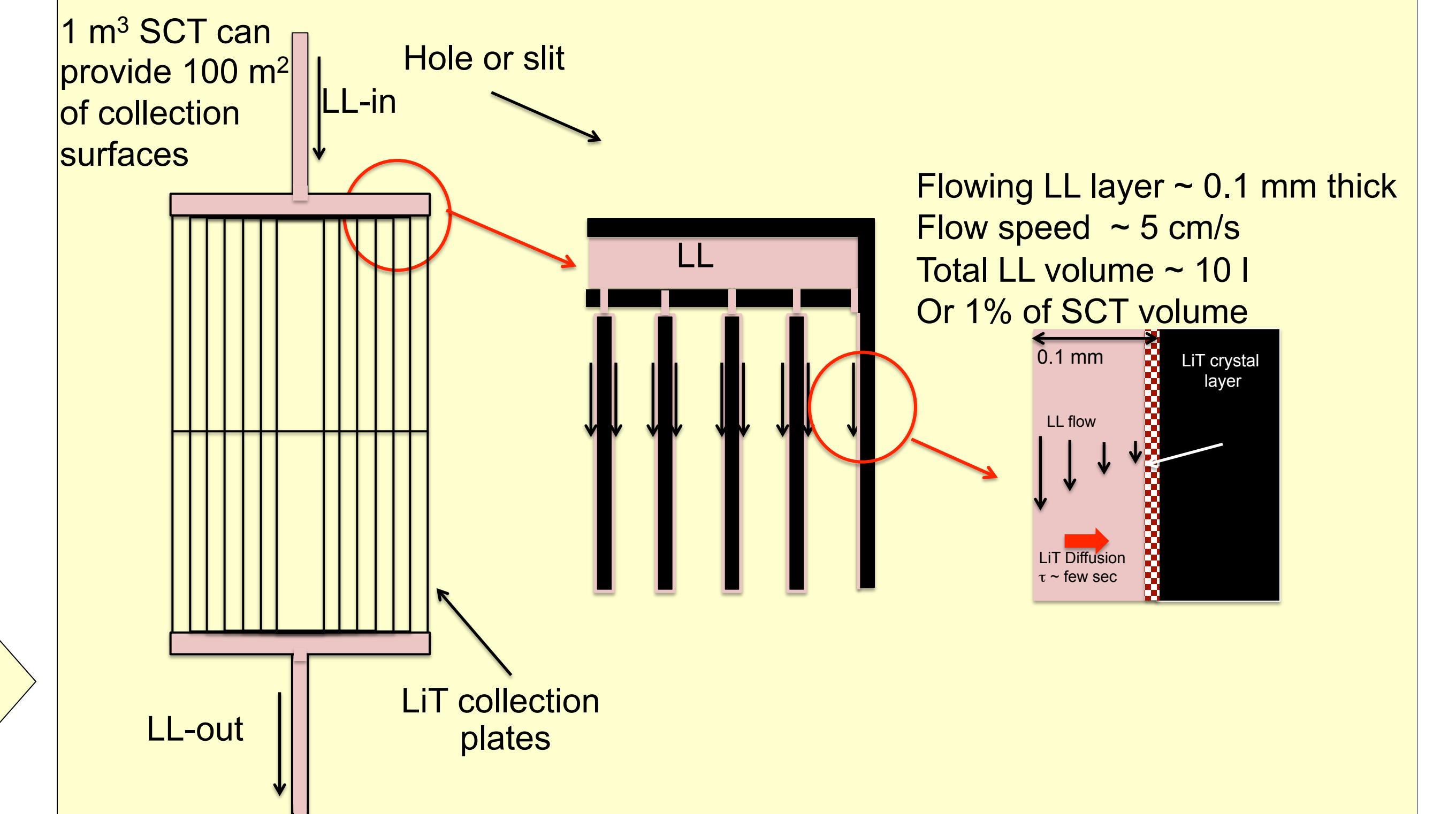
Tritium Removal from Liquid Lithium

“Cold” Trap at 200 °C Could Remove T, D, H, and O
Cold trap can be regenerated at higher temp.

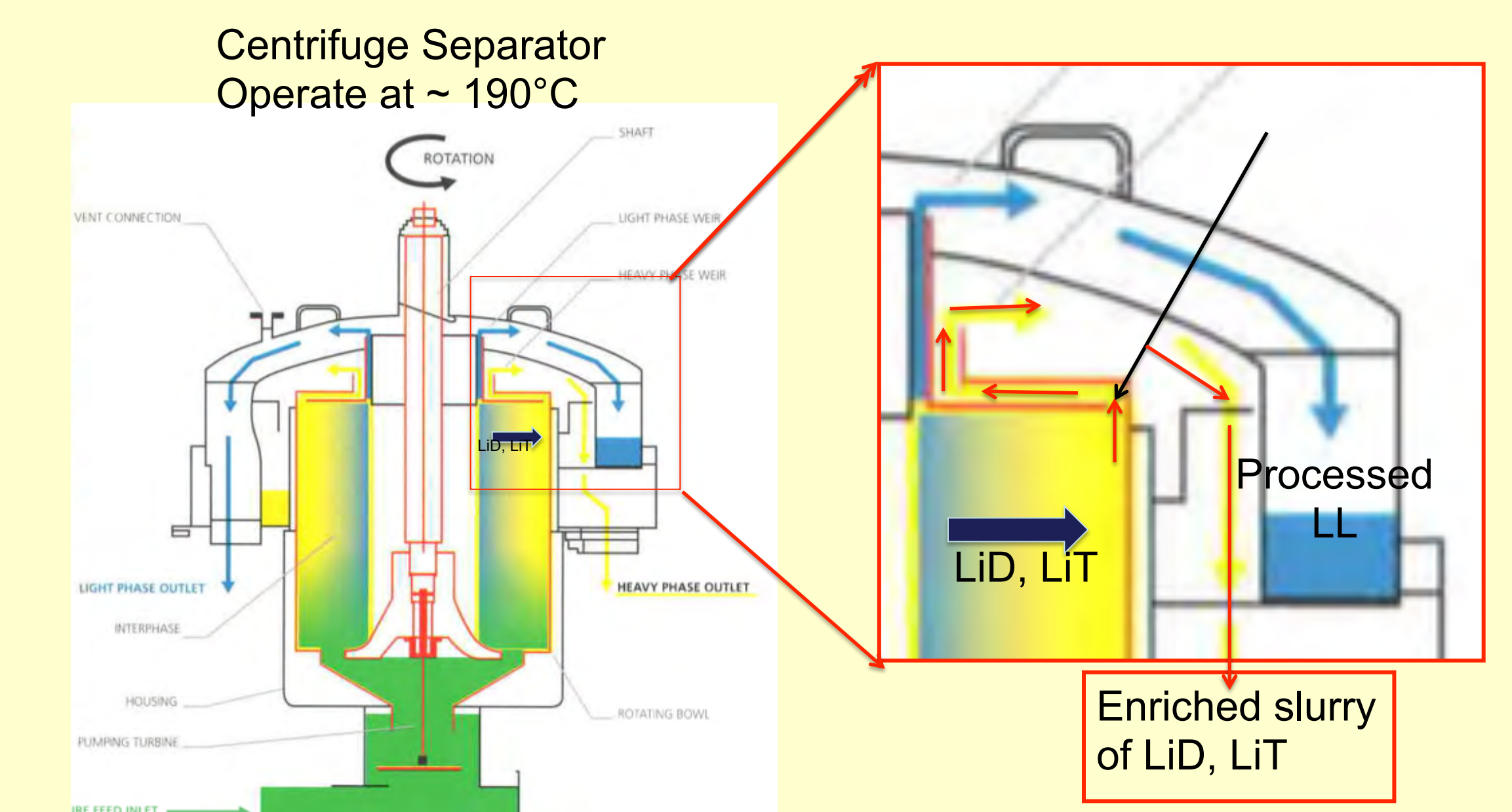


- At 200 °C, hydrogen can be reduced toward 0.08% level.
- Oxygen is also effectively reduced with cold trap (e.g., IFMIF).
- Nitrogen would require separate hot nitrogen trap if needed.

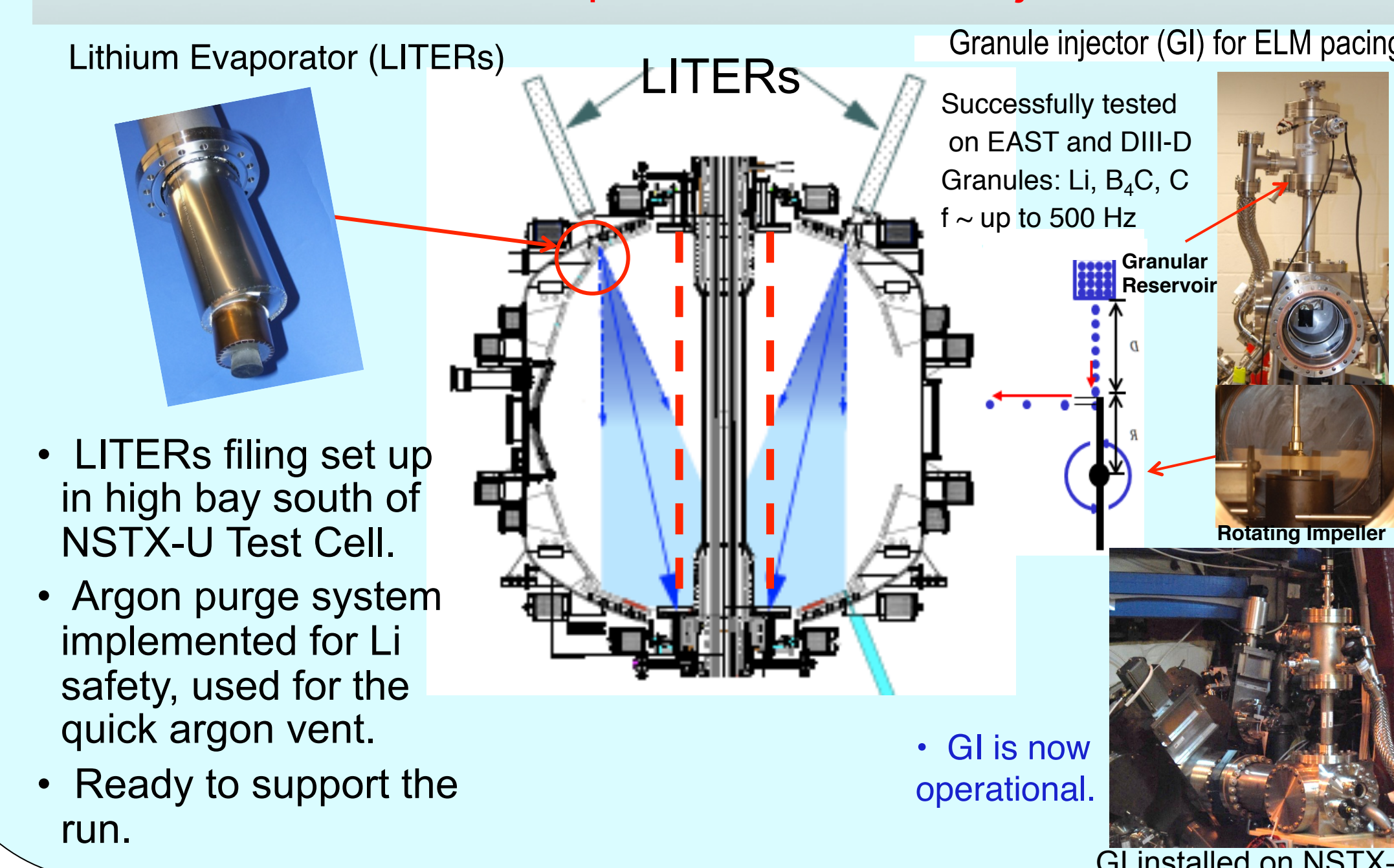
Surface Cold Trap (SCT) system to provide Large surface area to facilitate LiT crystallization



Centrifugal separation of LiD, LiT appears feasible
LiT, LiD ~ 1 g/cc is twice as heavy as LL ~ 0.5 g/cc



NSTX-U Lithium applications Lithium Evaporators, Granule Injector



NSTX-U Upward Lithium Evaporator R&D Fast evaporation with much less lithium

- Based on resistive heating of lithium in porous stainless steel medium for fast evaporation
- Prototype can be used on NSTX-U if installed using power supply with remote control
- Porous medium to absorb liquid lithium evaluated
- Concept planned for implementation on LTX-β

