LDRD-C Brainstorming

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What we have achieved so far (with the previous LDRD)

- pTP coating successfully performed in three different substrates
- refurbished/upgraded spectrophotometer
- emission spectrum measurements showed good results
- coating thickness measurements showed good uniformity
- thermal testing showed no significant changes in emissions
- post-deposition heat treatment testing: pending
- journal publication: in preparation

What more can we do (part 1): improving & more testing of pTP coating

- upgrade spectrometer further with test chamber
- measurement photon collection efficiency with our sample + XA @ Spain
- more careful thermal testing
- test light trapping of the sample as-is (at RT, just attaching SiPM to the substrate)
- light yield measurement
- transmittance measurement

What more can we do (part 2): prototyping & LAr measurement

- (assume we have a running LAr test stand with our without upgrade: this is a separate topic, will be covered by Yichen)
- small PDS prototyping with our sample:
  pTP-substrate (+WLS plate) + cryogenic SiPM
- testing photon collection efficiency of the prototype in LAr: conceptually similar setup to CIEMAT setup, just smaller/simpler
- collaboration with SBU: offer the LAr test stand for SBU sample testing, cross-compare between different samples/deposition method

More thoughts

- we were “encouraged” to submit LDRD, per Xin’s discussion with the department leadership on Nov. 7
  - leadership’s a bit concerned that how this new proposal will look to higher-ups, given that we already had 1 SBIR, 2 LDRD (LDRD-C for FY25, Goldhaber LDRD for FY26) for this topic
  - we were advised to keep this in mind when preparing the proposal: how can we make this new LDRD-C different and new, not an incremental improvement?
- it may be beneficial to have our paper submitted (uploaded to arXiv at least) before the proposal submission
- 12k from Goldhaber LDRD available FY26: best way to use it?