TISD & RILIS activities during LS2

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For EN-STI-RBS/LP

ENGINEERING
DEPARTMENT

Target Materials

What	Why	How	Where	Who
Ensure non-actinide nano material production	faster release/higher yields	Derogation / Collaboration / Initiate non-actinide nano lab at CERN	Offline chemical lab /?/?	JPR
Optimize target heating	Reproducibility Uniformity of temperature	Collaboration w. SPES	Offline Pump stand	DOCT1 / FELL1
Investigate UCx sintering	Optimize Release	Sequential thermal treatment + characterization / on-line sintering at synchrotron beam line	Class A + MME labs / tbd	JPR,srr
Investigate Material Pre-treatment	Avoid contamination	Chemical reactions (etching etc)	Chemical lab Offline	Srr, Collaborations ?
Study Molecular beam chemistry	Volatilization and/or Purification	Develop dedicated setup	Offline /ext.	JB Collaborations
Optimize UCx production	Reproducibility	More observables during production	Class A	srr
Investigate ThCx	Higher yields in specific regions	FLUKA, reactivating procedures	Class A	BC,JPR

Target Materials

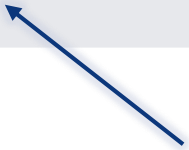
What	Why	How	Where	Who
Neutron converter (s)	High Purity High Production	Design iteration	ISOLDE	JPR, coll. With TRIUMF
Mass marker development	More control, Avoid cold spots	Simulation, Iterative testing	Pump stand + RGA	DL, FELL Collaboration
Autopsy of used targets	Learn from failure, improve future designs	List of priorities, Open targets in hot cell	ISOLDE Hot cell	PGH

Ion sources

What	Why	How	Where	Who
VADLIS 2.0	Improve RILIS mode Validate reliability	Simulations Design iterations Testing	Offline	DL, ISBM
COLD VD7	CO beams, fragile molecules	review design (from PS), construct, test	Offline	DOCT2, FELL2
Ion source simulation	Starting point for optimization	VSIM Collaboration	in silico	DL, FELL SCK
TOFLIS	Beam purity	High ohmic cavity Drift region Fast beam gating Integrate LIST	Offline ISOLDE	SW, Fell1, ISBM
2 Photon laser ionization	Resolution for in source spectroscopy isomer selectivity Accessibility to other elements	Mirror in ion source PI-LIST	offline	KC, RH
Negative ion source	Yield, purity Rectify design	Simulation, testing. Develop new low work-function materials	offline	DL, FELL

Ion sources

What	Why	How	Where	Who
Integrated yields + stress test	Optimize lifetime + efficiency	Long-time performance tests, destructive tests	New ion source test stand	DL, FBP, FELL
RILIS General R&D	Increased range of accessible elements, isomer selectivity, reliability	Spectral range Laser and lab infrastructure, Bandwidth optimization, ion source developments	RILIS, Offline	RILIS & ISBM



Dedicated session in next GUI

Infrastructure

What	Why	How	Where	Who
Improve VADIS gas distribution system	Measure pressure Ensure purity	Add gas loop, recirculation pump & filters	OFFLINE, then ISOLDE	JB, FELL
Upgrade beam gate switches	No spares. No high frequency possible	Test fast BG during 2018 at GPS Specify product with manufacturer	OFFLINE, ISOLDE	SW, srr ISBM
Build second pump stand	Dedicated ion source test stand Lifetime tests + integrated yield measurements	Copy of existing Pump stand	LARIS, then OFFLINE	DL, BC
Intensify use of RGA	Monitor Target and ion source behavior already during heating process	Survey, then purchase .	Offline, Pumpstands, Class A	Srr, LV support
Improving YIELD database	Link to target documentation Add yield prediction Add user interface Add interface to CRIBE	Test during 2018, collect feature requests	CERN	JB, FELL2, srr, Users

Infrastructure

What	Why	How	Where	Who
Improve target documentation	Spread of information -> Single entry document required. Track target location, link to control system	EDMS, infor, Link databases	ISOLDE	srr, BE-OP, Target production, RP, Users, LV support
Upgrade Isolde Timing System	Not very user friendly	Review specification	ISOLDE	TG
Lasers at OFFLINE 2 and MEDICIS	RILIS is most efficient and selective ion source.	Install full laser systems	Offline 2 Medicis	RILIS, KU LEUVEN/PROMED, Umz,
RILIS control system upgrade	Current system not easy to maintain by LV support	Employ (shared) PJAS Refactoring of RILIS control software	RILIS	BM, PJAS @ LV support
Development of unified controls system for Offline machines	Synergies, Still features missing Improve stability More automation	Employ (shared) PJAS Dedicated development time at offline machines.	OFFLINE	srr, PJAS@LV Support
Improve target health monitoring	Enable preventive actions	Link production rates from experiments permanent yield checks set up display for target health	OFFLINE, ISOLDE	srr, Users, BE-OP, LV support

Thanks to the TISD and RILIS teams.