

Heavy Ion Accelerator for RIB

KoRIA

in

International Science & Business Belt



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Big Picture

International Science & Business Belt

Heavy Ion Accelerator KoRIA

What is International Science & Business Belt?

- Science project of a new administration -

Science

Cutting Edge Science

Basic Science Institute
Heavy Ion Accelerator (for RIB)

International

Globalization of Science

Global Knowledge Platform
Academic Convergence Center

Business

**Science to Business &
Knowledge Industry**

Science & Business Network /
Global Connect & Development

Belt

**Belt Formation &
Synergy**

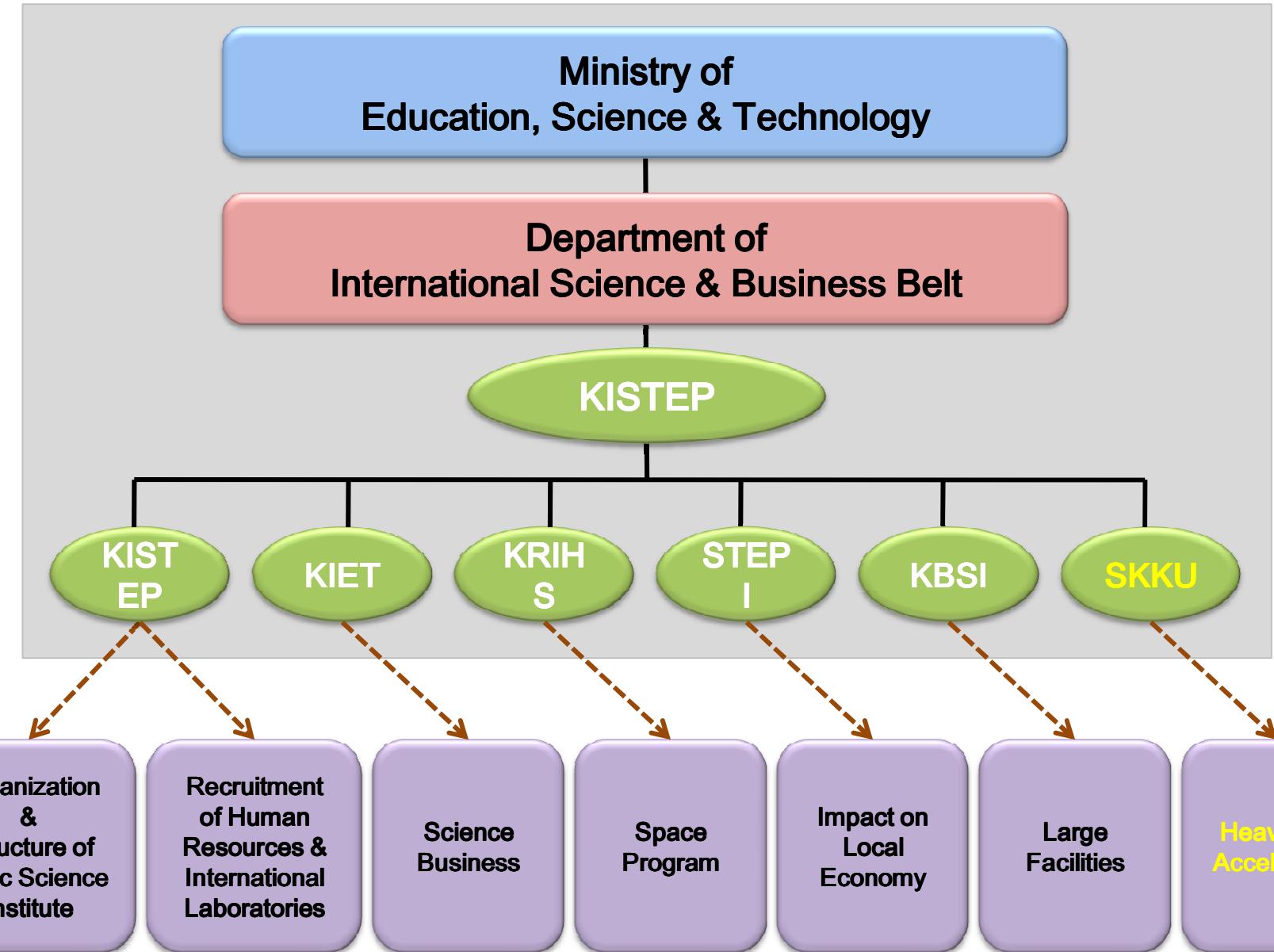
Creative City of Science & Culture
Regional Science Belt

Status

- Feb. 2008: Int'l Science & Business Belt (ISBB) Team in the Ministry of Education, Science & Technology
- Oct., 2008: The ISBB Team was expanded to a Department of ISBB
- Jan. 2009: Basic Plan for ISBB endorsed by National Council of Science and Technology (Chair: President) with a total budget: ~ 3 B USD
- At present: Action planning is underway (KISTEP*).

* KISTEP: Korean Institute of S & T Evaluation and Planning

Structure of Planning of ISBB



Heavy Ion Accelerator ‘KoRIA’

ABC's of KoRIA

- Name of the facility
 - At present we call it "Heavy Ion Accelerator".
 - A **tentative** name that scientists use: "KoRIA".
(Korea Rare Isotope Accelerator).
 - The official name needs further discussions.
- Status
 - Will be the cornerstone core facility for "Basic Science Institute" to be established.
 - Conceptual design work will start soon.
- Proposed Budget for KoRIA: 460,000,000,000Won ~ 0.4 B USD
- Planning: 2009 ~ 2012
- Construction: 2012 ~ 2016

Basic Concepts of KoRIA

- **Multipurpose**
- **Both ISOL & In Flight Fragmentation**
for **production of rare isotope beams**
(In Flight Fragmentation after ISOL: more exotic beams)
- **Maximum use of (stable & RI) beams**
- **Pump and Probe**

General features of the facility

- Block 1 : Cyclotron : $K \sim 100$, $\sim 1\text{mA}$
ISOL targetry
Post SC linac : 10 MeV/u

Block 2 : 200 MeV/u driver SC linac for all ions and RIB

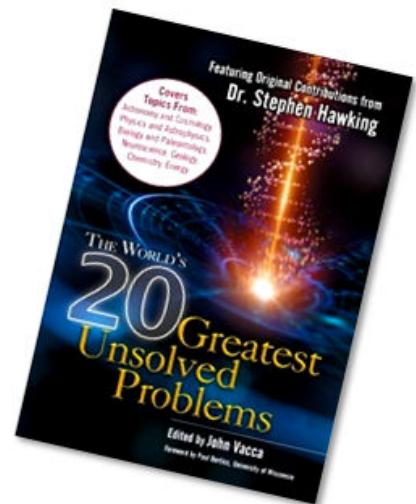
Block 3 : 10 MeV SC linac for injection of stable beams

- A broad range of experimental tools (fast, stopped, reaccelerated)
- Two ISOL target stations and an in-flight fragmentation target

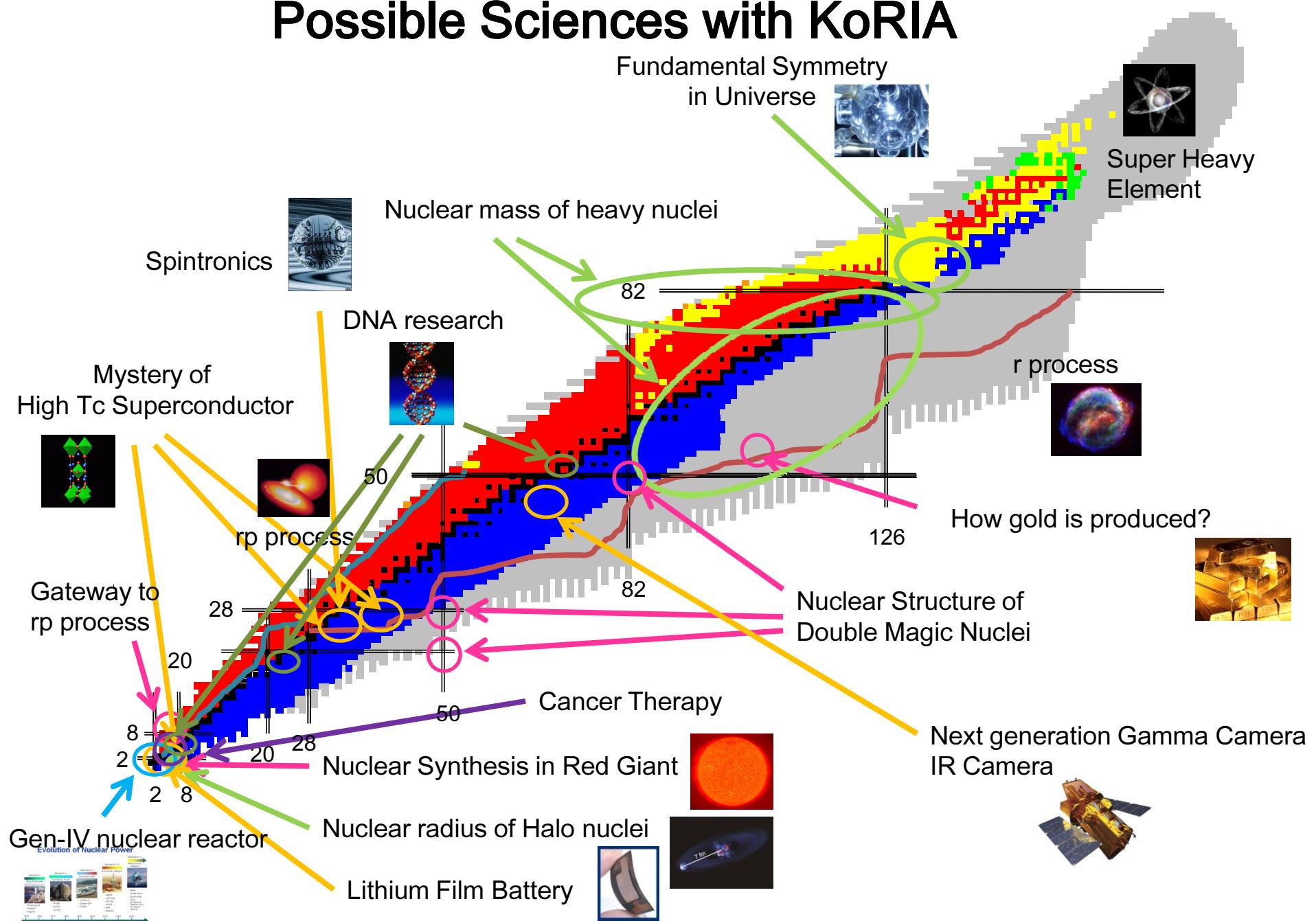
Multipurpose Facility

- Nuclear and Nuclear Astrophysics
- Material Science using stable HI & RIB
- Bio and Medical Sciences with HI & RIB
- Atomic Physics & Fundamental Symmetry
- Nuclear Data Production for Energy
- Nuclear Fusion (Plasma)

The World's
20 Greatest
Unsolved Problems

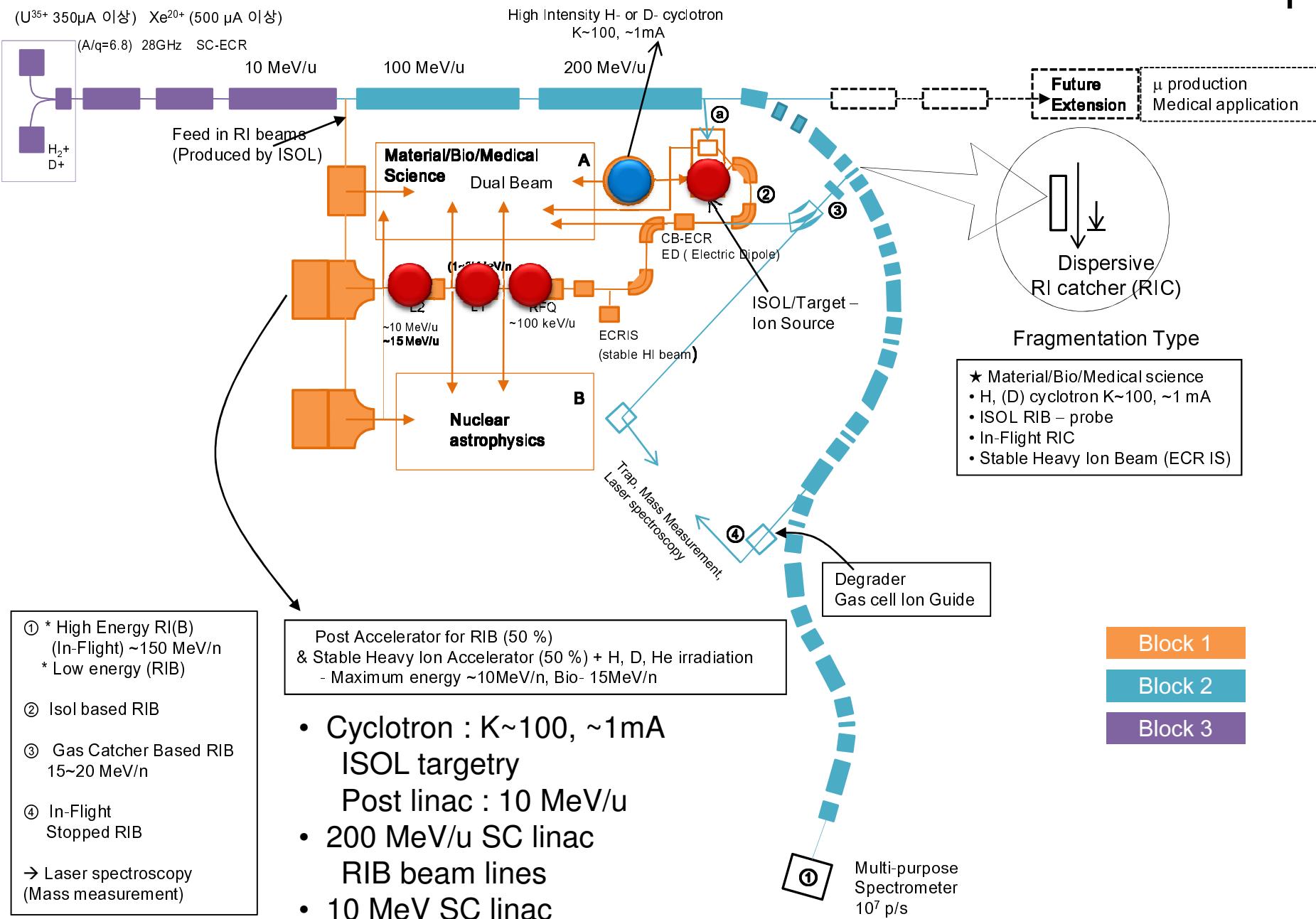


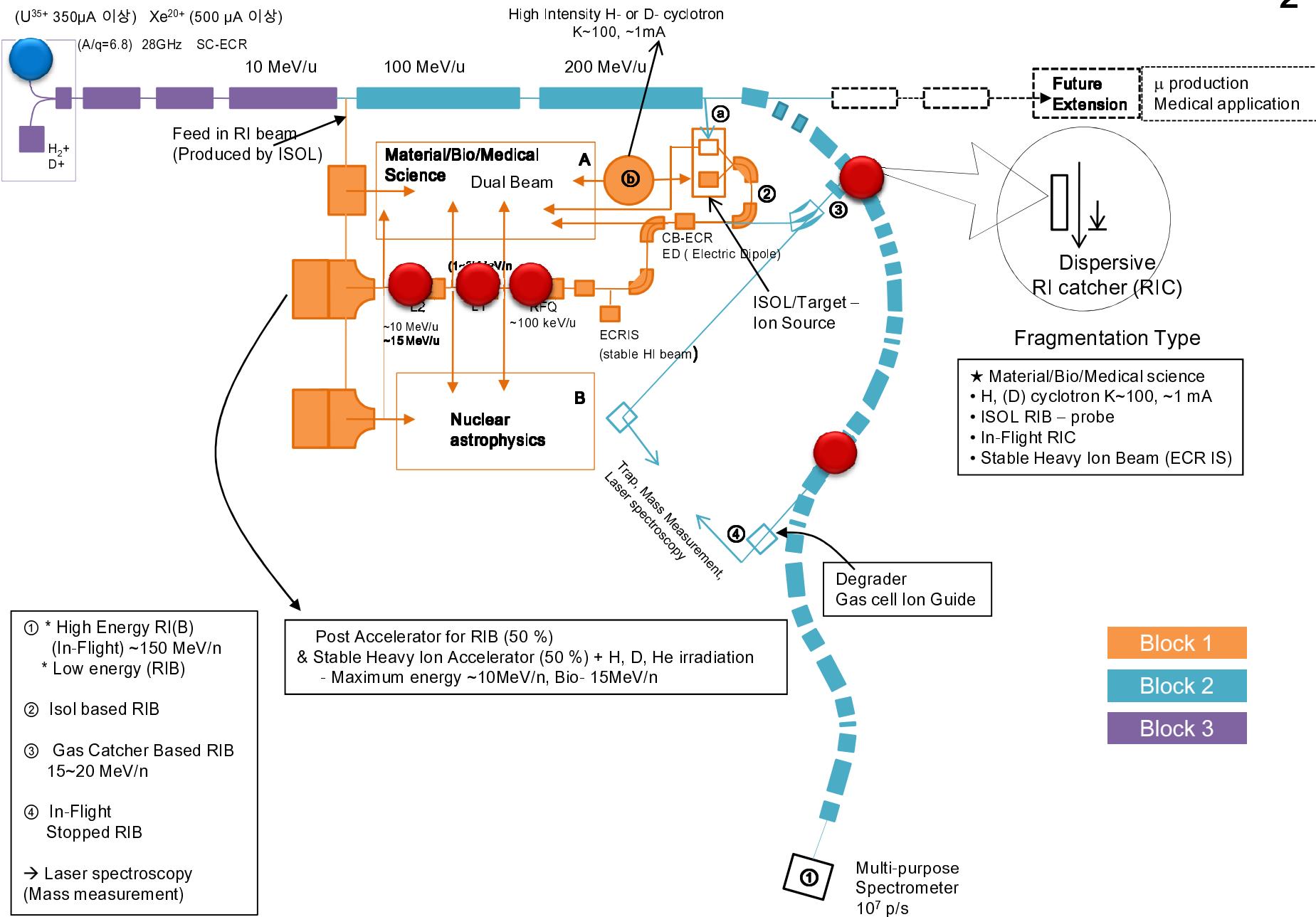
Possible Sciences with KoRIA

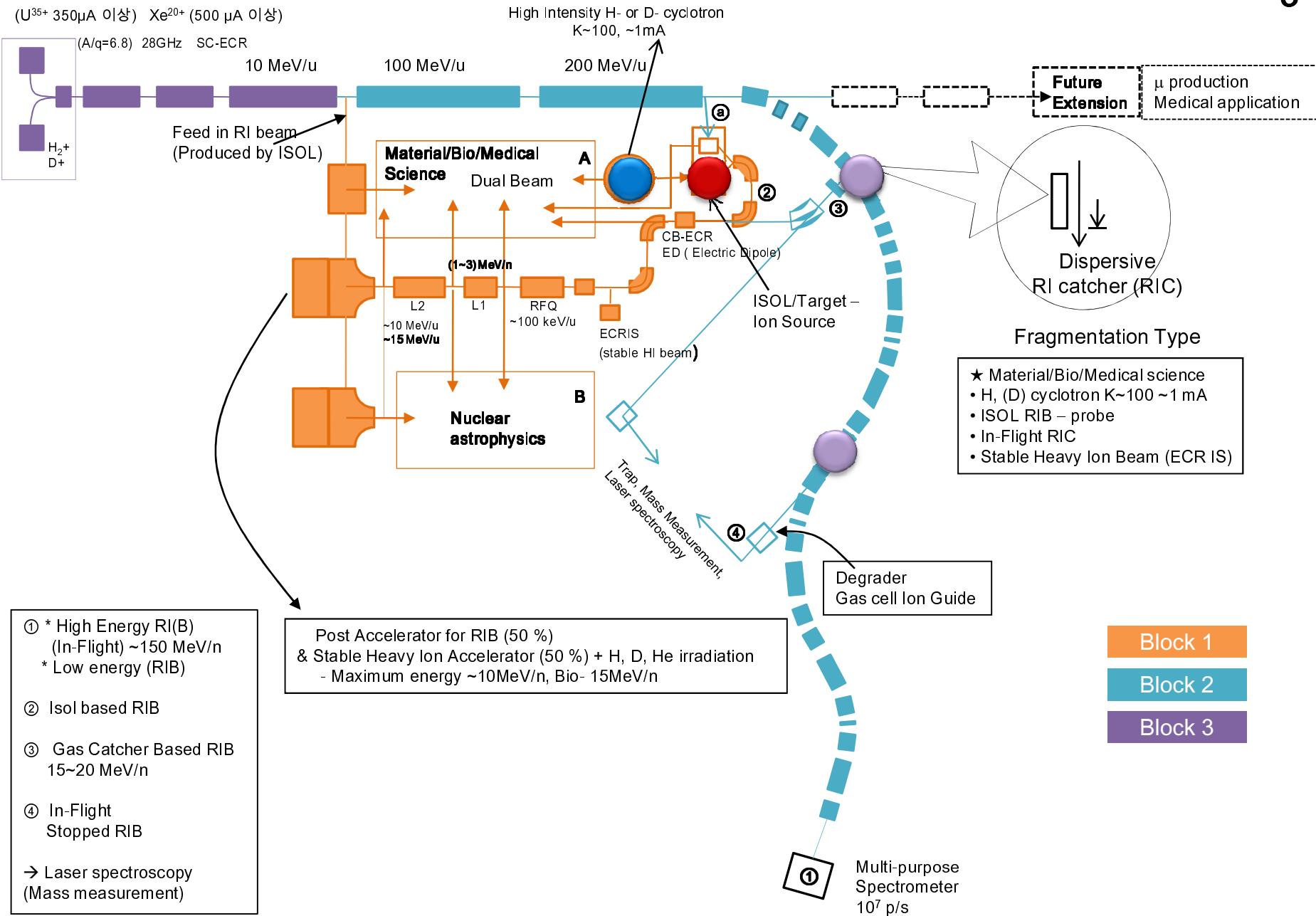


Both ISOL & In Flight Fragmentation for producing rare isotope beams

- Isotope Separator On Line (ISOL)
- In Flight Fragmentation
- In Flight Fragmentation after ISOL: to produce more exotic beams,
if possible.

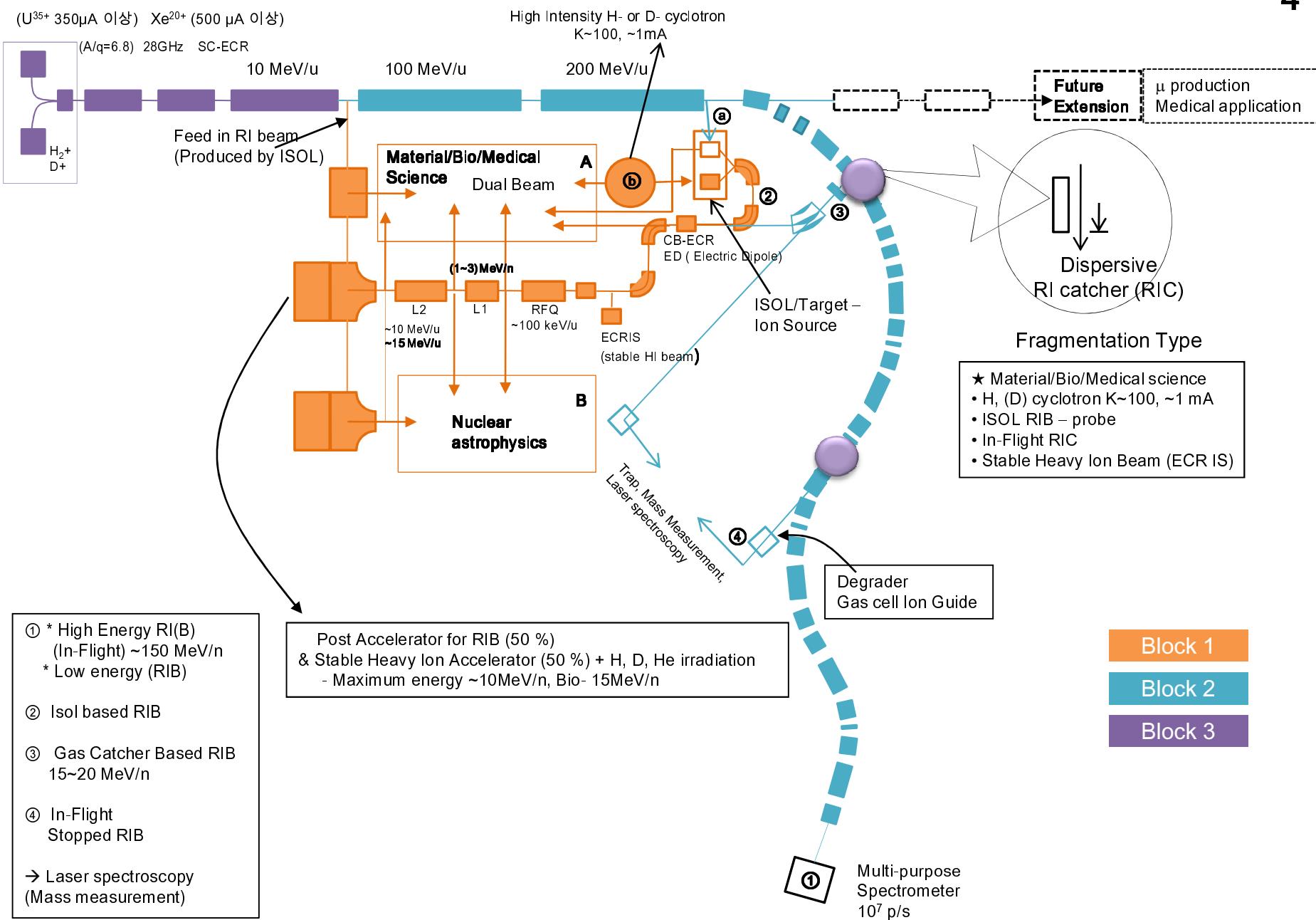


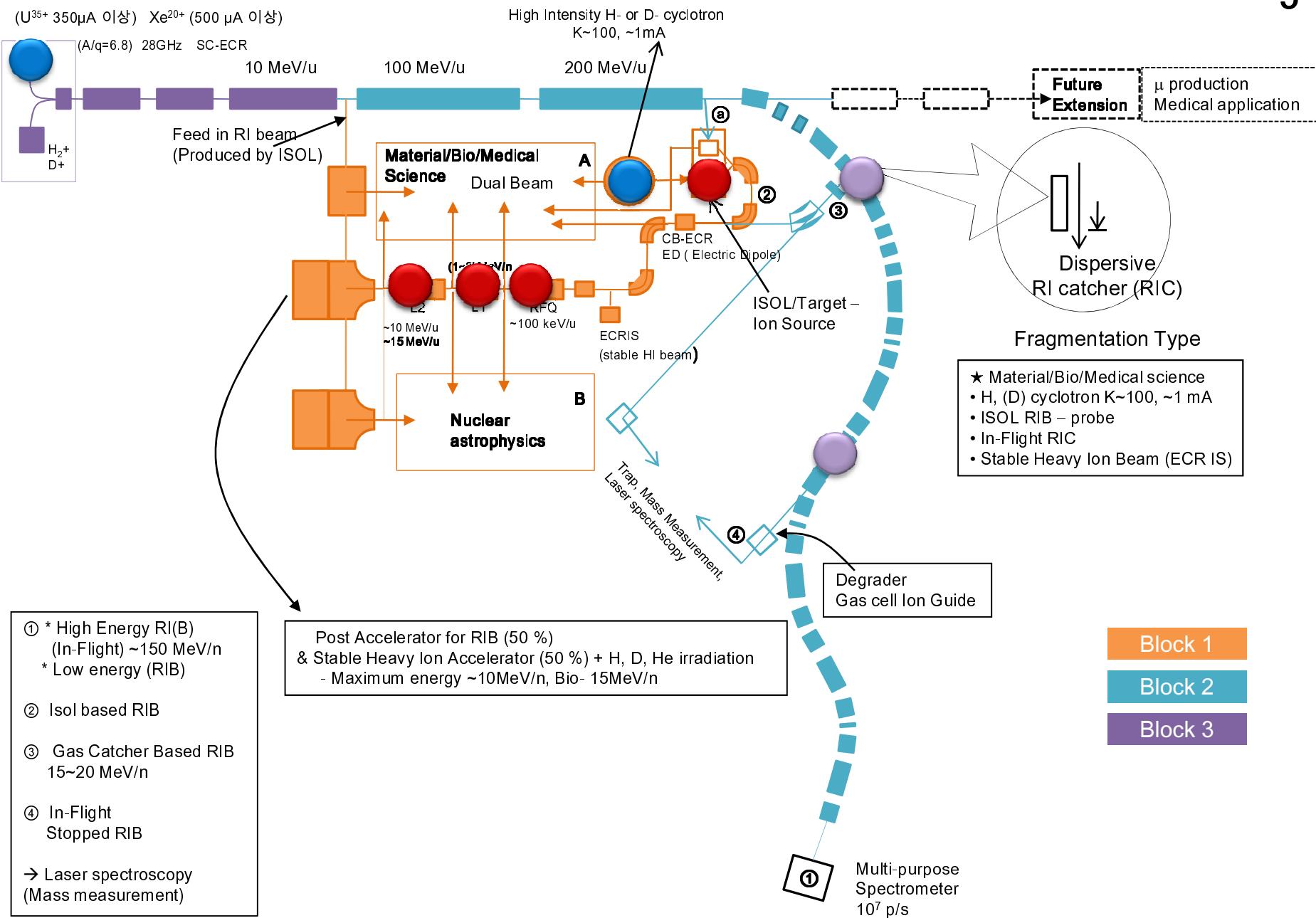




Maximum use of beams

- Maximum use of both stable and RI beams: more beam time
- Independent operations of beam lines
- By virtue of several ion sources
- By using the accelerators in combinations

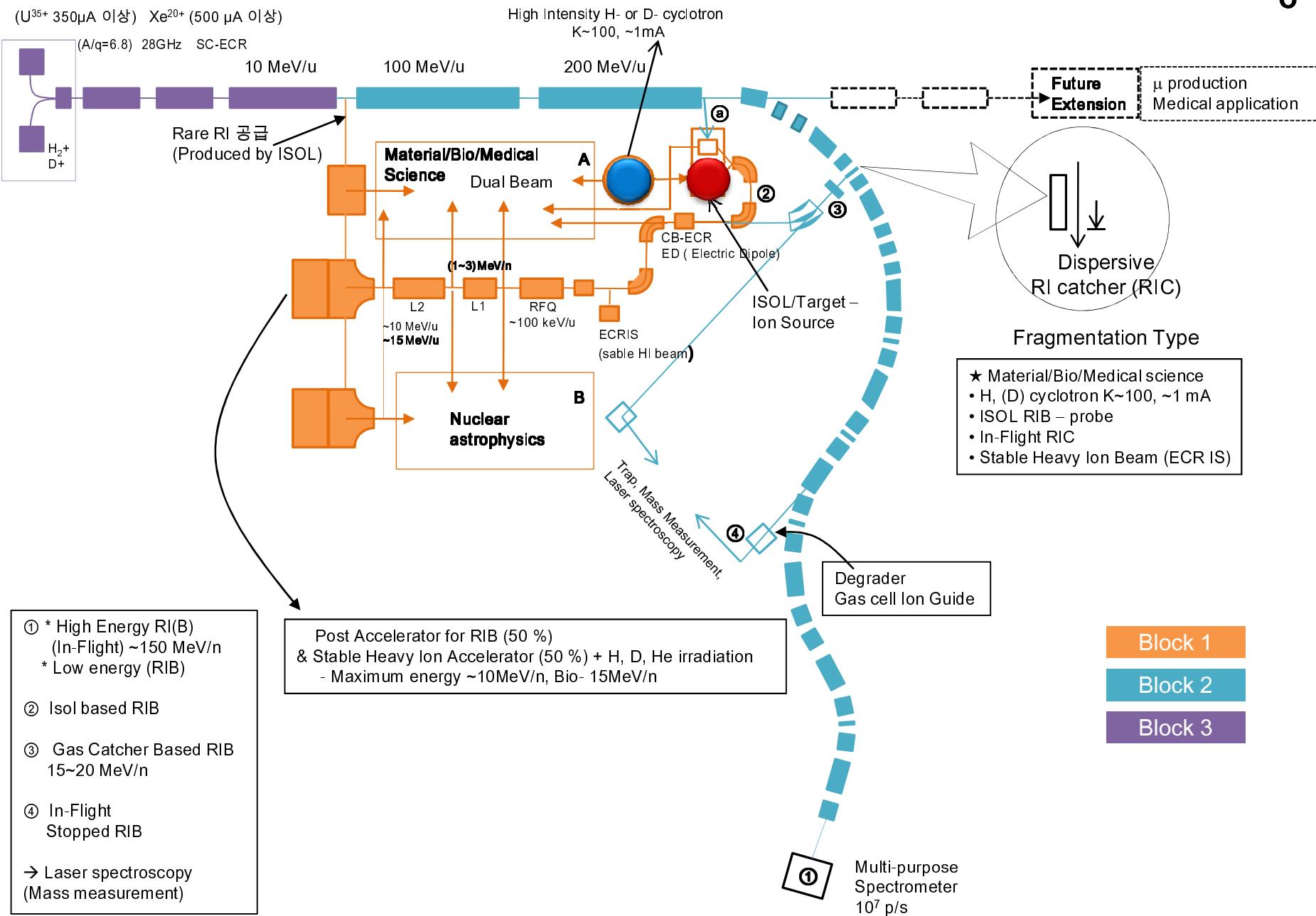


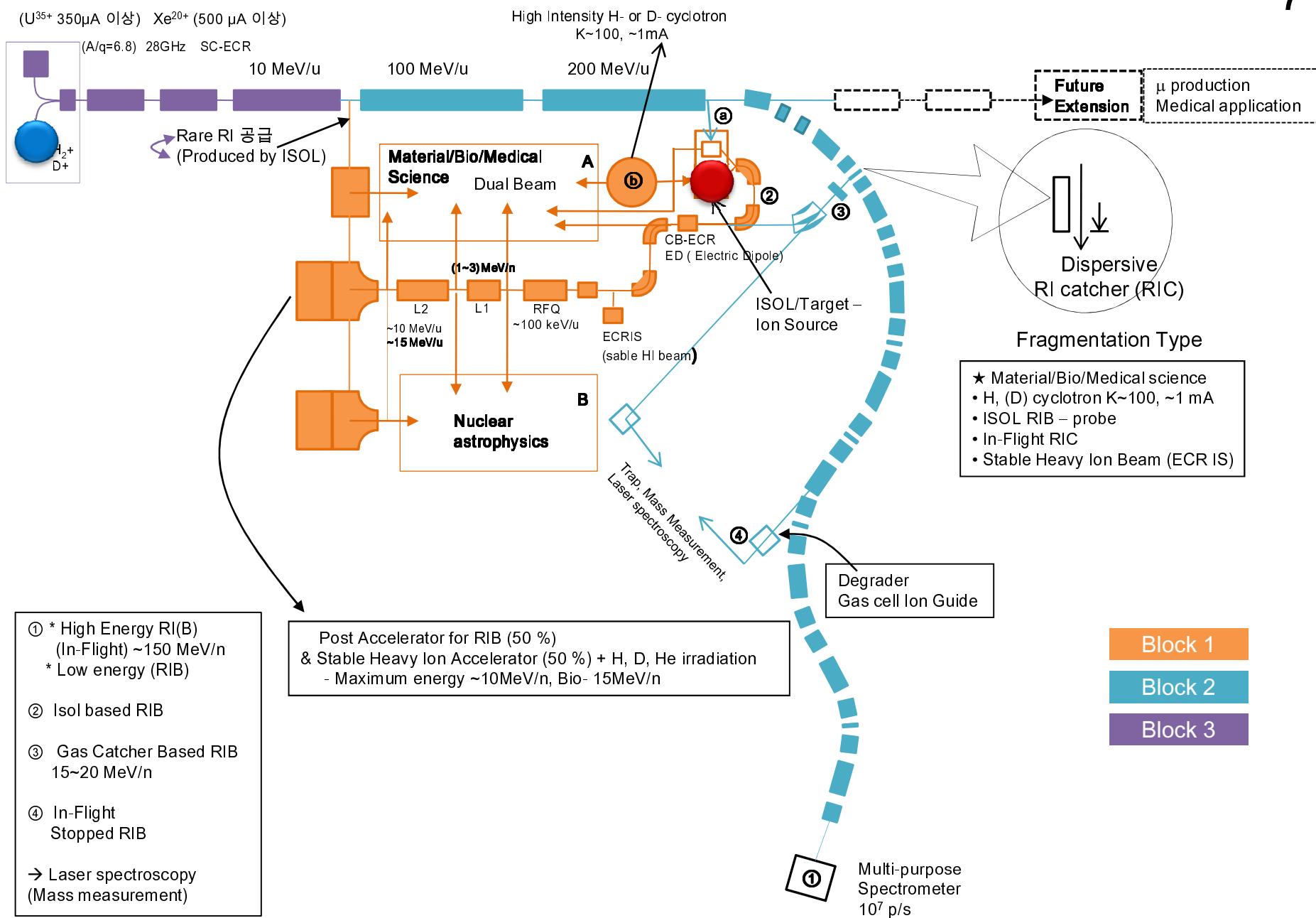


Pump and Probe

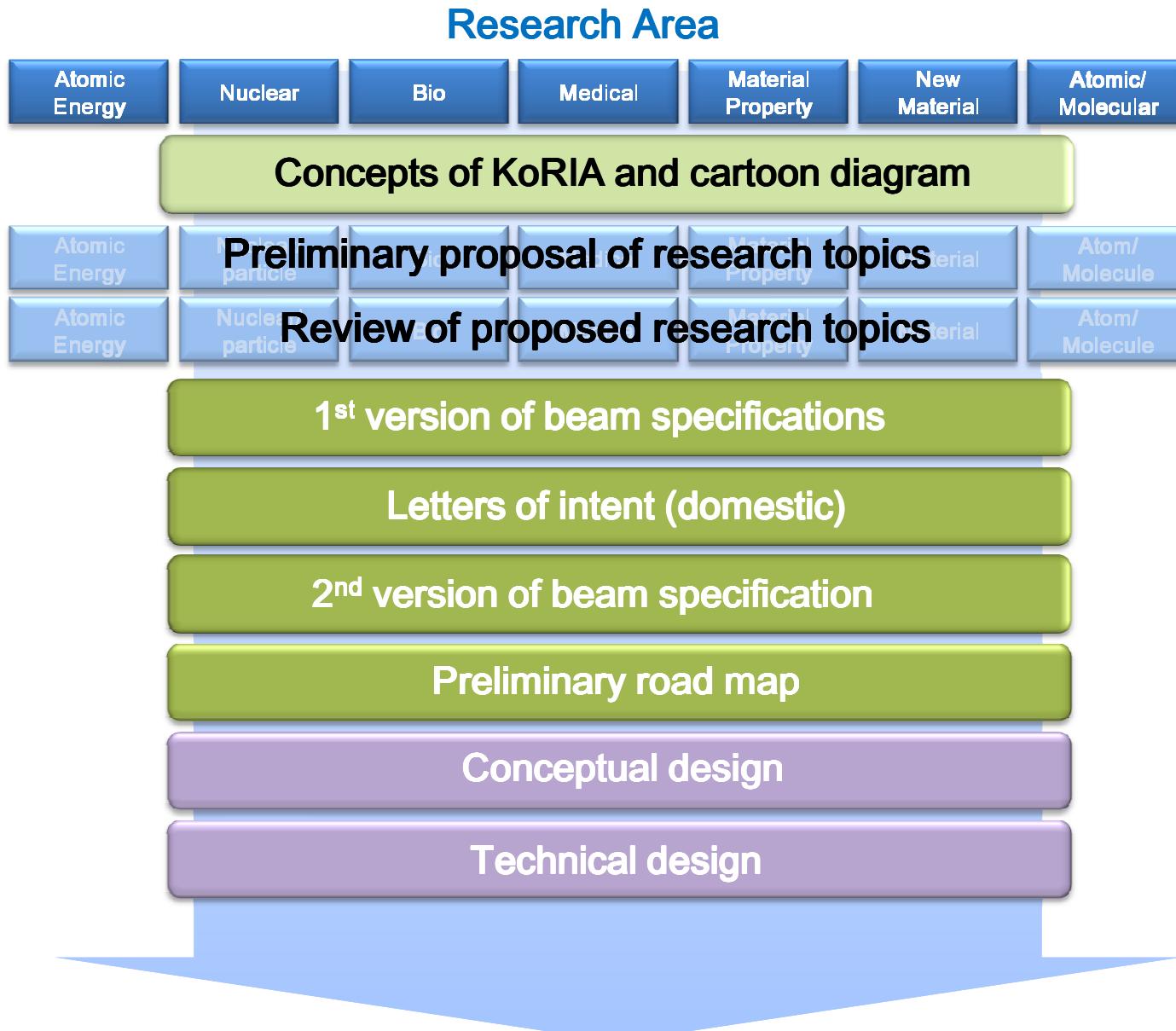
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- Excite the materials or nuclei by using stable beams and probe the states by using the RIB.
- Possible because of the use of combination of accelerators and several ion sources.





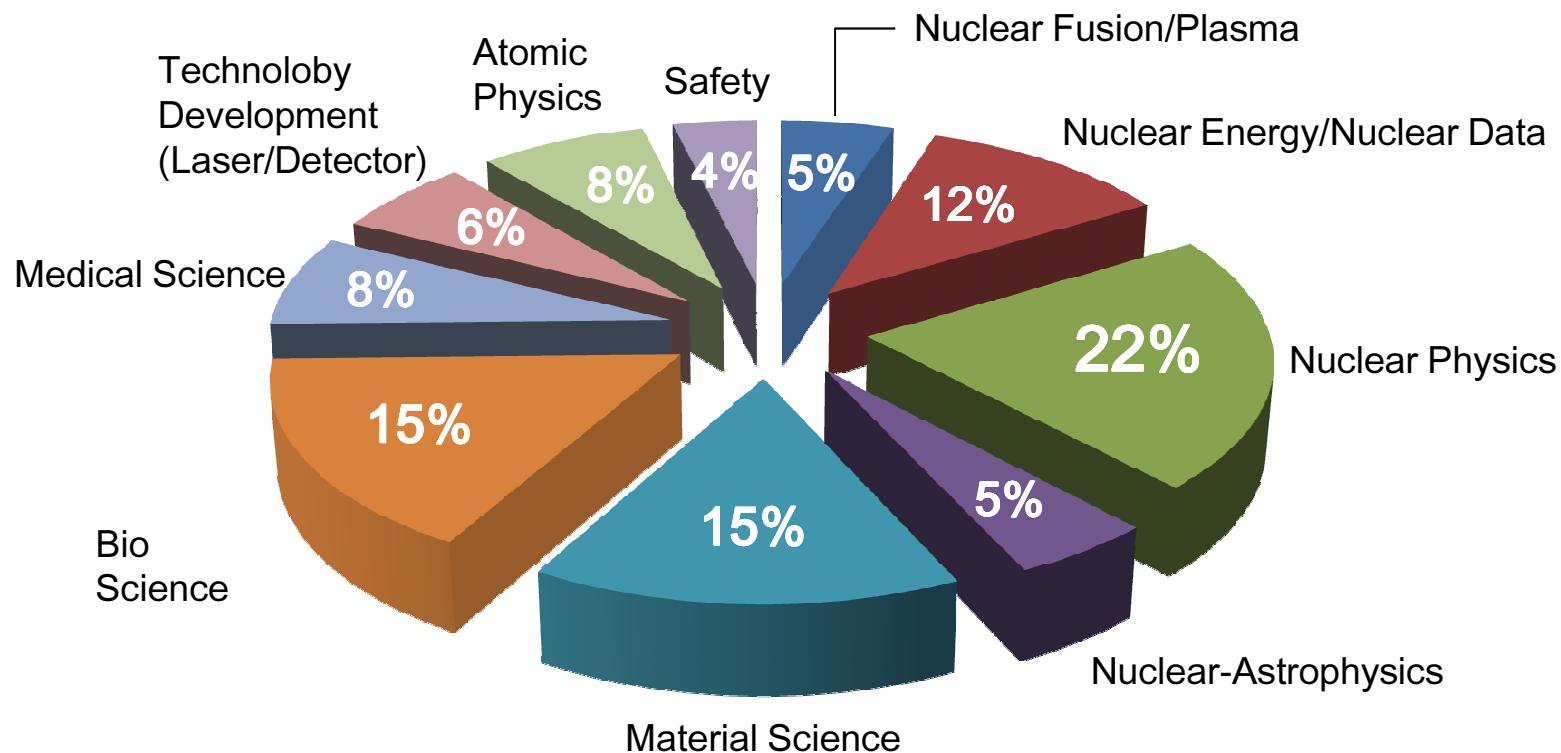
Beam Specifications



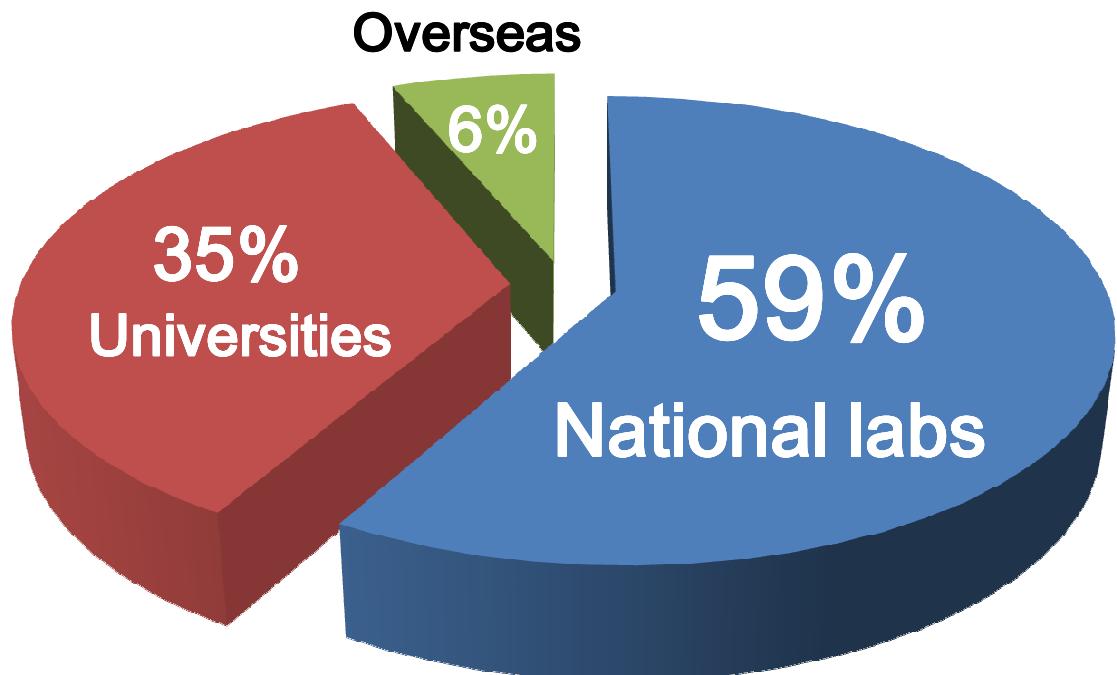
Letters of Intent

- Call for letter of intent
- One month in May 20 ~June 20, 2009
- Only in Korea at this moment
- 83 Lol's are received.

Areas of interests



Who submitted



Summary

- We want this facility to be designed as an international users' facility from the initial stage.
- International collaboration is very important.
- Call for proposals for conceptual design project was announced last week.
- Conceptual design will start in Dec. 2009 and is to be finished by Nov. 30, 2010.
- We are open for international collaboration and discussions to improve the present conceptual schematic diagram.



Thank you.