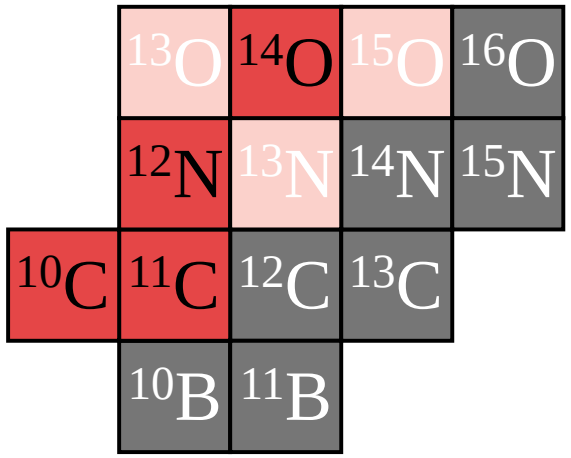
Test result of Low-Energy RIB Productions



Used the (p,n) & (^{3}He,n) reactions in inverse kinematics.
Measured at F2.

RI beam	Primary beam	Reaction	Cross section	Target	Collection efficiency	Intensity	Purity with degrader
^{10}C 6.1 *A* MeV	^{10}B(4+) 7.8 *A* MeV (200 pnA)	**p(^{10}B,^{10}C)n**	2 mb	CH_4 gas 1.3 mg/cm^2	30 %	**(1.6×10^5 aps)**	90 %
^{14}O 6.7 *A* MeV	^{14}N(6+) 8.4 *A* MeV (500 pnA)	**p(^{14}N,^{14}O)n**	8 mb	CH_4 gas 1.3 mg/cm^2	50 %	**(1.7×10^6 aps)**	80 %
^{12}N 3.9 *A* MeV	^{10}B(4+) 7.8 *A* MeV 200 pnA	**^{3}He(^{10}B,^{12}N)n**	5 mb	^{3}He gas 0.25 mg/cm^2	1 %	**2.5×10^3 aps**	3 %
^{11}C 3.4 *A* MeV	^{10}B(4+) 7.8 *A* MeV 200 pnA	**^{3}He(^{10}B,^{12}N*)n** ^{12}N* → **^{11}C**+p	≈20 mb	^{3}He gas 0.25 mg/cm^2	≈ 2 %	**1.6×10^4 aps**	15 %

^{17}N, ^{22}Mg > 10^4 aps, ~ 10%. ^{23}Mg, ^{25}Al, ^{26}Si, ^{7}Be, ^{8}Li

* ( ); Actual production tests of ^{10}C & ^{14}O were performed at lower intensities.
* Cross-section values are taken from other exp. results.