

Measurement of the Neutron Capture Cross Section of ^{99}Tc Using ANNRI at J-PARC

Tatsuya KATABUCHI

*Laboratory for Advanced Nuclear Energy
Tokyo Institute of Technology*

Tokyo Tech

M. Mizumoto , M. Igashira

JAEA

K. Terada, A. Kimura, S. Nakamura, T. Nakao, O. Iwamoto

N. Iwamoto, N. Mizuyama, H. Harada

KURRI

J. Hori

Hokkaido Univ.

K. Kino

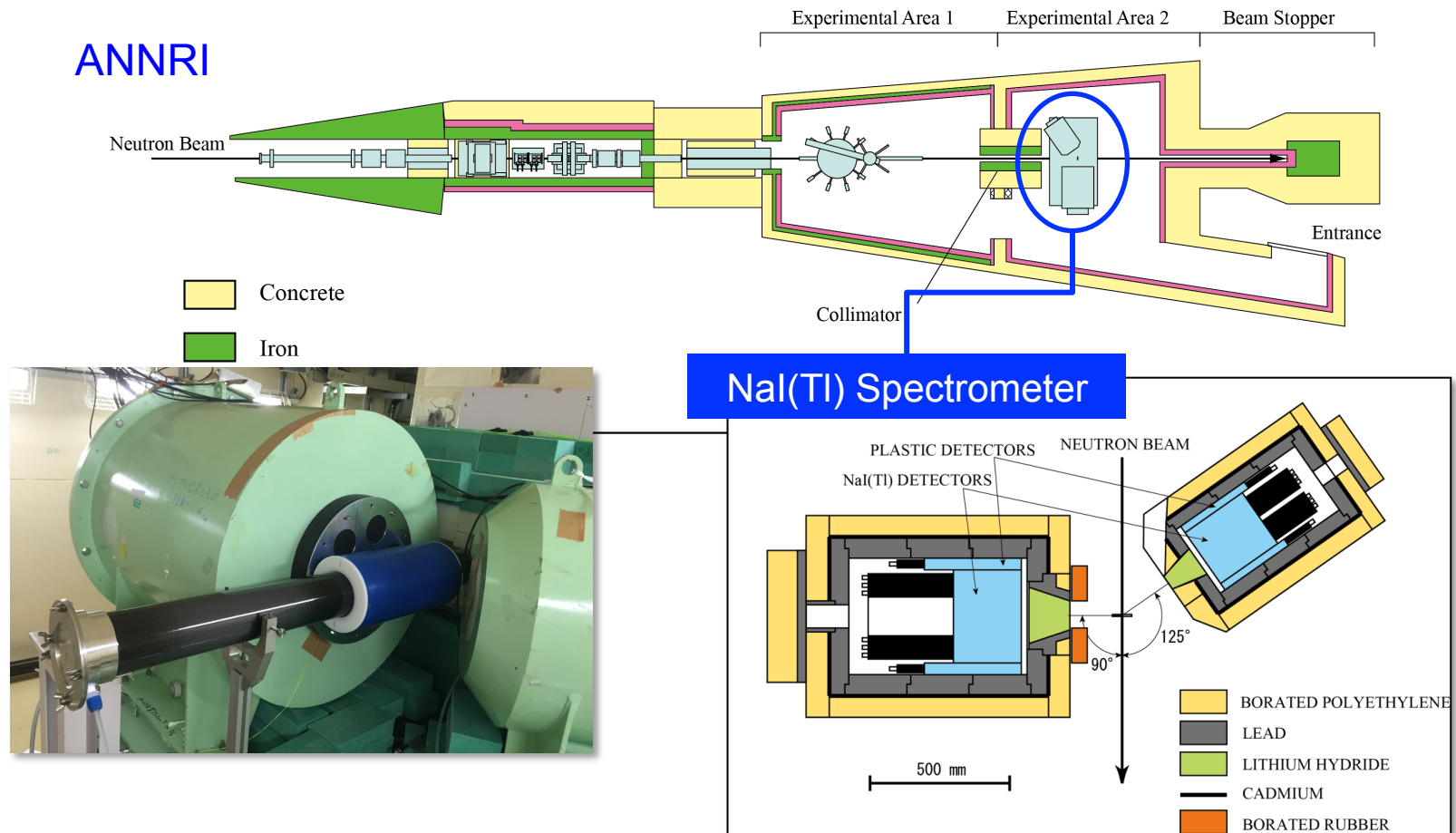
^{99}Tc and nuclear transmutation

- ❑ Long-lived fission products (LLFP) in spent nuclear fuel have been an issue to deal with in nuclear power industry.
- ❑ To solve this long-standing issue, nuclear transmutation has been suggested.
- ❑ Technetium-99 has the highest priority to transmute due to its high fission yield and radiotoxicity.
- ❑ To design a nuclear transmutation system for ^{99}Tc , reliable neutron nuclear data of ^{99}Tc in a wide range of neutron energy are necessary.

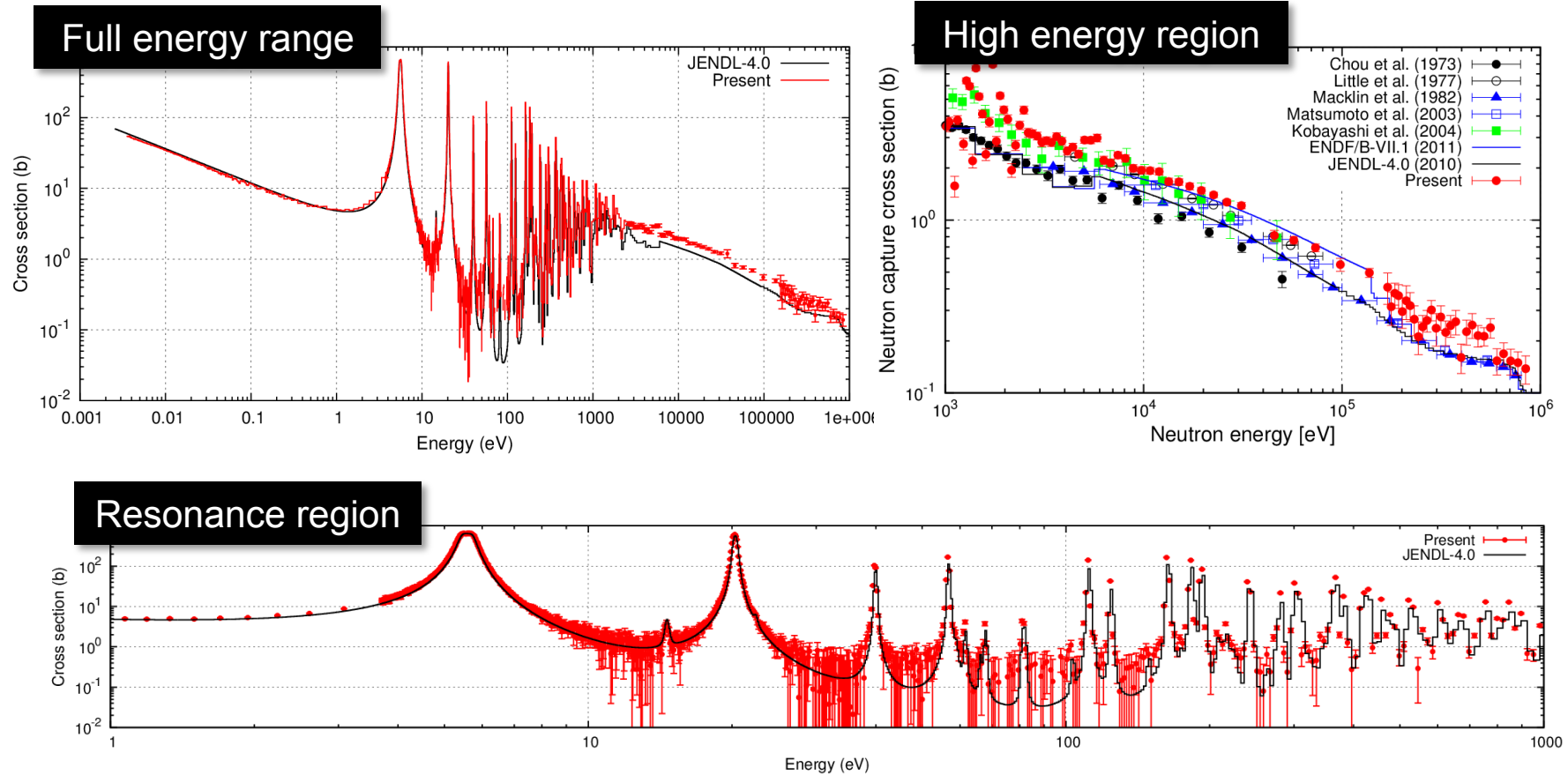
Nuclide	$T_{1/2}$ [y]	Y[%]	ALI [MBq]	Hazard Index
Se-79	0.295 M	4.53×10^{-2}	21 ~ 160	0.04 ~ 0.3
Zr-93	15.3 M	6.39	54 ~ 110	0.35 ~ 0.71
Tc-99	0.211M	6.11	140	1.9
Pd-107	6.50 M	0.14	1000 ~ 1300	$(1.5 \sim 1.9)10^{-4}$
Sn-126	0.100 M	5.49×10^{-2}	10	0.5
I-129	15.7 M	0.72	0.2 ~ 0.67	0.63 ~ 2.1
Cs-135	2.30 M	6.53	260	1

Present measurement @ J-PARC

The neutron capture cross section of ^{99}Tc was measured from thermal energy to keV at J-PARC. An NaI(Tl) spectrometer of ANNRI was used for measurement.



Results: $^{99}\text{Tc}(n,g)^{100}\text{Tc}$ cross section



The detail of the present work will be given in
Poster P033 (S111) .