Application of the method in this manner would provide us new information.

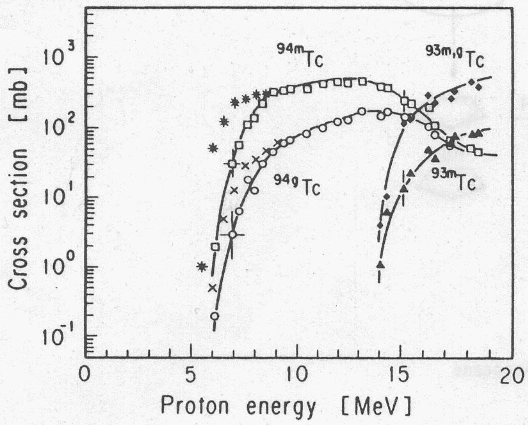

Fig.1. Excitation function of the ^{94}Mo(p,n)^{94m}Tc reaction.

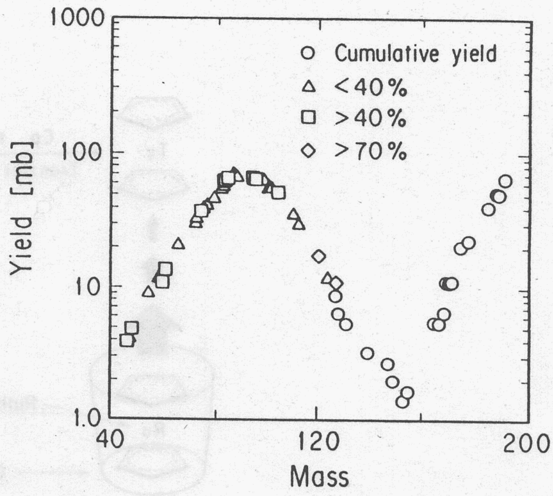

Fig.2. Multitracer isotope yields produced by the RIKEN ring cyclotron.

2.Shortening of half-life of technetium in astrophysical environments

Production of ^{99}Tc in stars was recognized by Merrill in 1950's. Recent calculation revealed that the half-life of this nuclide could be considerably shortened in the intrastellar environments. Only 10 years half-life is expected at s-process star temperature 3.3 x 10^8 K.

3. Molecular Rockets and shock waves induced by nuclear reactions

Molecular rockets and shock waves induced by nuclear reactions were interesting findings in our laboratory in Sendai.

Molecular rockets obtain energy from nuclear recoil in the moment of nuclear transformation occurring at the central atom of metallocene included in β-cyclodextrin. A metallocene molecule ejected from the cavity of β-cyclodextrin undergoes unique chemical reactions - molecular impact, molecular abstraction, molecular excitation and molecular rearrangement. In the case of ^{100}Ru(γ,p)^{99m}Tc reaction in ruthenocene $RuCp_2$ included in β-cyclodextrin, a molecular rocket of $TcCp_2$ · radical will pick up cyclopentadienyl radical from other ruthenocene (Fig.3).