Response to heavy ions of thin ΔE strip detectors produced by the PPPP process

A.J. Kordyasz, M. Kowalczyk, W. Czarnacki, E. Kulczycka, J. Iwanicki

In order to produce

uniform, thin strip detectors made of the

n^+-n structures

thinned by

the anodic dissolution

we have elaborated

a new technological process

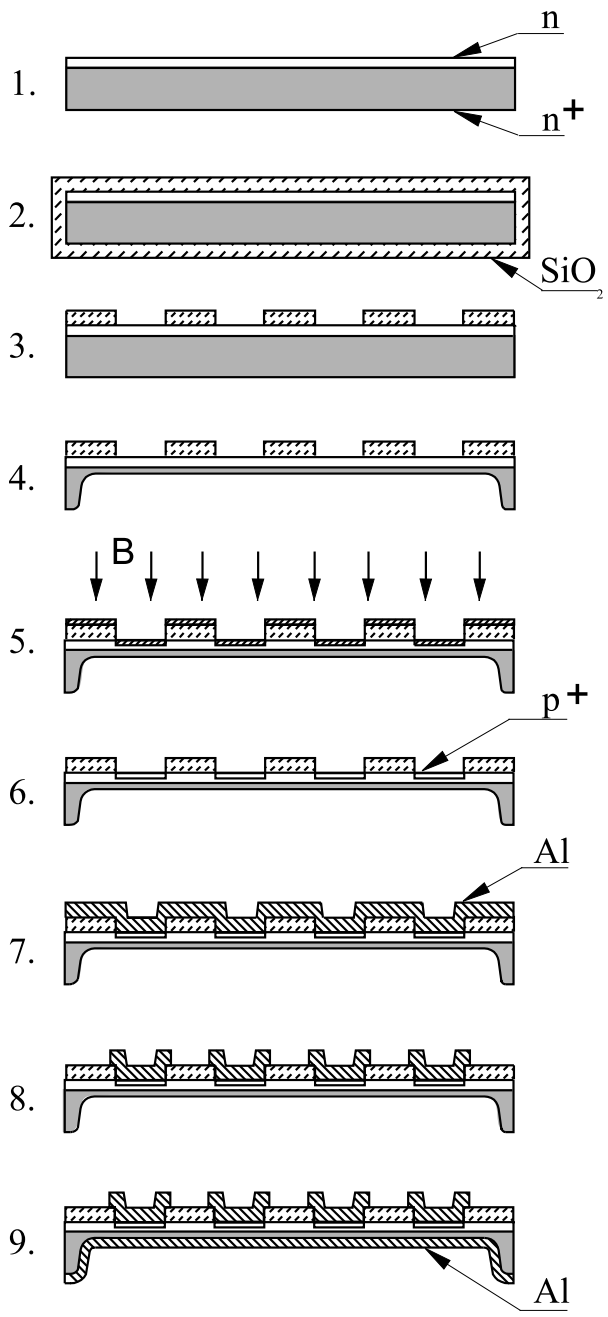
named:

Planar Process Partially Performed on the Thin Silicon Membrane (PPPP process):

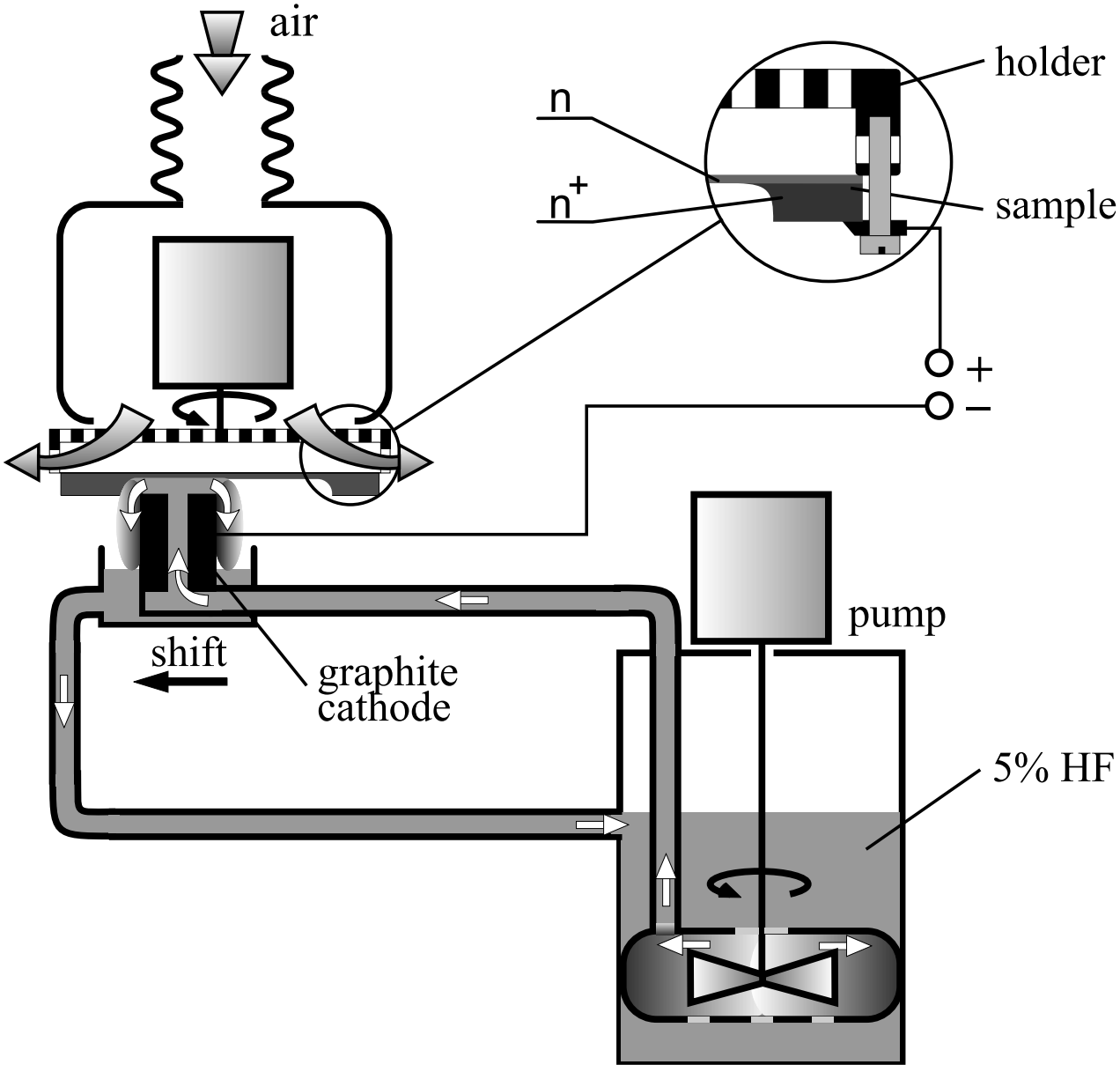
A.J. Kordyasz, E. Nossarzewska-Orłowska,
J. Wojtkowwska, M. Kisieliński, E. Kulczycka,
L. Reissig, J. Kownacki, A. Wojtasiewicz,
J. Sarnecki, J. Iwanicki,

Nucl. Instr. and Meth. A 539 (2005) 262

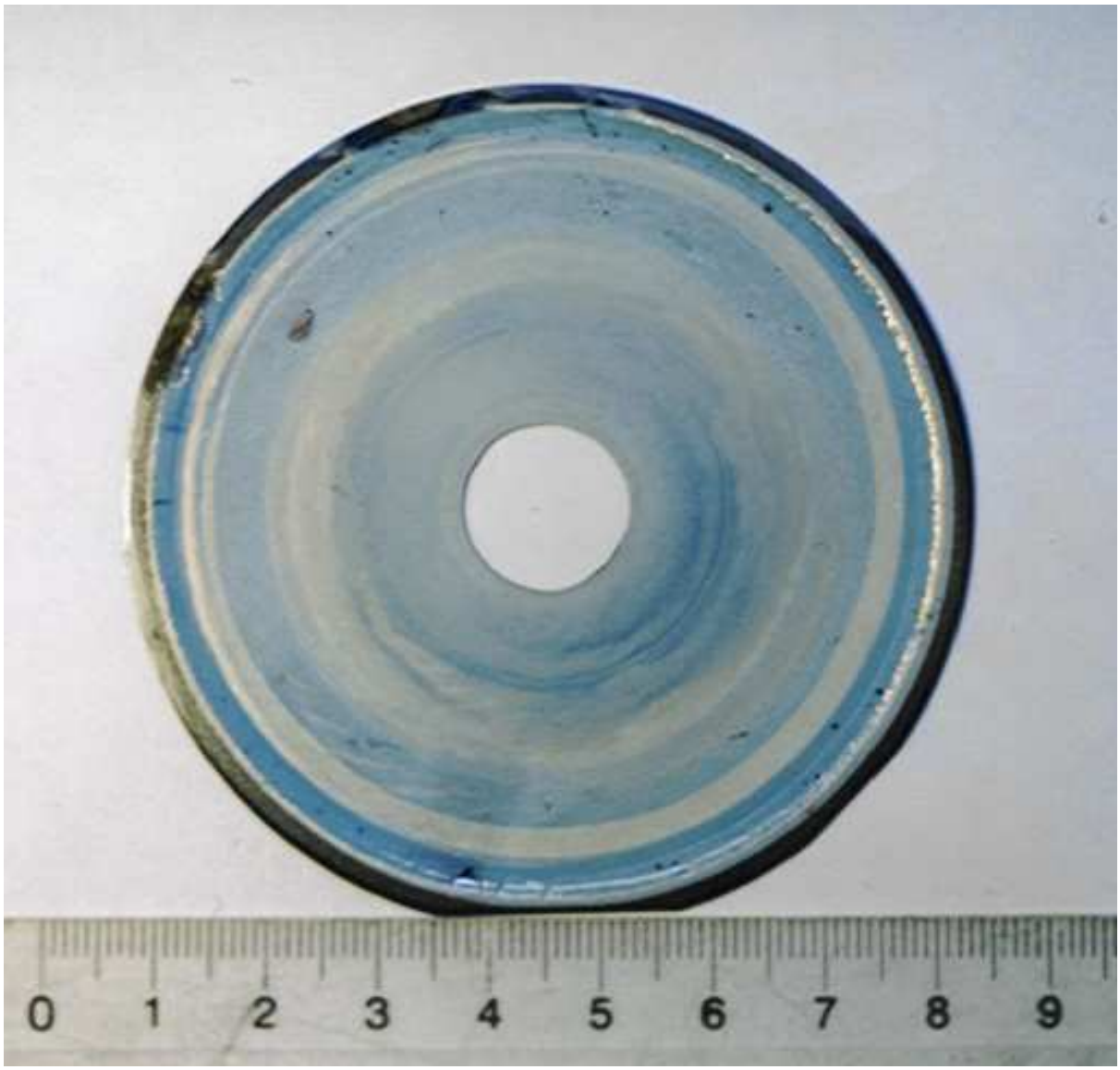
Planar Process Partially Performed on the Thin Silicon Membrane (PPPP process)



Electrolyte jet technique device for thinning the large-area n^+-n oxidated silicon epitaxial wafers by the anodic dissolution



52 μm thick epitaxial n-type layer after removing 300 μm thick n^+-type substrate by the anodic dissolution of the 3 in diameter n^+-n structure

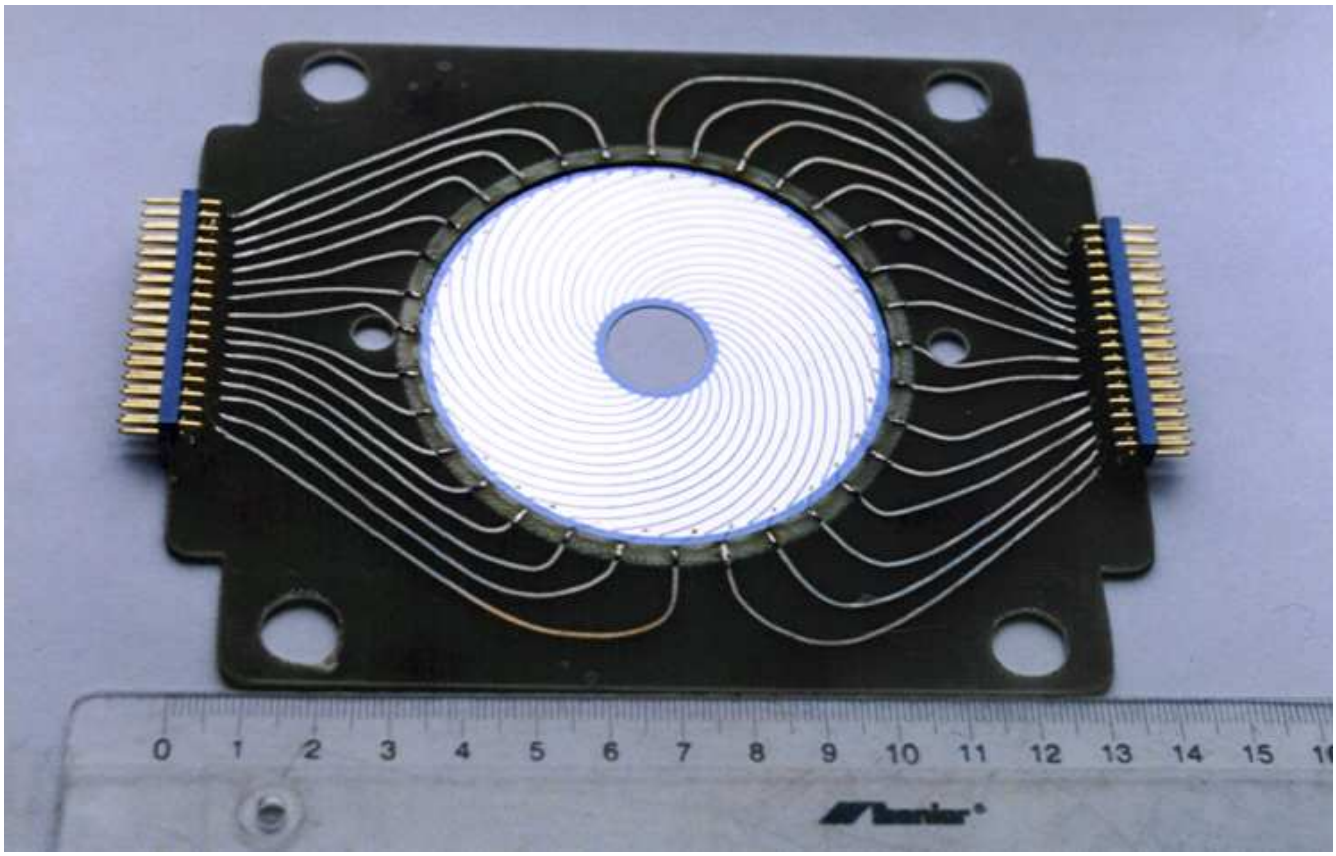


Top view of the

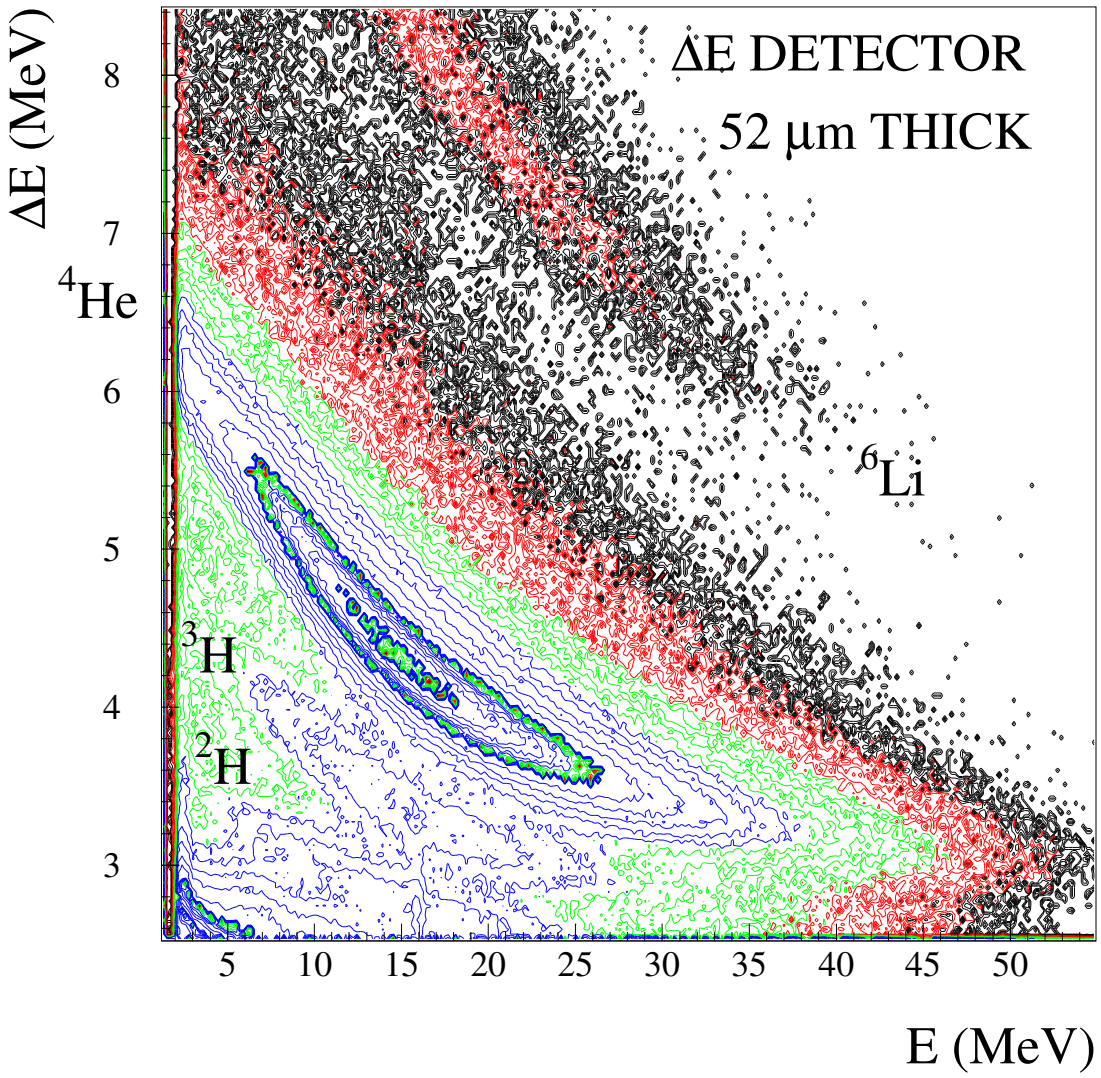
passivated 52 μm thick ΔE strip detector

produced by the

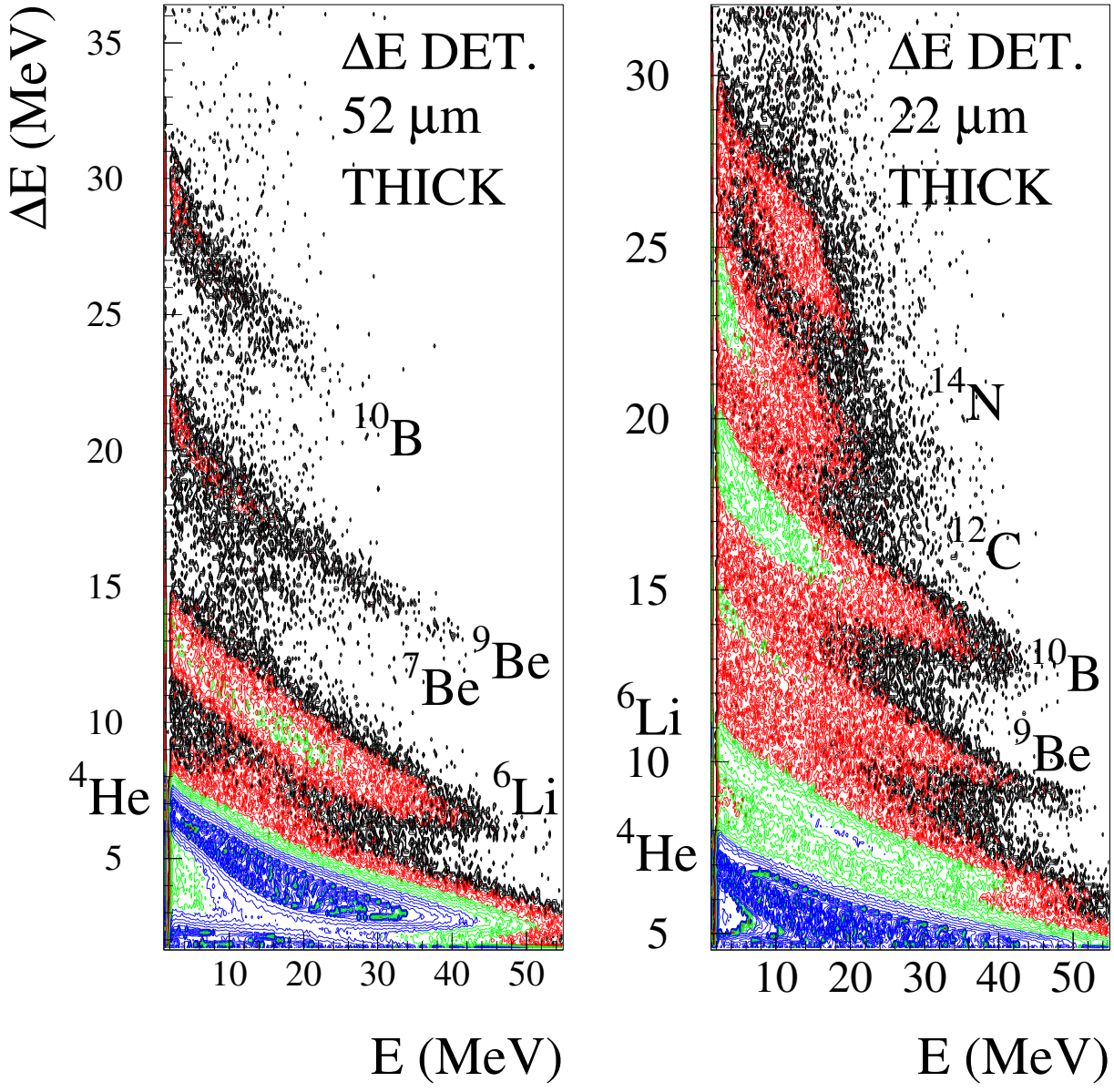
PPPP process



Measurements of light charged particles (p,d,t,α,^{6}Li) produced in the ^{14}N(^{12}C,X) reaction by E-ΔE telescope consisting of 52 μm thick ΔE strip detector followed by Si(Li) E detector.



Measurements of heavy ions produced in the ^{14}N(^{9}Be,X) reaction by E-ΔE telescopes containing ΔE strip detectors with thickness 52 and 22 μm, respectively.



Applications:

- **Light charged particle and heavy ion identification,**
- **Front strip detectors in Si-balls for low energy heavy ion identification.**

Possible to produce 10 μm thick silicon strip transmission detectors.