

Measurement of reaction cross-sections critical to Fusion reactors

In a typical fusion reactor



Element	%age
Cr	16-18%
Fe	65-72%
Ni	10-14%
Mn	2-3%

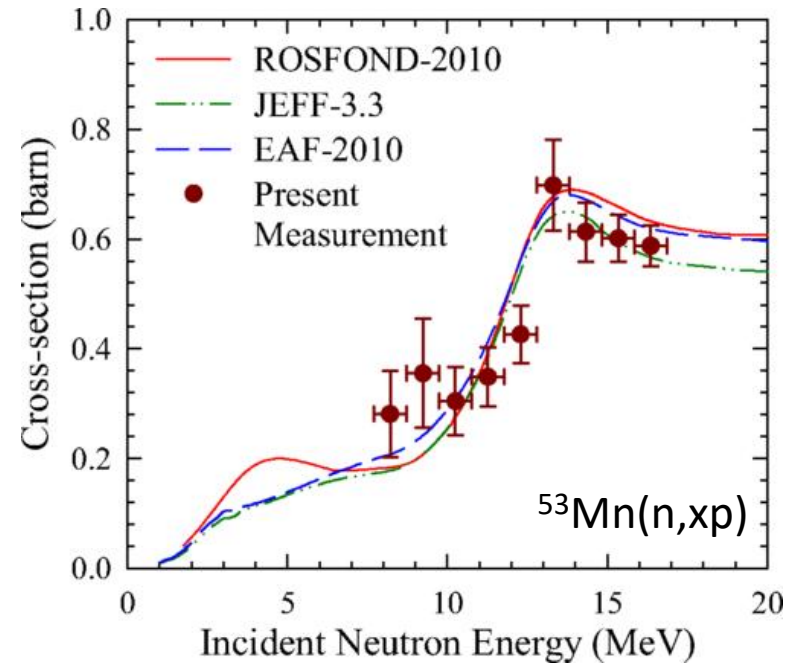
Transmutation reactions

Radio Nuclie	Half life (Year)
^{53}Mn	3.74E+6
^{55}Fe	2.73
^{60}Fe	1.5E+6
^{60}Co	5.27
^{59}Ni	7.6E+4
^{63}Ni	100.1

(n,xp) (n,xα)

Hydrogen Helium
Direct measurements
Possible

Hydrogen Helium
(n,xp) (n,xα)



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Direct measurements
Extremely Difficult

- ✓ Gas production leads to **swelling** and **embrittlement** of structural material.
- ✓ (n,xp) & (n,xα) cross-section data have a critical importance for safety and design analysis of a fusion reactor .

