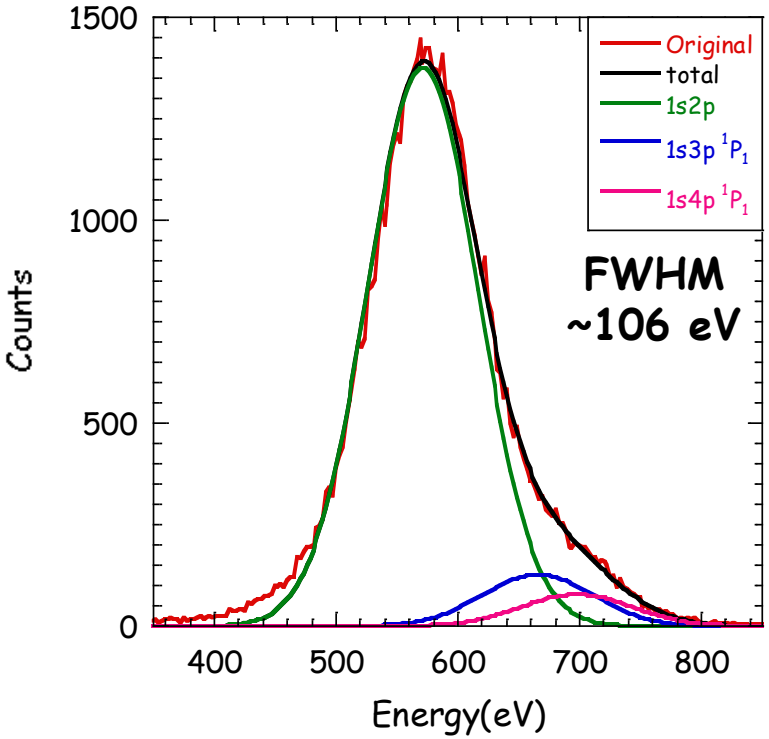
CX-TES MEETING

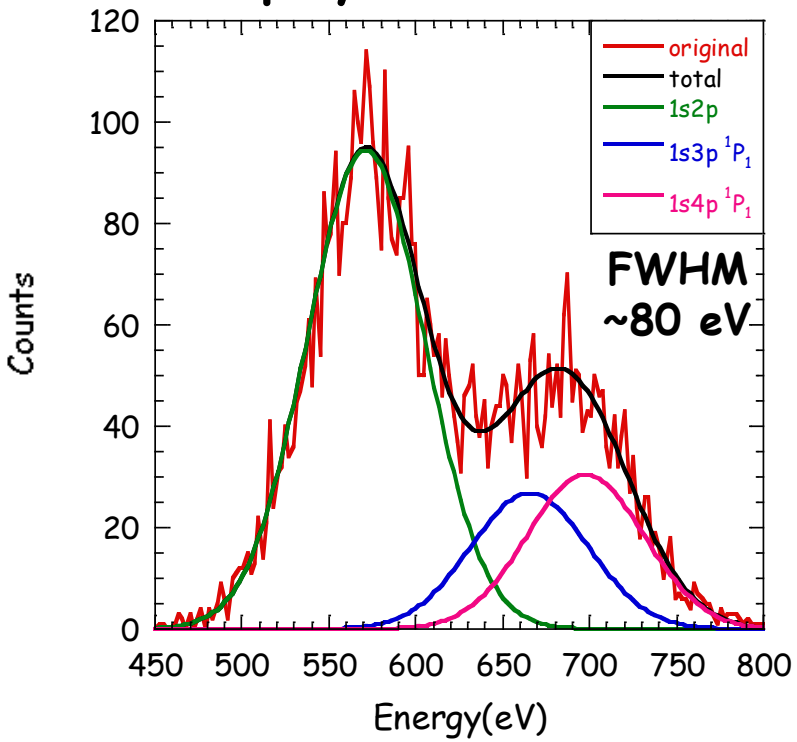
2011.07.08

O^{7+}-H_2 140 keV

window less



polymer window



detector-collision center (mm)	150	150
Beam current (nA)	168.7	6.09
Pressure of target gas (10^{-3}Pa)	2.30	6.55
測定時間 (s)	300	10800
2p:3p:4p	100:9:6	100:28:32

発光断面積

$$\sigma[cm^2] = \frac{R[/m^3 \cdot s]}{n[/m^3] \cdot J[/cm^2 \cdot s]}$$

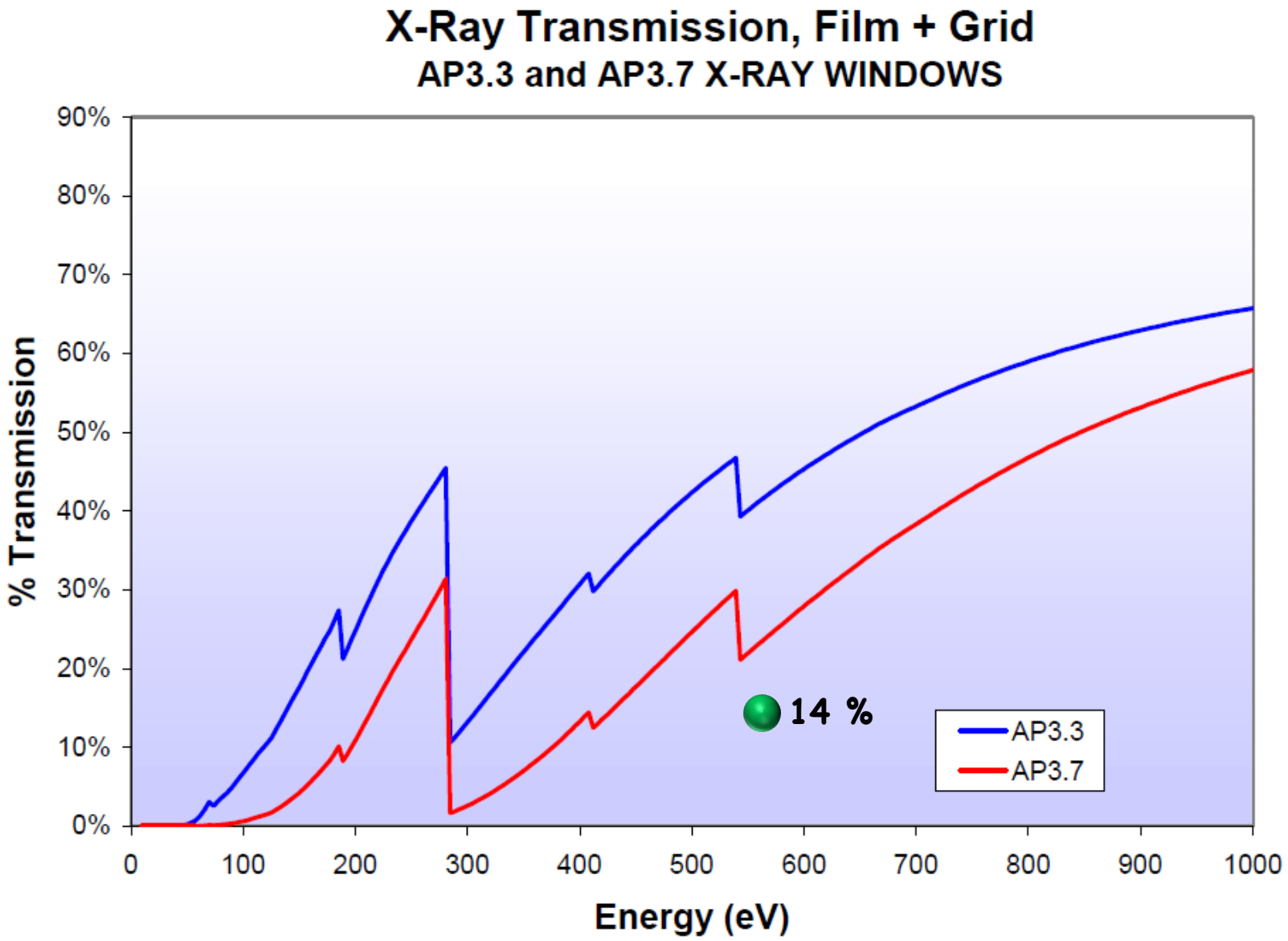
$$R[/m^3 \cdot s] = n \cdot \frac{4\pi\pi^2[mm^2]}{S[mm^2]} \cdot \frac{1}{t[s]} \cdot \frac{1}{4/3\pi r^3[m^3]}$$

number of event　solid angle　measurement time　emission volume

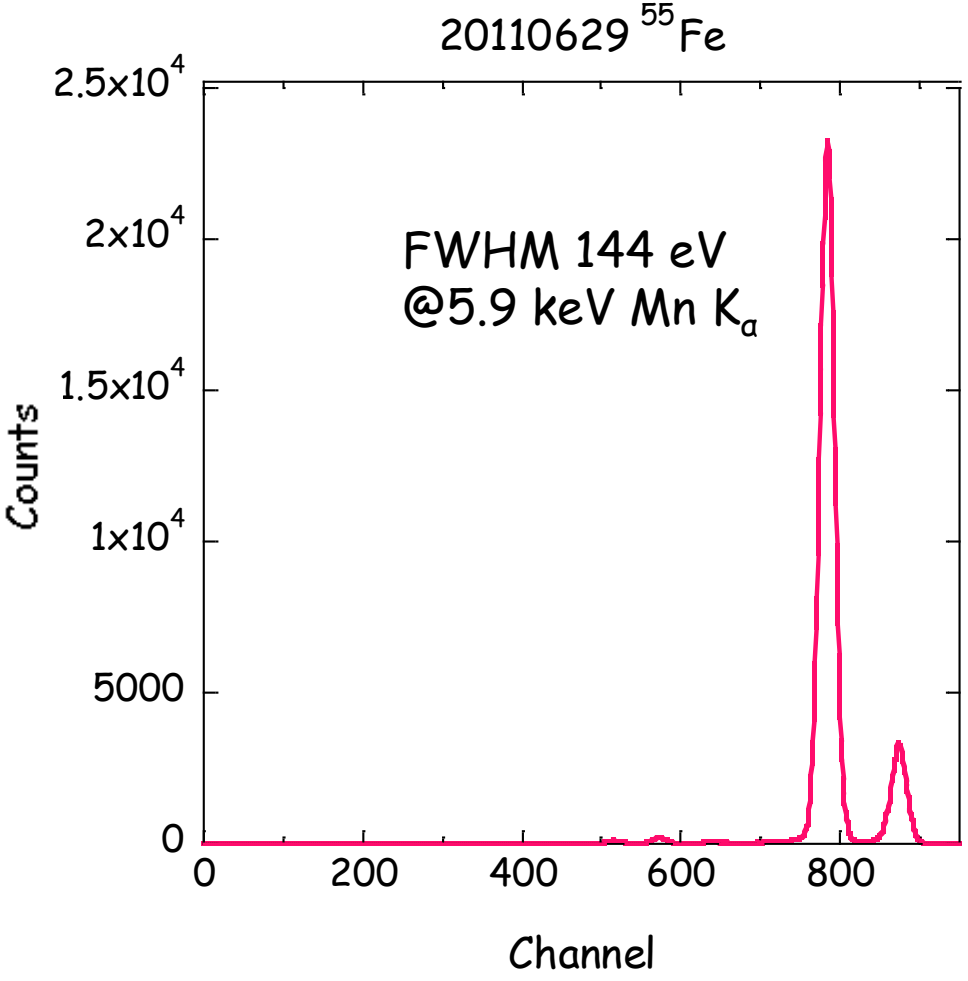
$$J[/cm^2 \cdot s] = I[A] \cdot e[/A \cdot s] \cdot \frac{1}{q} \cdot \frac{1}{\pi r^2[cm^2]}$$

beam current　elementary charge　projectile charge　beam diameter

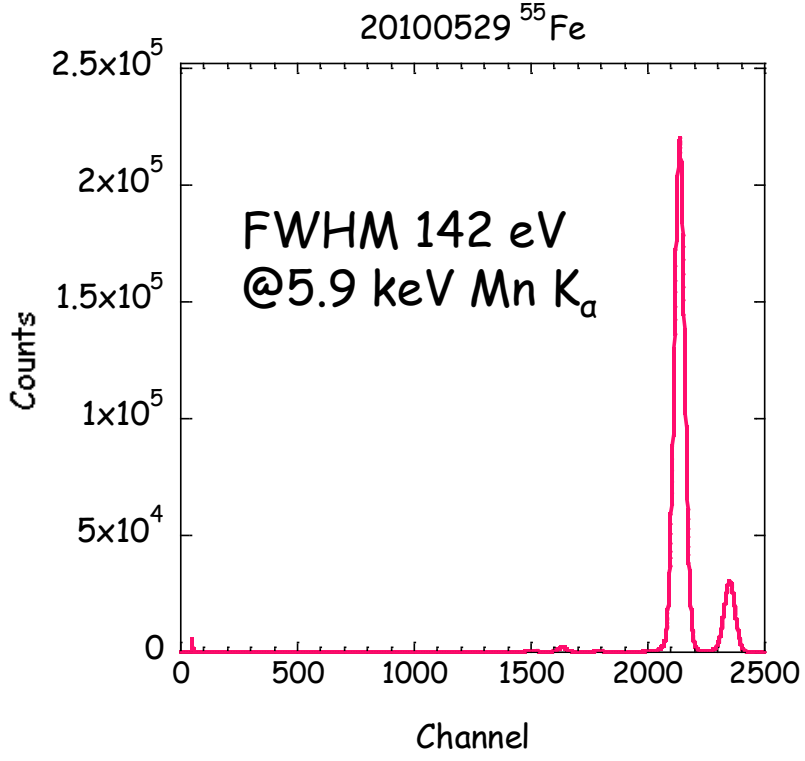
Polymer windowの透過率



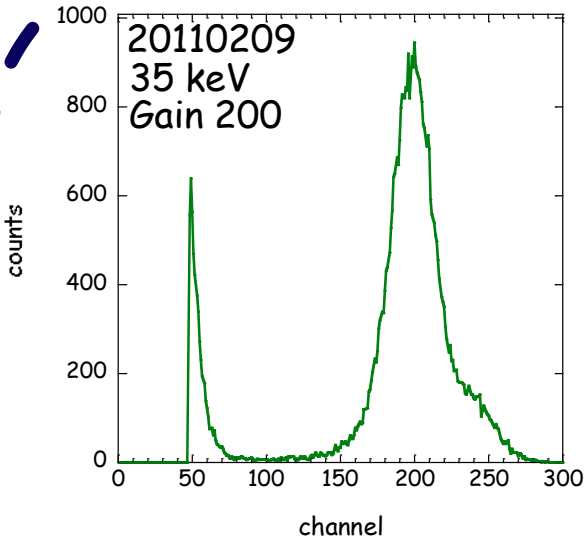
^{55}Fe Si(Li) detector

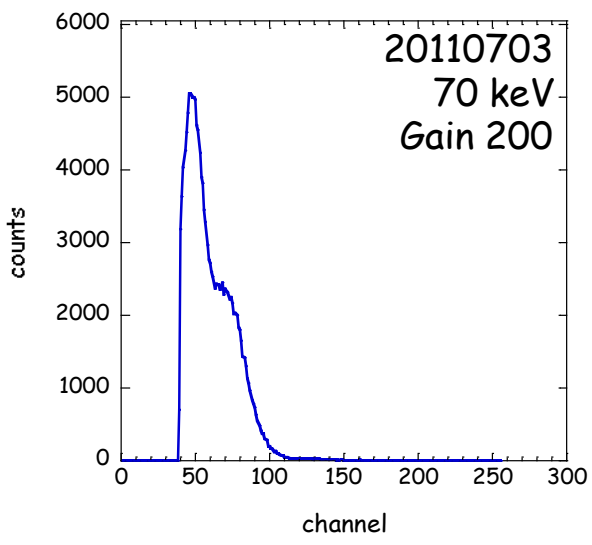


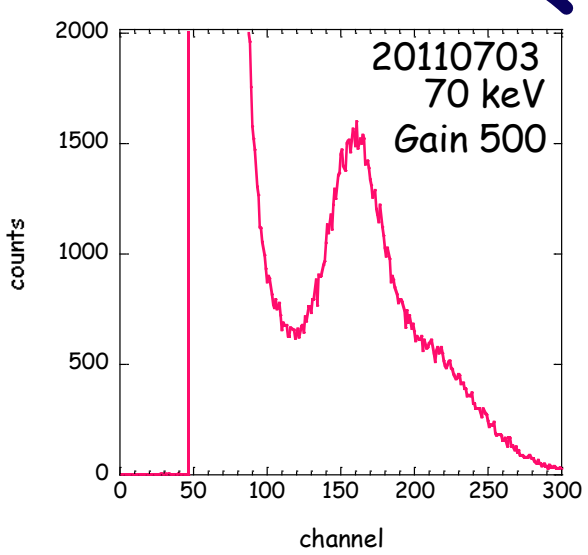
X-rays from ^{55}Fe (2.73 y)		
E(keV)	I (%)	Assignment
5.77	6.9E-06 *4*	Mn K_{a3}
5.888	8.5 *4*	Mn K_{a2}
5.899	16.9 *8*	Mn K_{a1}
6.49	1.01 *5*	Mn K_{b3}
6.49	1.98 *10*	Mn K_{b1}
6.536	0.00089 *5*	Mn K_{b5}
6.539	8.5E-08 *5*	Mn K_{b4}



O^{7+}-CH_4 Si(Li) detector







原因

素子の表面に不感層

or

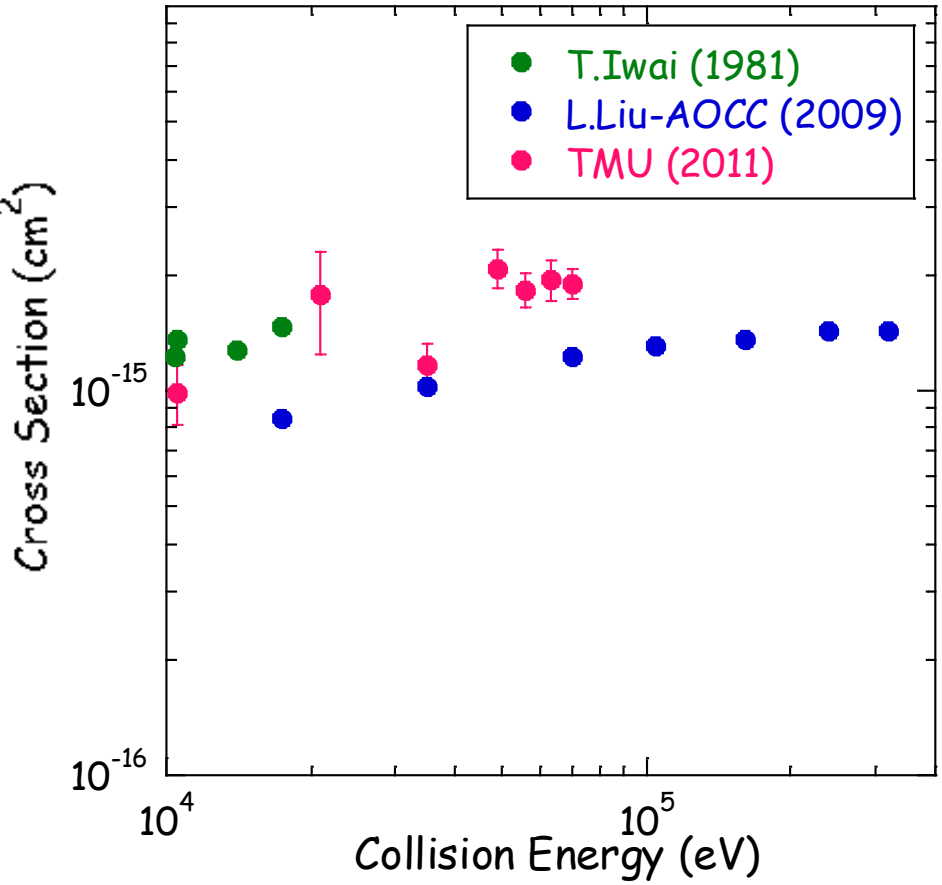
Si結晶中へ均一にドリフトさせたLiイオンが一部動いてしまい，
表面付近に空乏層でない部分を形成

→その分，空乏層が薄くなっている

→要　素子交換

1 電子捕獲電荷移行断面積

O^{7+}-He

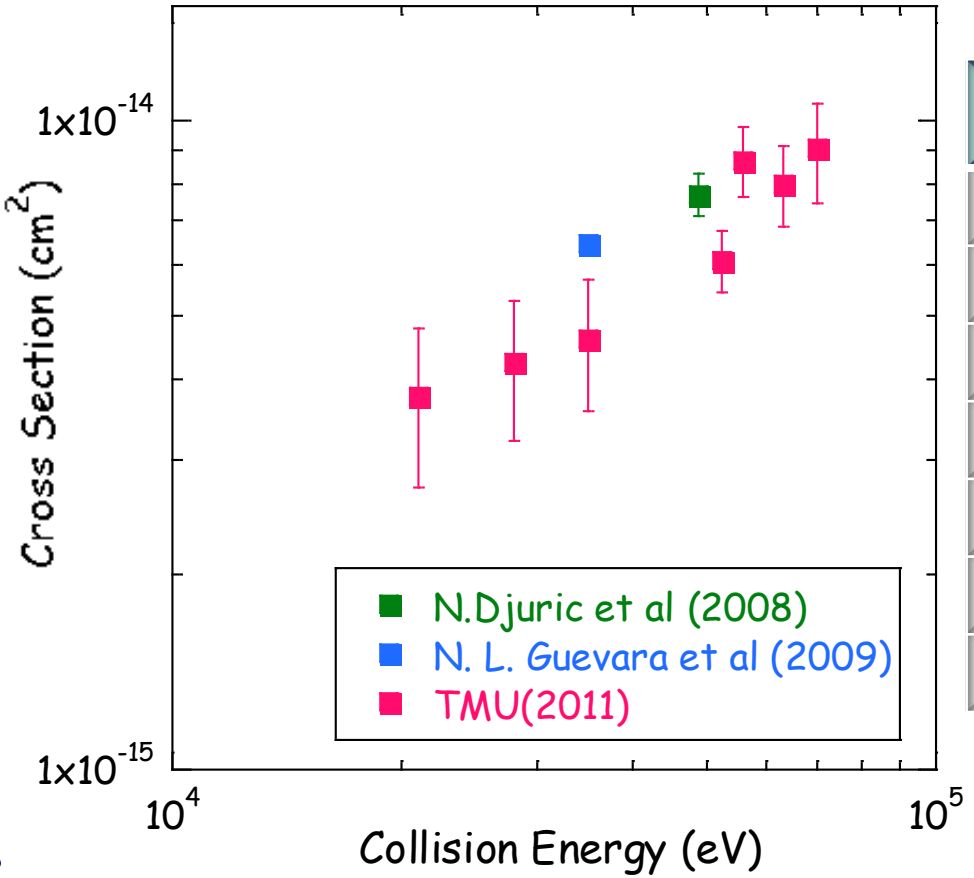


Collision Energy (keV)	Cross Section (cm^2)	Velocity (km/s)	error (%)
70	1.90×10^{-15}	919	9
63	1.95×10^{-15}	872	12
56	1.83×10^{-15}	822	11
49	2.08×10^{-15}	769	11
35	1.16×10^{-15}	650	14
21	1.77×10^{-15}	503	30
10.5	9.92×10^{-16}	356	18

1 電子捕獲電荷移行断面積

$O^{7+}-CH_4$

IP: H, CH_4
13.6 eV



Collision Energy (keV)	Cross Section (cm^2)	Velocity (km/s)	error (%)
70	9.04×10^{-15}	919	17
63	7.99×10^{-15}	872	14
56	8.69×10^{-15}	822	12
52.5	6.09×10^{-15}	796	23
35	4.61×10^{-15}	650	14
28	4.24×10^{-15}	581	30
21	3.75×10^{-16}	503	18