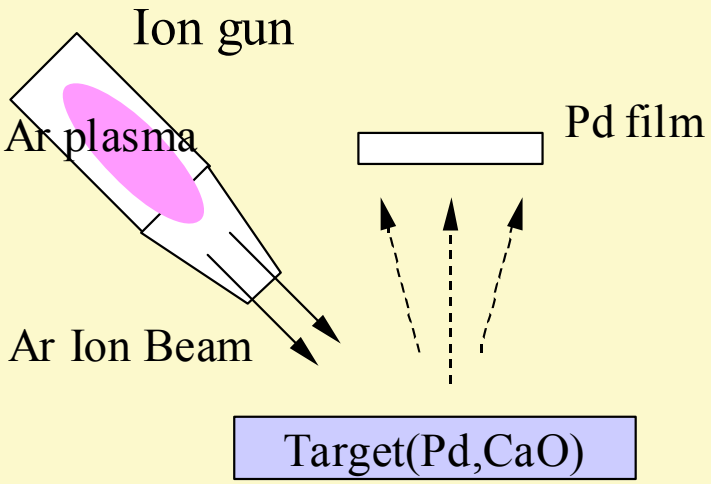
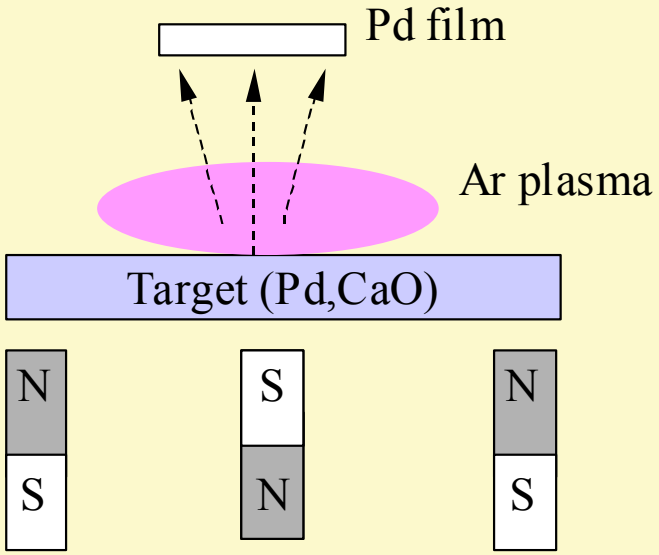
Consideration on the Role of CaO

Ion Beam Sputtering



Magnetron Sputtering



Both magnetron sputtering and ion beam sputtering methods gave positive results.

Correlation between D_2 Permeation and Conversion Rate

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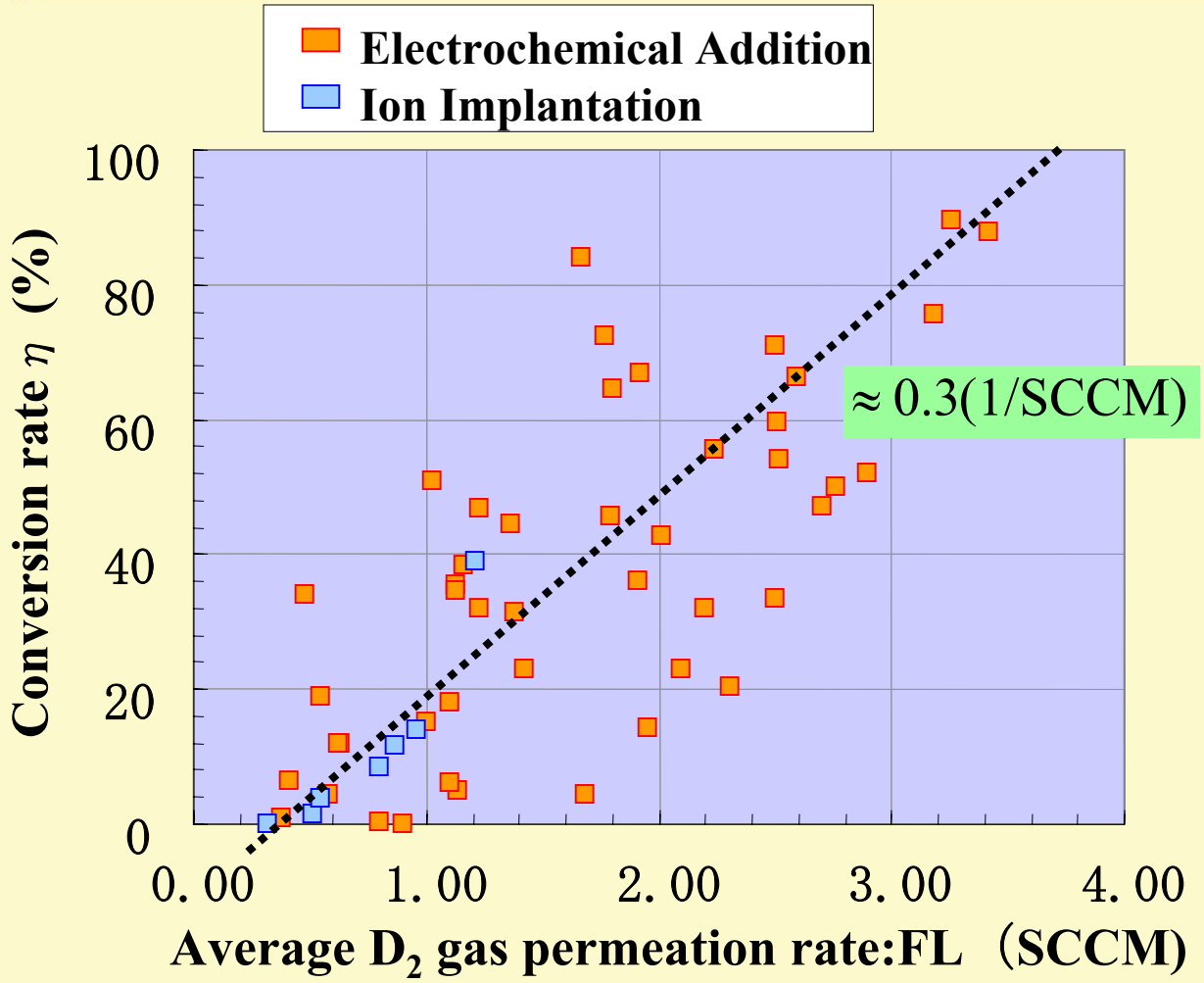

$$\eta = \frac{N_{\mathrm{Pr}}}{N_{Cs}} \times 100\%$$

$$= \frac{N_{\mathrm{Pr}}}{N'_{Cs} + N_{\mathrm{Pr}}} \times 100\%$$

η : conversion rate(%)
N_{Pr} : detected Pr (ng)
N_{Cs} : given Cs (ng)
N'_{Cs} : detected Cs after an experiment (ng)

$Cs \rightarrow \mathrm{Pr}$

Positive Correlation between D_2 permeation and Conversion Rate

Full SIMS Spectra for a Natural Ba Experiment

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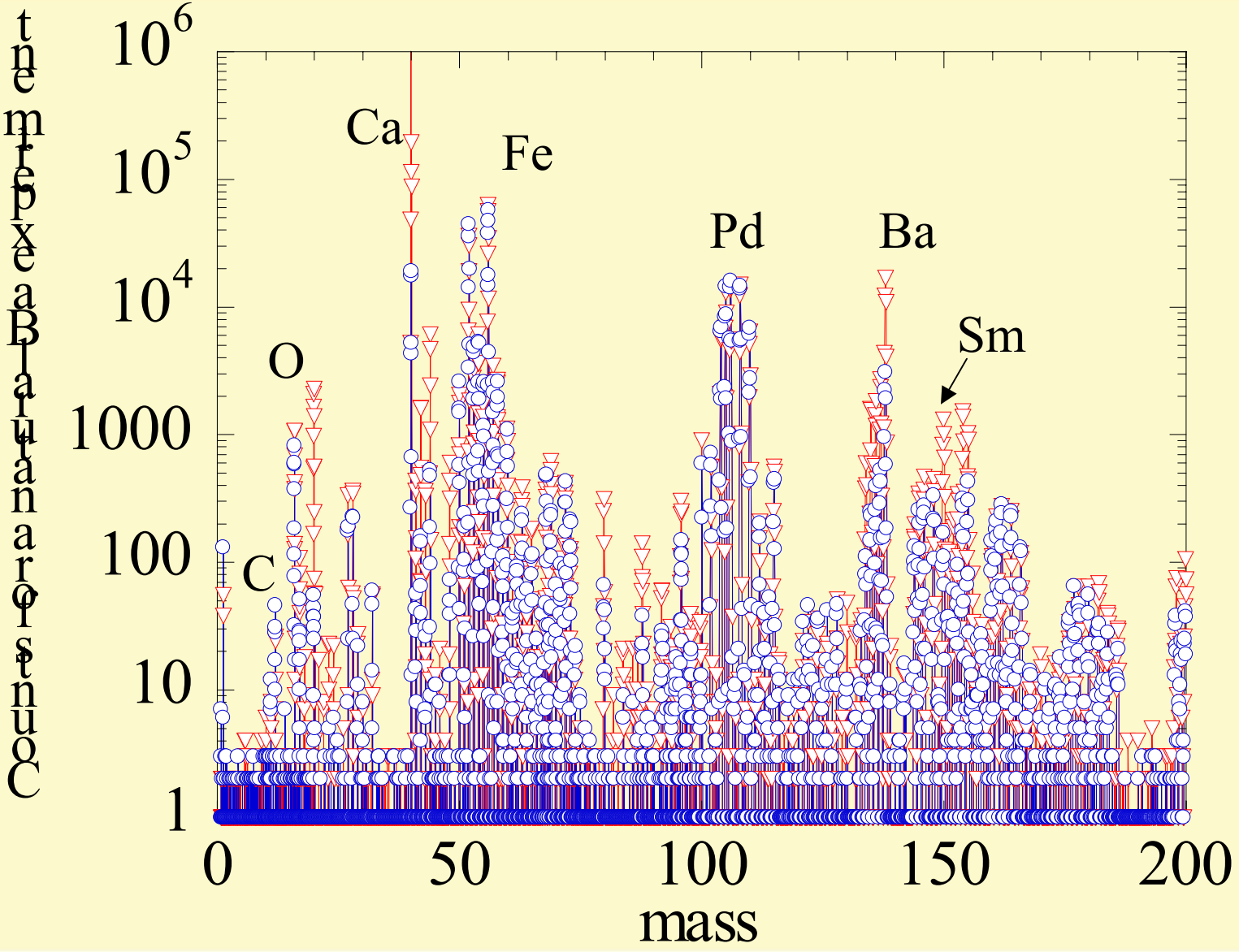
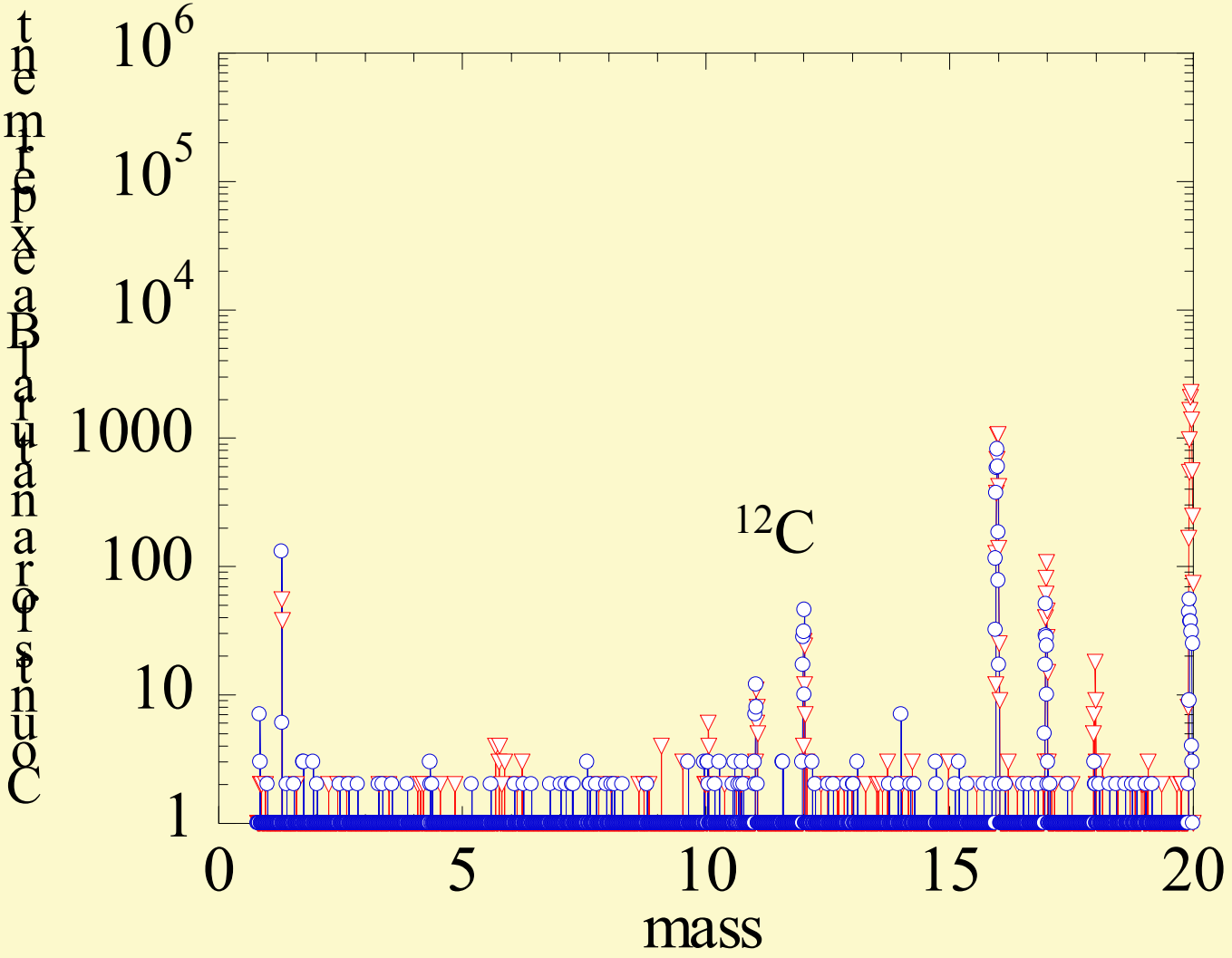
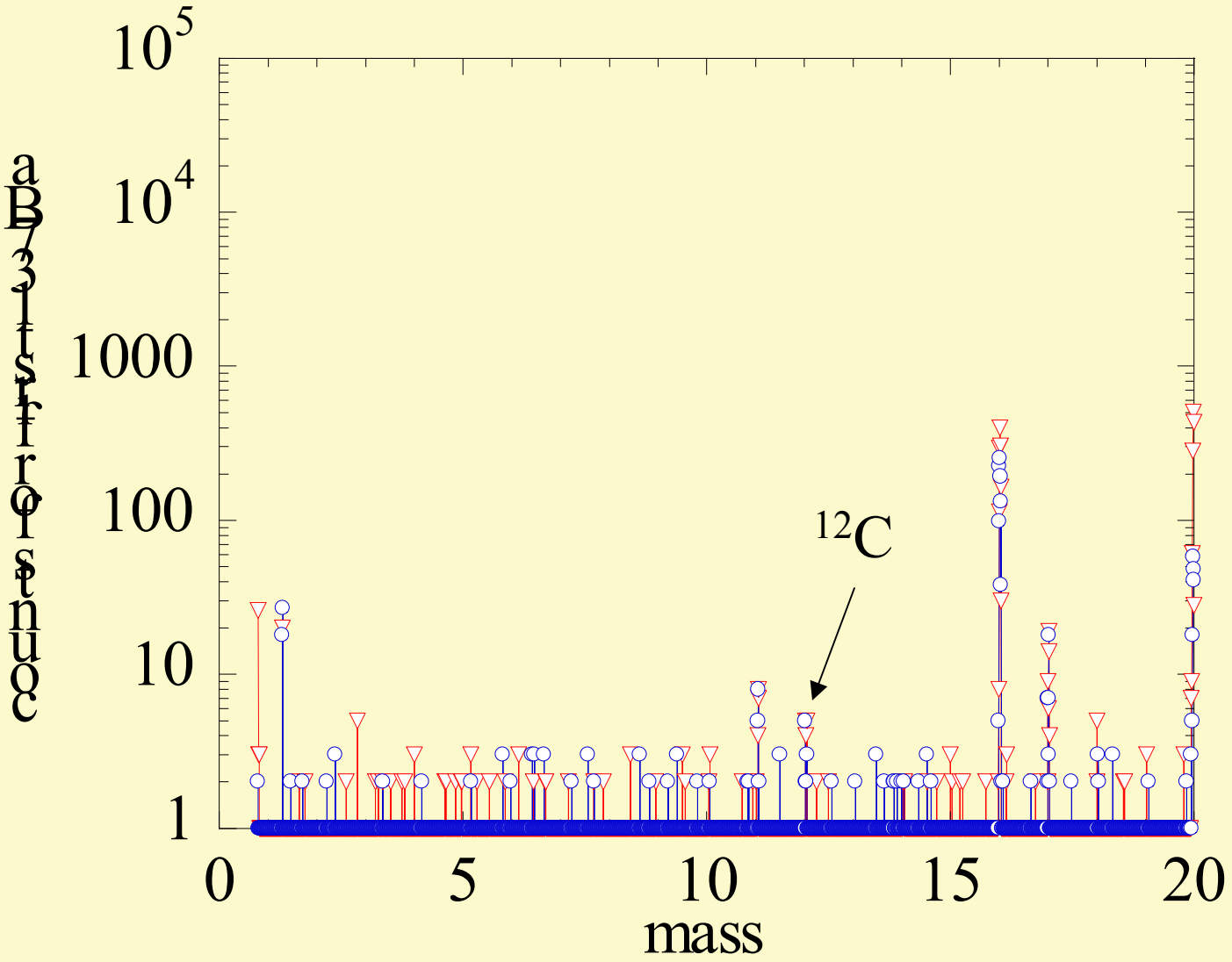


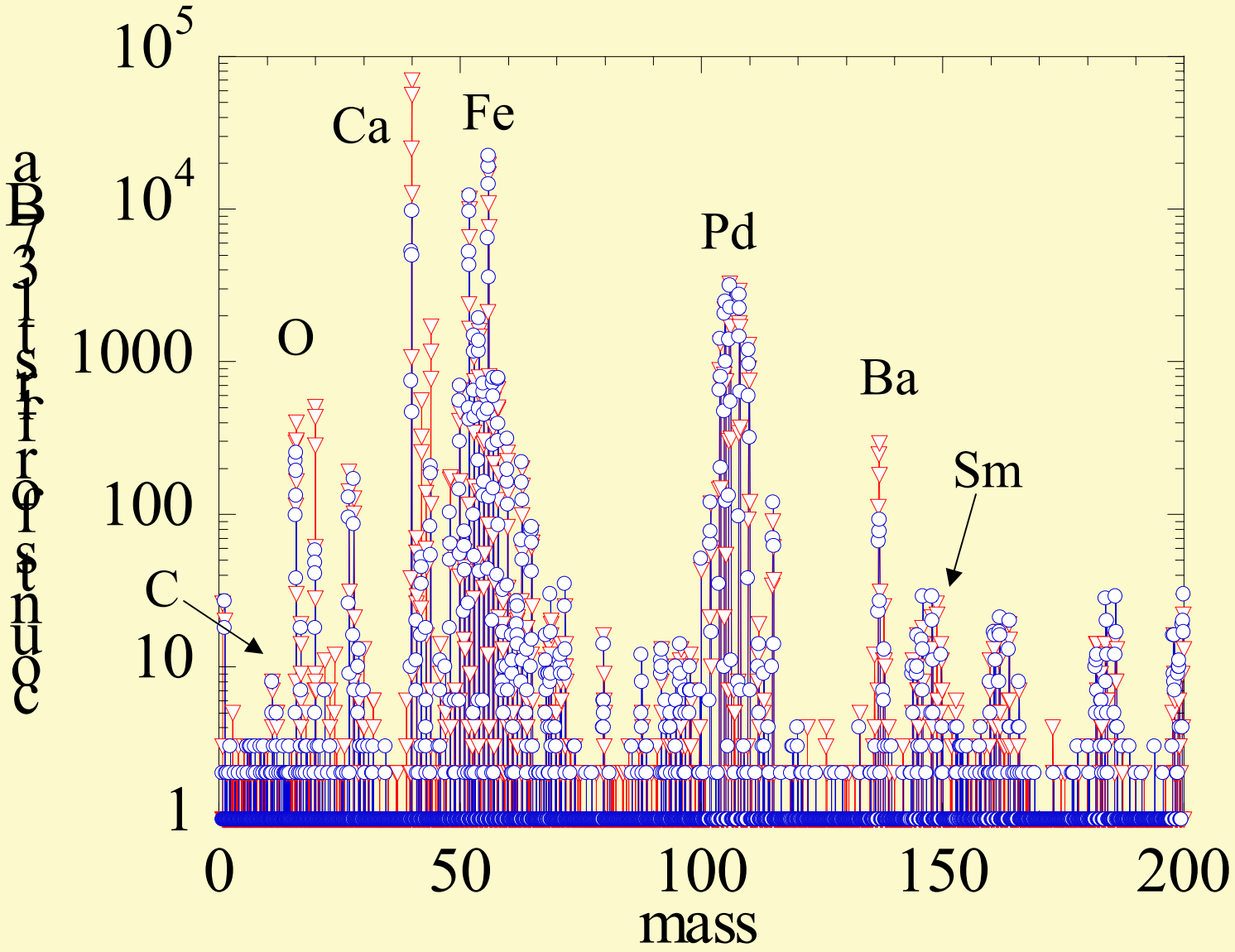
SIMS Spectra around mass 12 for a Natural Ba Experiment



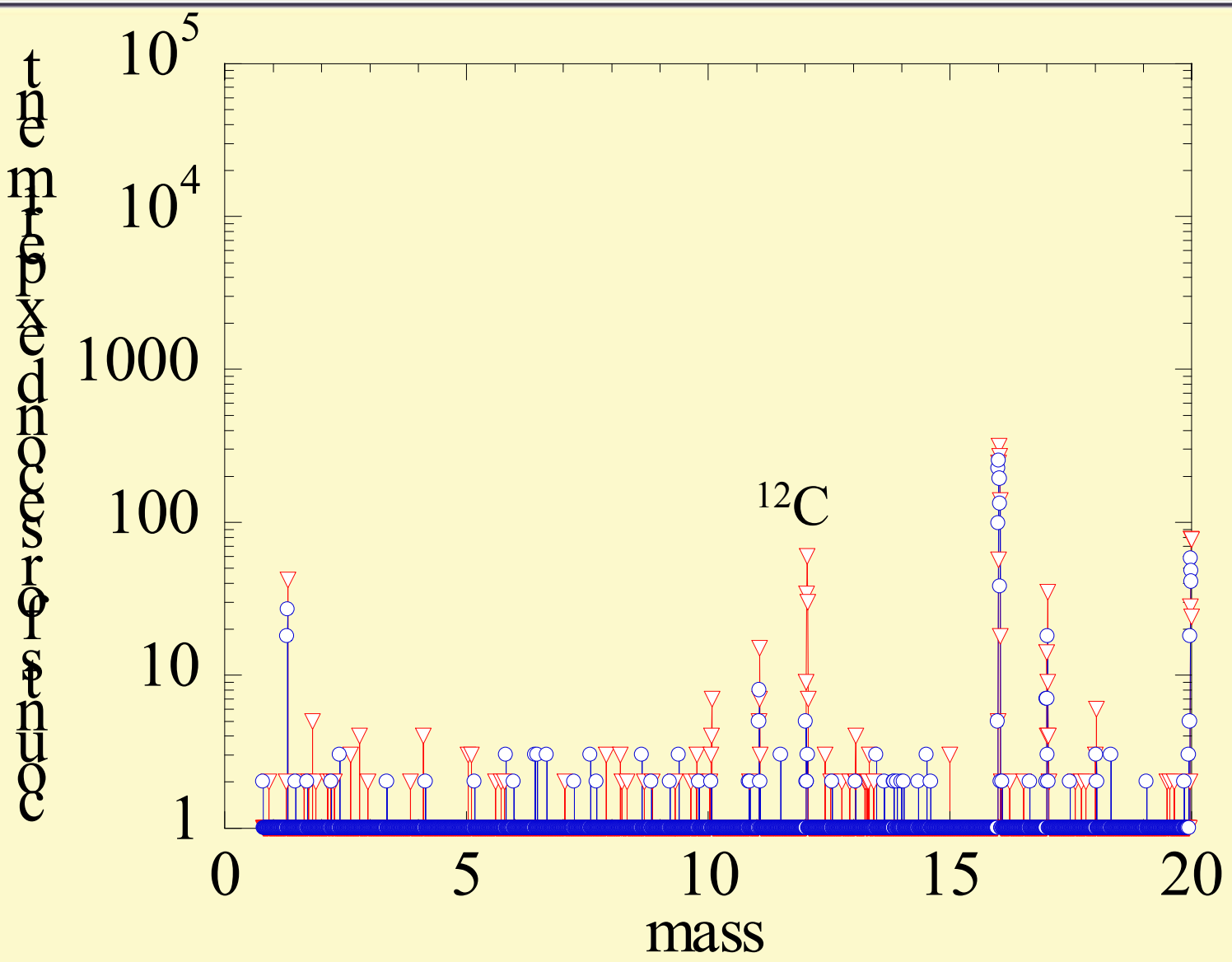
SIMS Spectra around mass 12 for the first 137Ba experiment



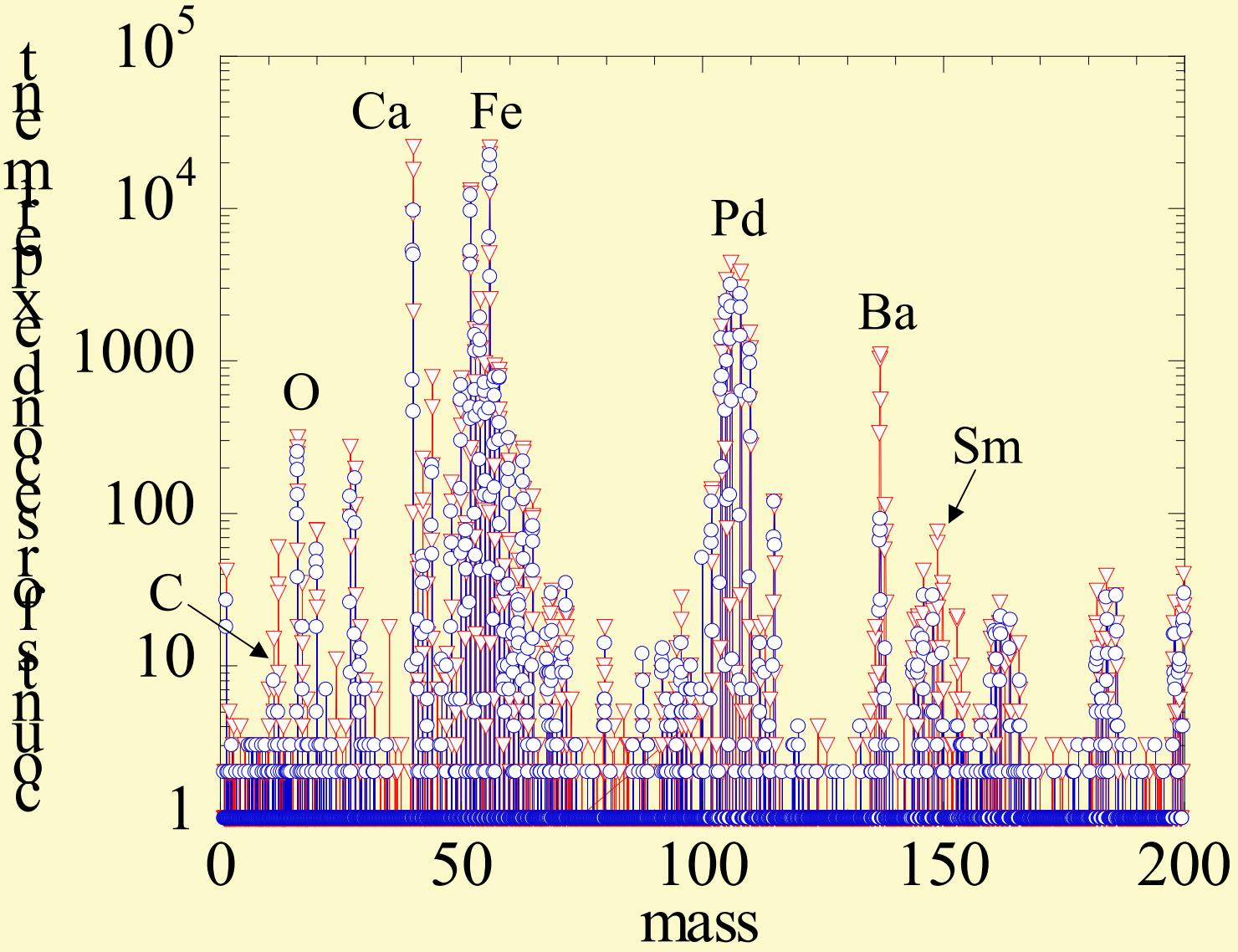
Full SIMS Spectra for #1Experiment



SIMS Spectra around mass 12 for the second 137Ba experiment



Full SIMS Spectra for #2Experiment



XPS Spectrum for Ba the second 137Ba experiment

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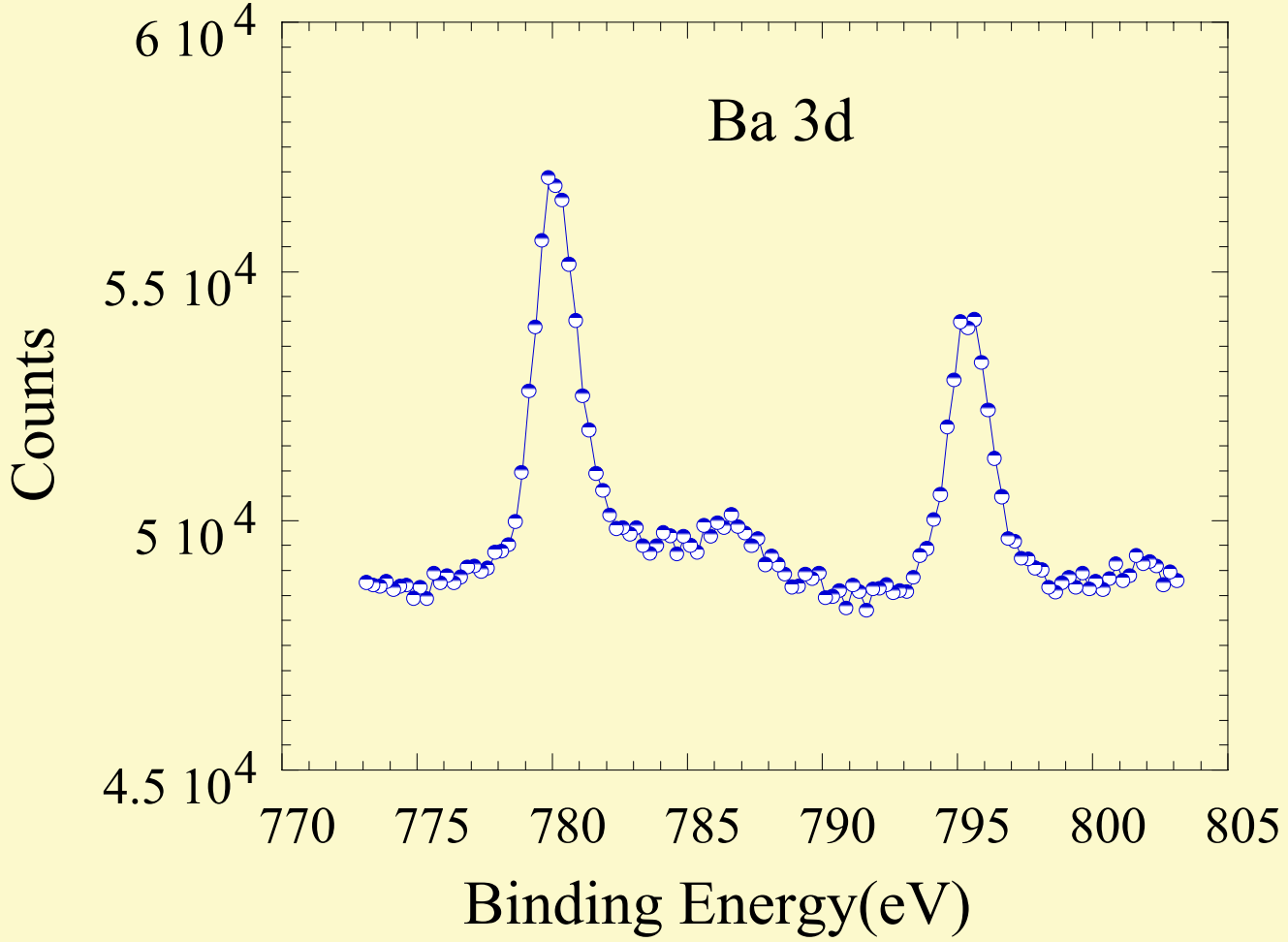

XPS Spectrum for Pd the second 137Ba experiment

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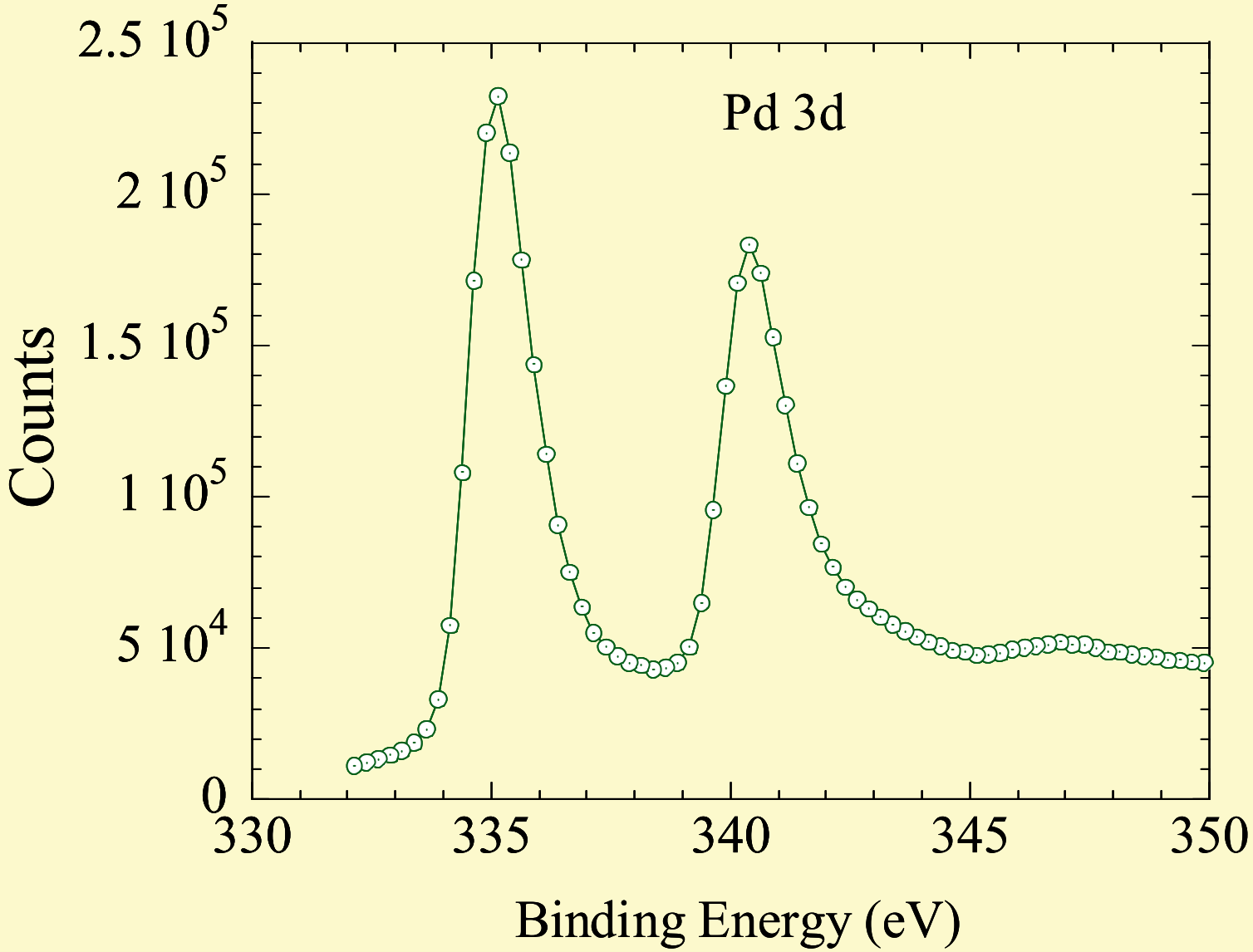
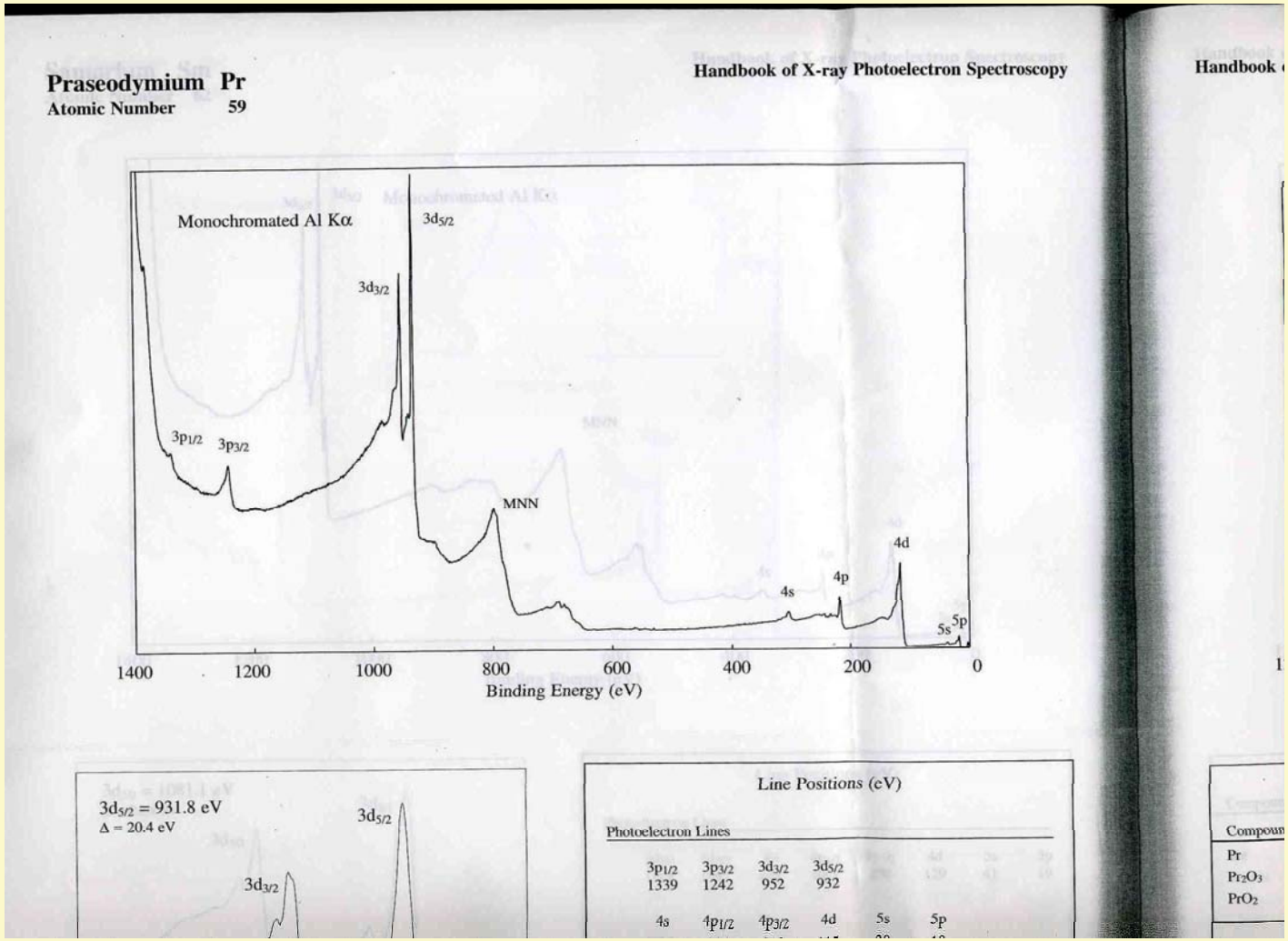


An Example of XPS Spectrum for Pr



Examination of Molecular Ions

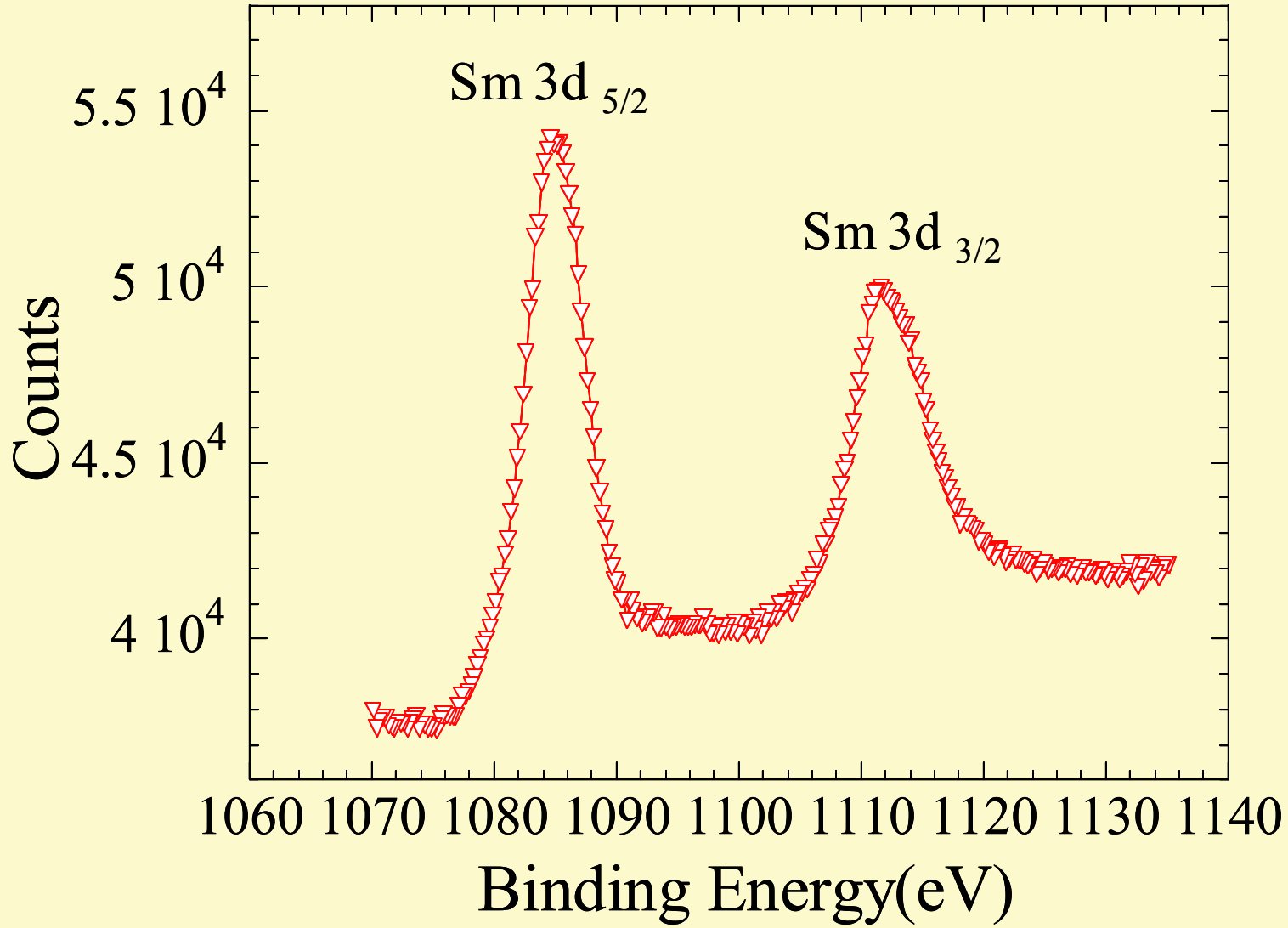
Pd	$Pd^{40}Ca$
102(1%)	142
104 (11%)	144
105 (22%)	145
106 (27%)	146
108 (26%)	148
110 (12%)	150

Ba	$Ba^{16}O$
130(0.1%)	146
132(0.1%)	148
134(2.4%)	150
135(6.6%)	151
136(7.8%)	152
137(11.3%)	153
138(71.7%)	154

No Molecular Ions for 149.

^{110}Pd(12%)Ca and ^{134}Ba(2.4%)O for mass150, however their effects should be lower than ^{106}Pd(27%)Ca and ^{138}Ba(71.7%)O

XPS Spectrum for the detected Sm



Depth Profile of Cs and Pr by XPS(2)