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**GROTRIAN DIAGRAMS FOR THE HYDROGEN I
ISOELECTRONIC SEQUENCE, H I THROUGH Kr XXXVI**

March 1987

Yoshio FUNATAKE, Toshizo SHIRAI and Yohta NAKAI

日本原子力研究所
Japan Atomic Energy Research Institute

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Grotrian Diagrams for the Hydrogen I Isoelectronic Sequence,
H I through Kr XXXVI

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It is useful for finding out systematic trends in atomic transitions to survey spectral lines of ions in isoelectronic sequences. In this report, Grotrian diagrams are presented to provide graphical overviews in the hydrogen I isoelectronic sequence.

Keywords: Energy Level, Wavelength, Hydrogen-like, Grotrian Diagrams

水素等電子系列, H I-Kr XXXVI のグロトリアン図

日本原子力研究所東海研究所物理部
舟竹良雄・白井稔三・中井洋太

(1987年2月27日受理)

等電子系列でイオンスペクトルを整理することは、原子遷移の系統的性質を調べる上で有用である。この報告書では、水素等電子系列イオン, H I-Kr XXXVI, のスペクトルをグロトリアン図にまとめた。

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I. INTRODUCTION

Compilation of spectroscopic data is very useful not only to atomic physics community but also for many applications in plasma physics, atmospheric physics, and astrophysics. A comprehensive compilation¹ was given in a tabular form by Kelly, who collected atomic and ionic spectral lines below 2000 Å for H through Ar. The compilation was extended to lines below 3500 Å for H through Kr in a recent article.²

The primary objective of series of reports is to present his spectral data in the form of Grotrian diagrams to allow a quick survey of the principal features of the levels and transitions, not in the tabular form. This report presents for the hydrogen I isoelectronic series, H I through Kr XXXVI.

ACKNOWLEDGEMENT

We gratefully thank Dr. R. L. Kelly and Dr. J. Sugar of National Bureau of Standards, who were pleased to provide numerical data on magnetic tape. We also acknowledge of the encouragement of Dr. Shikazono and Dr. Igarasi during the work.

REFERENCES

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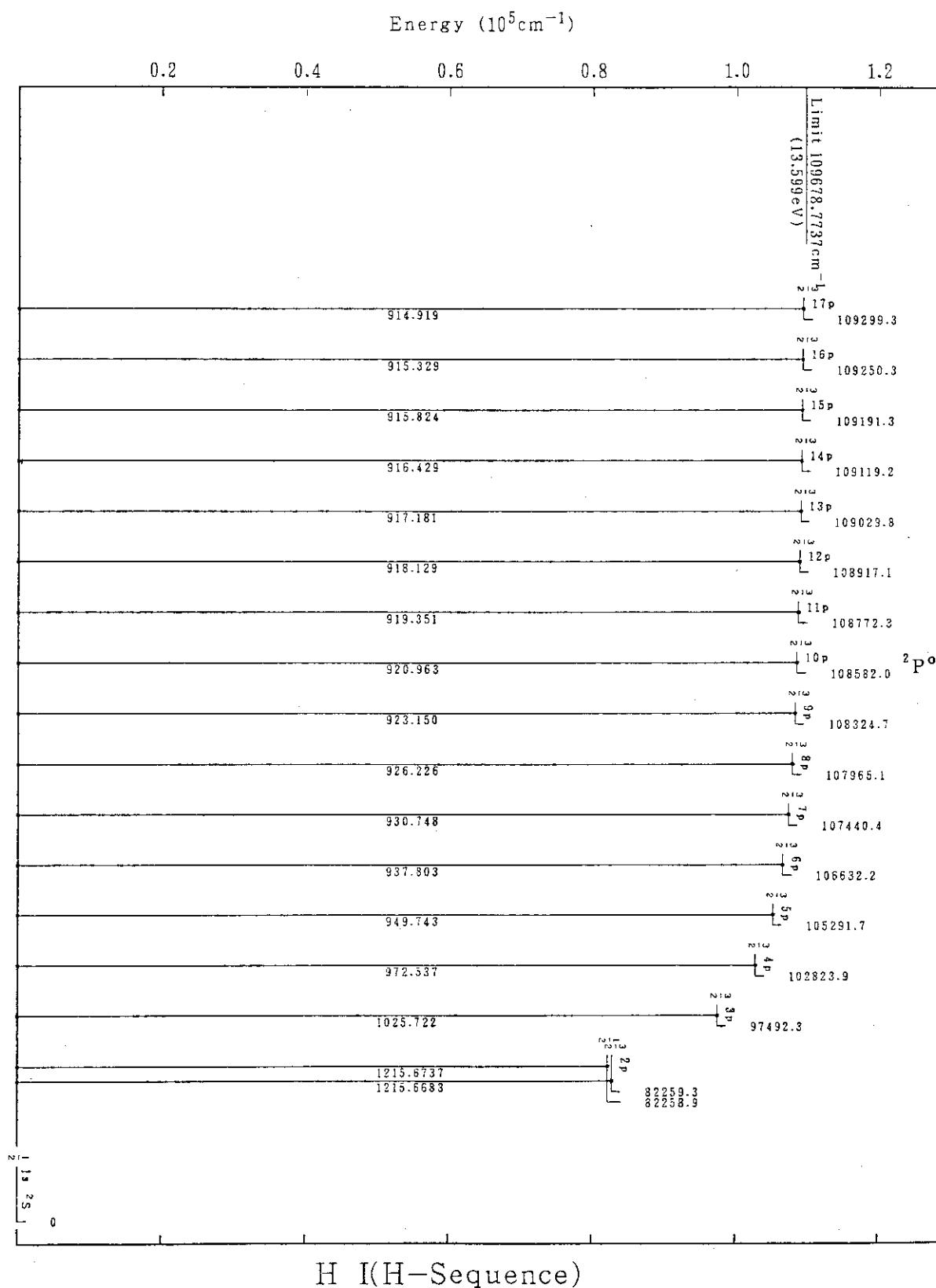
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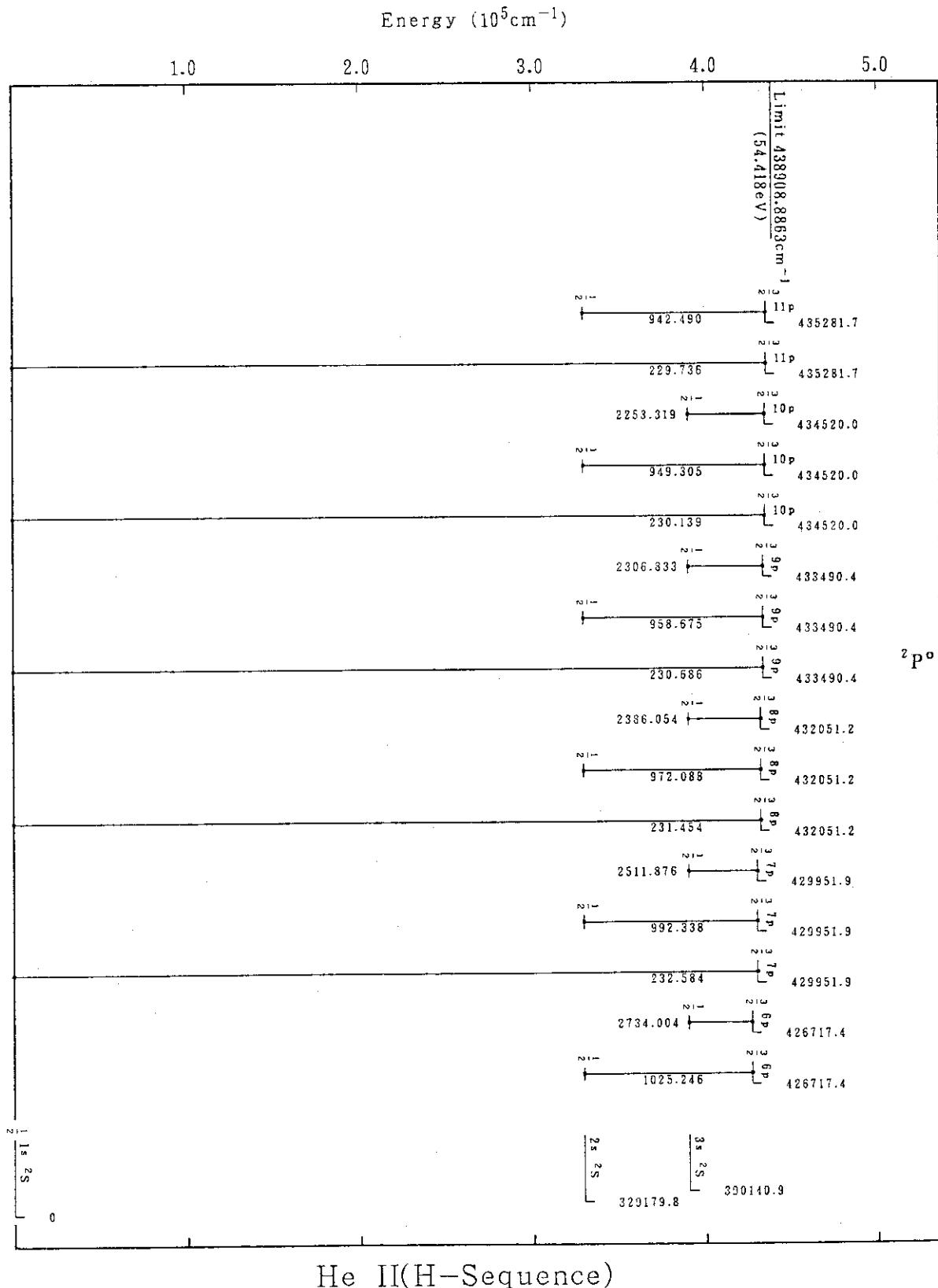
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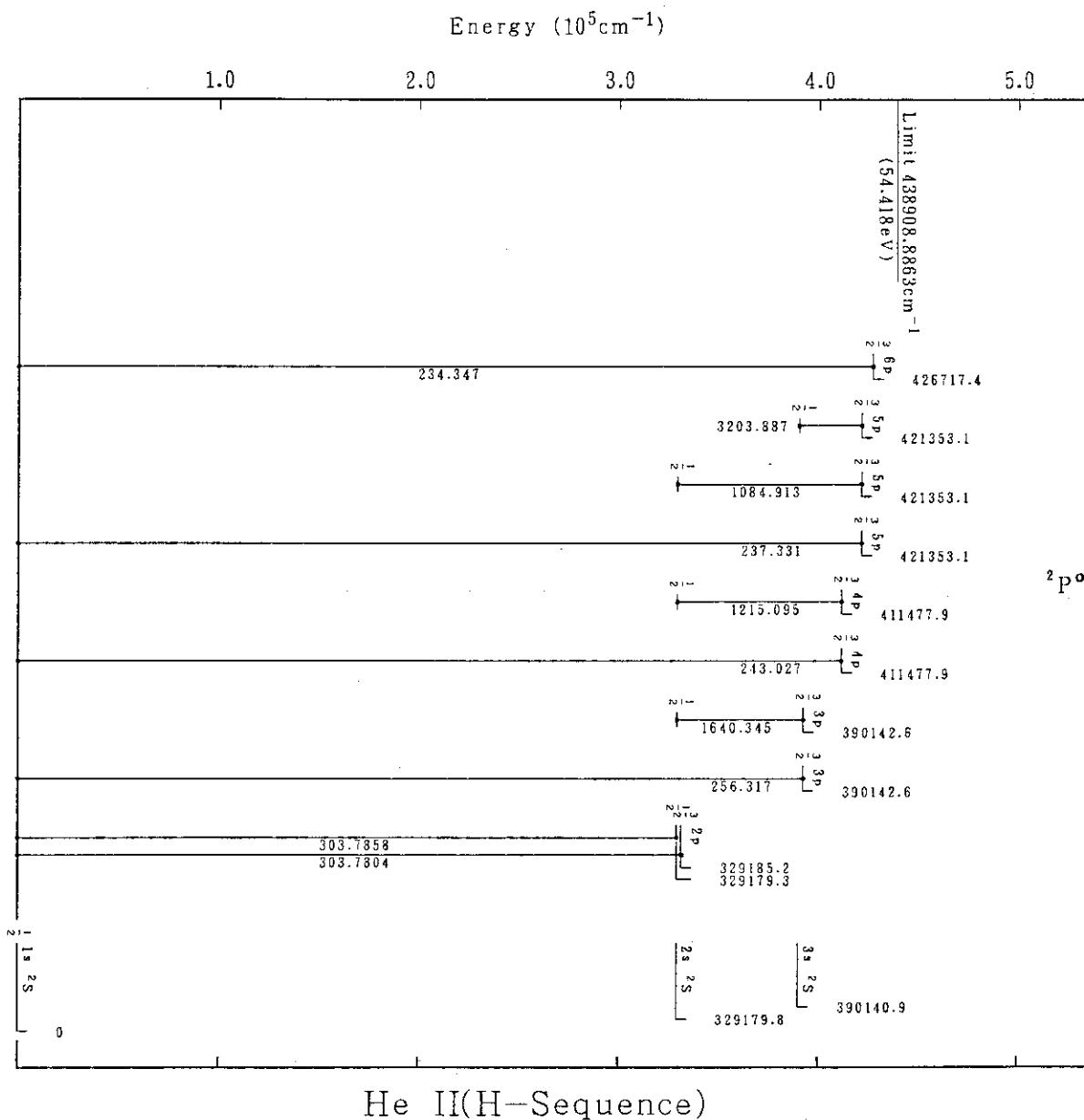
II. EXPLANATION OF GROTRIAN DIAGRAMS

Abscissa	Energy of the levels in cm^{-1} . The levels are indicated as vertical lines.
Vertical lines	Energy levels. The electronic configuration and the level energy in cm^{-1} are given to the right of the line, and at the top is the J value. Energy levels with the same LS label for the upper term are grouped together. The term designation is given at the right of the diagram; the ordering is by increasing multiplicity and orbital angular momentum. For the lower level, the term is adjacent to the configuration.
Horizontal lines	Transitions between levels. The number below each line gives the transition wavelength in Angstroms (10^{-8} cm).
Limit	The ionization limit in cm^{-1} (eV).

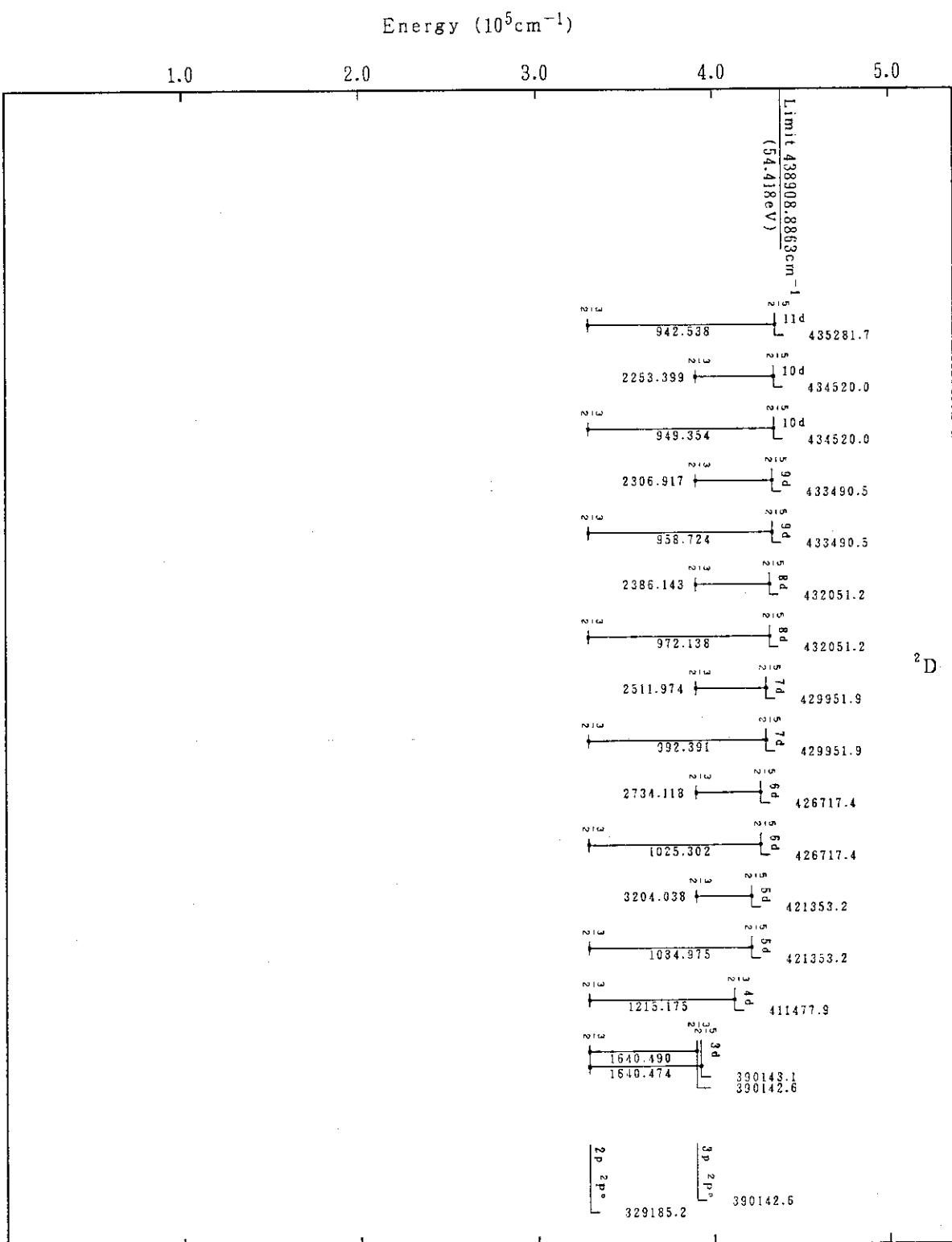
III. GROTRIAN DIAGRAMS



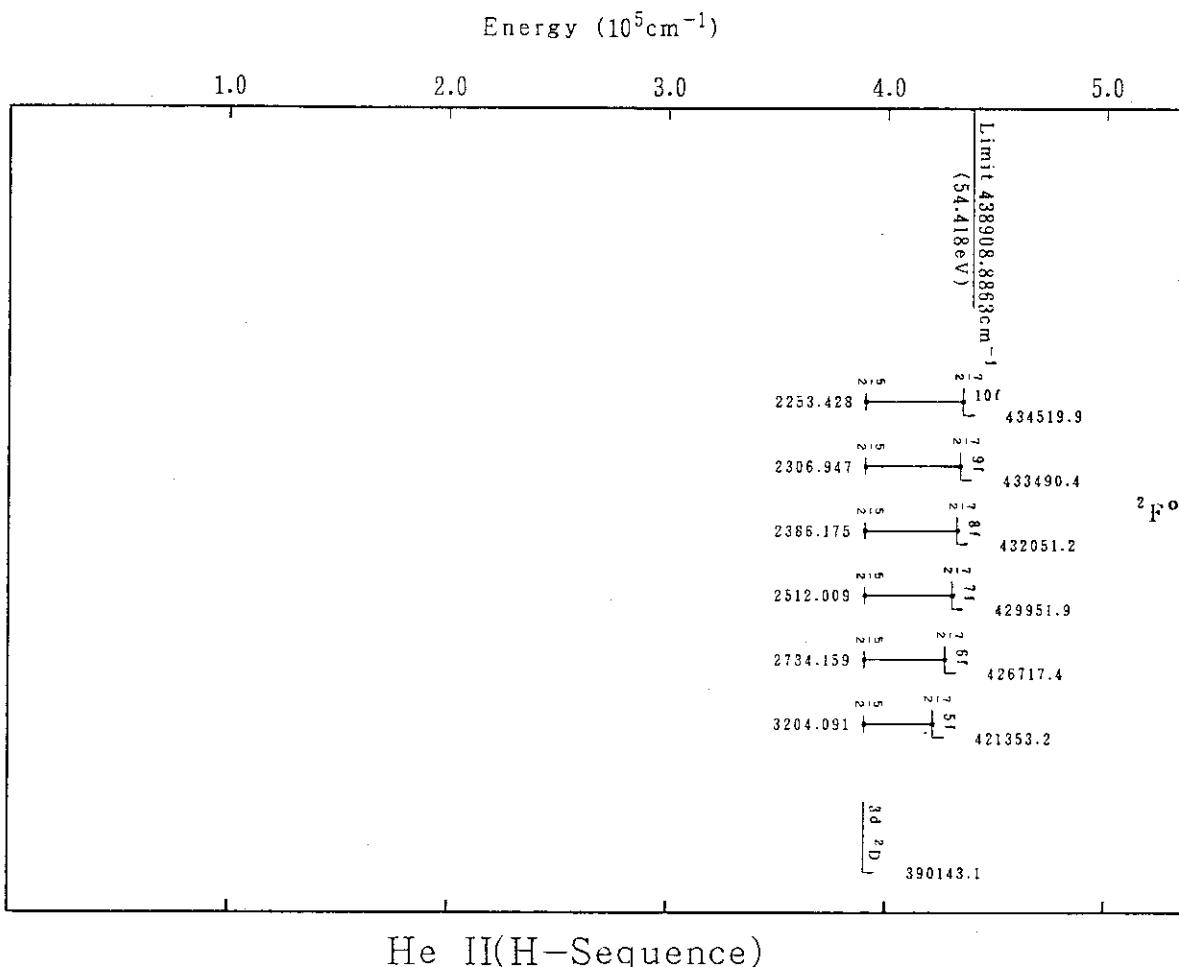




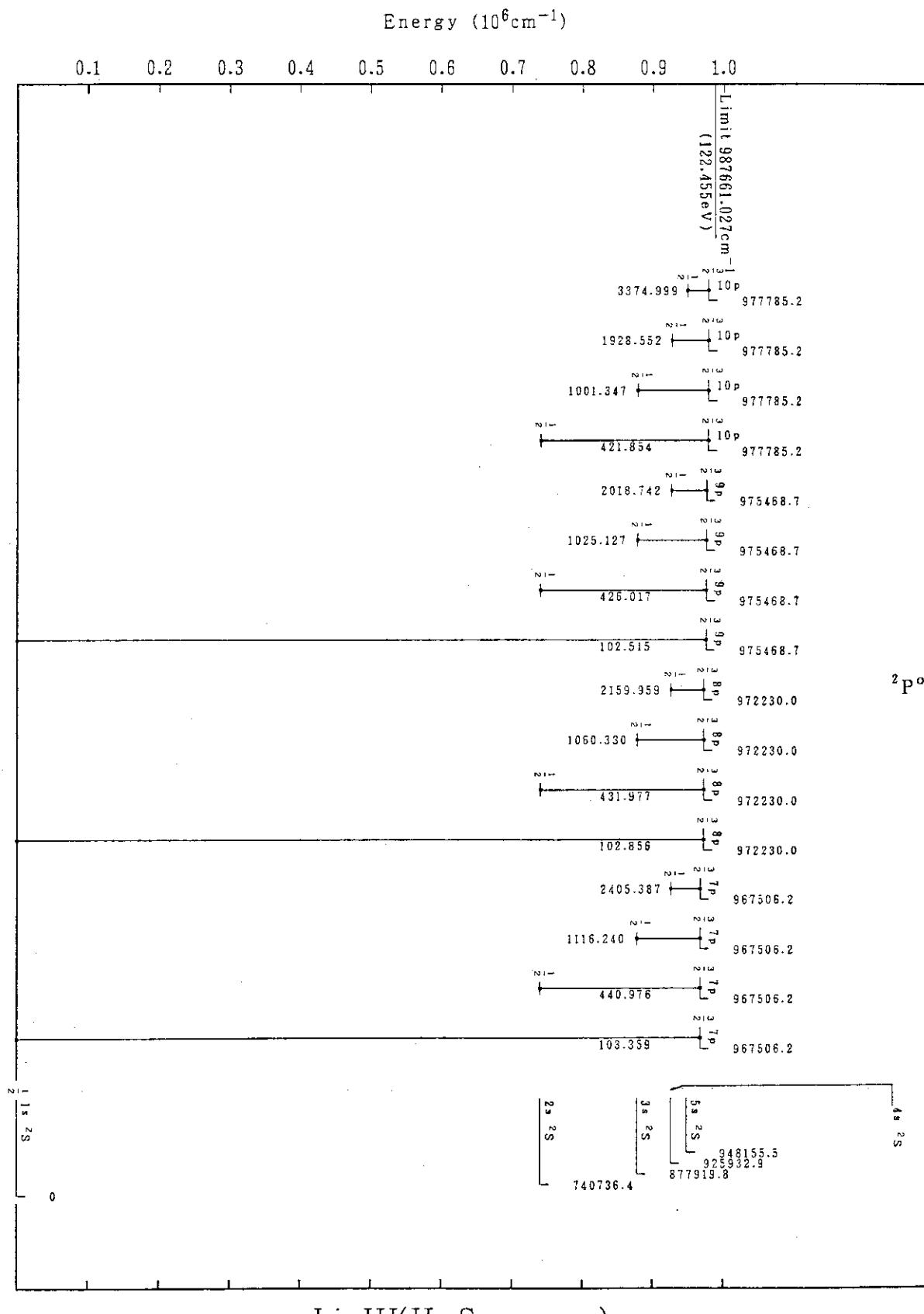
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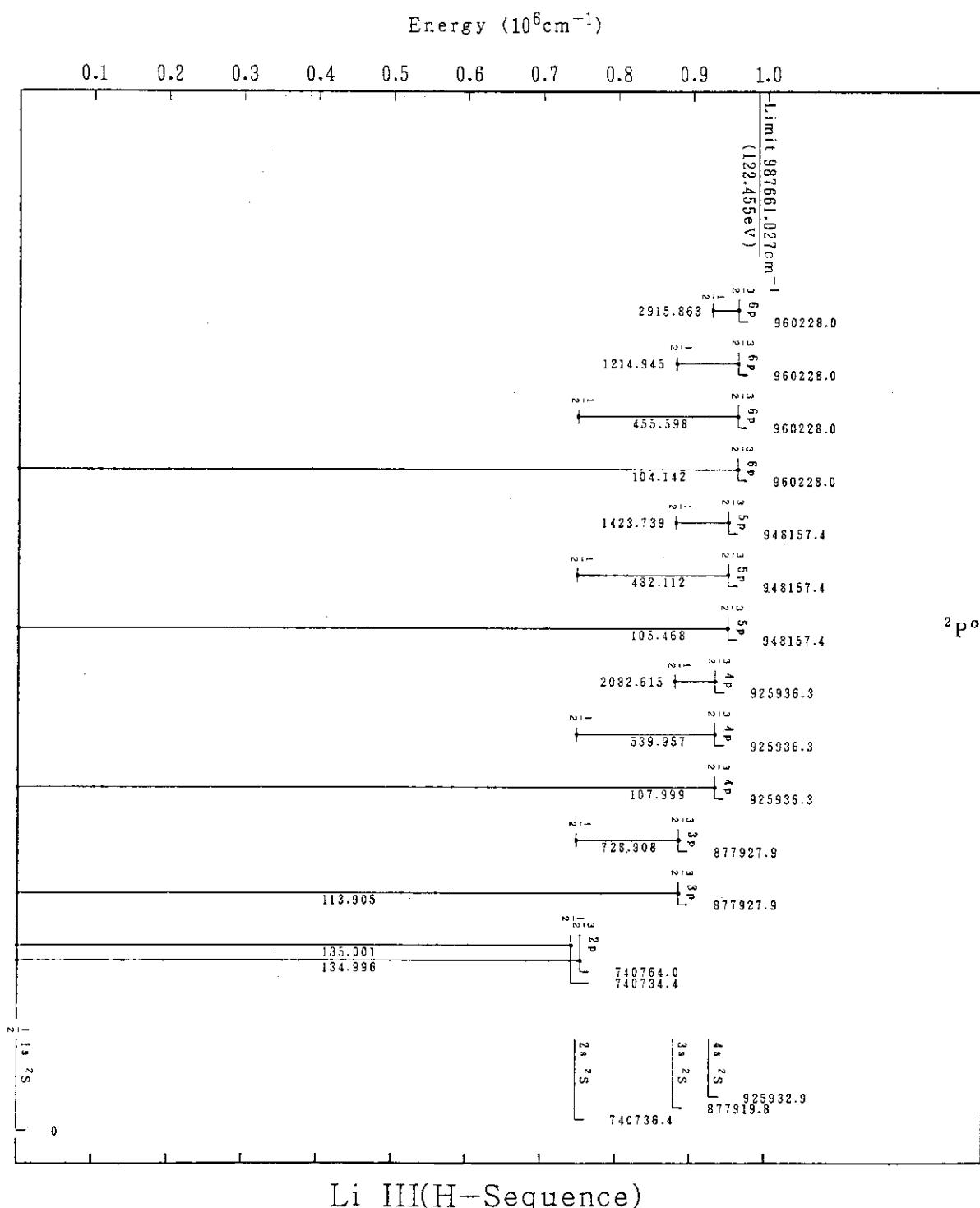
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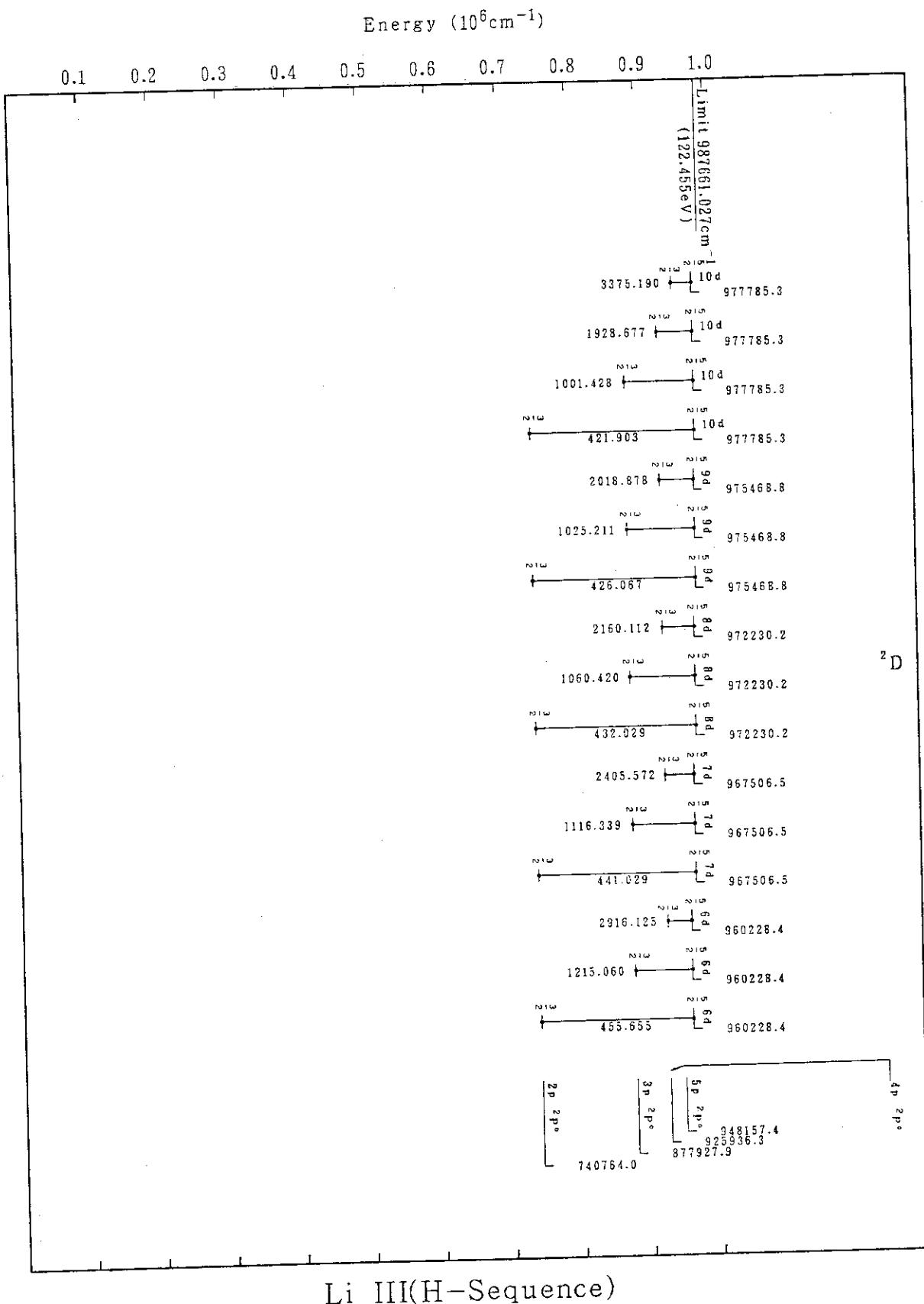


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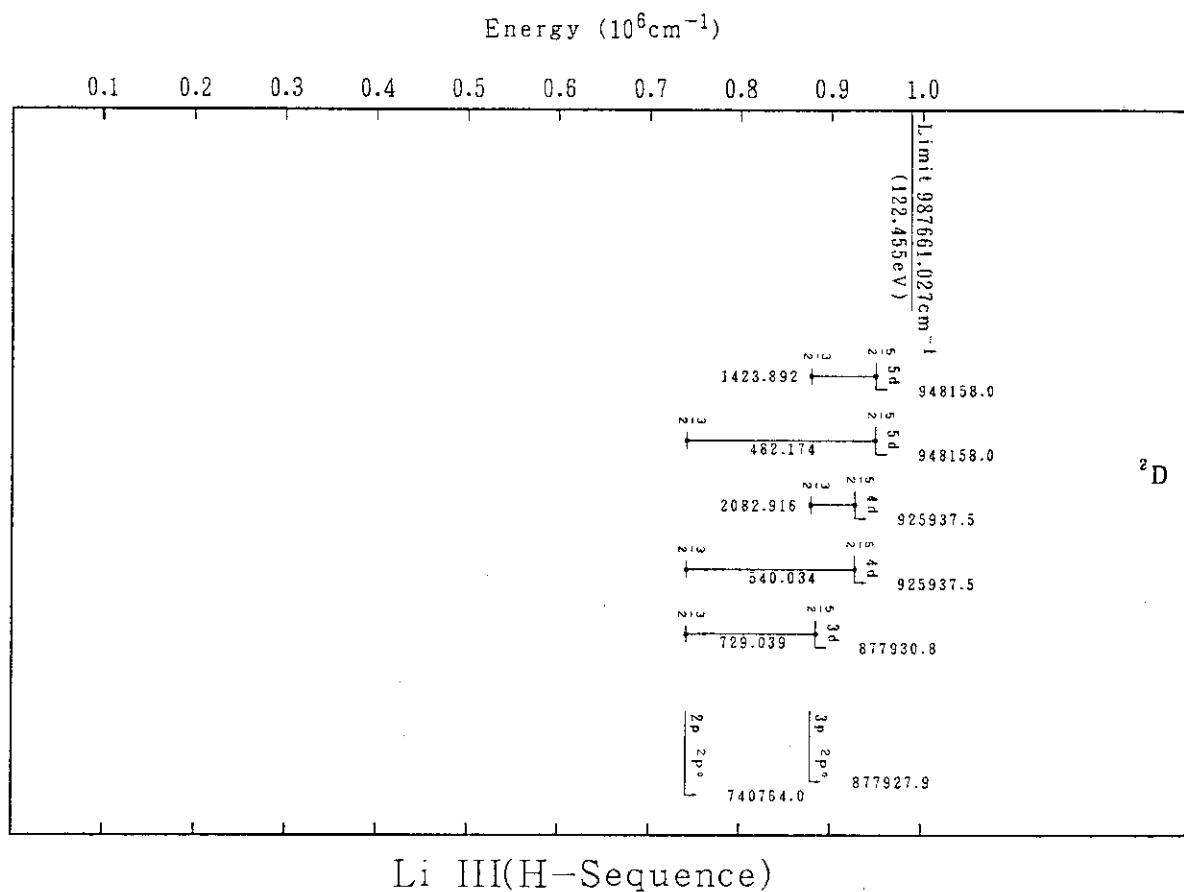


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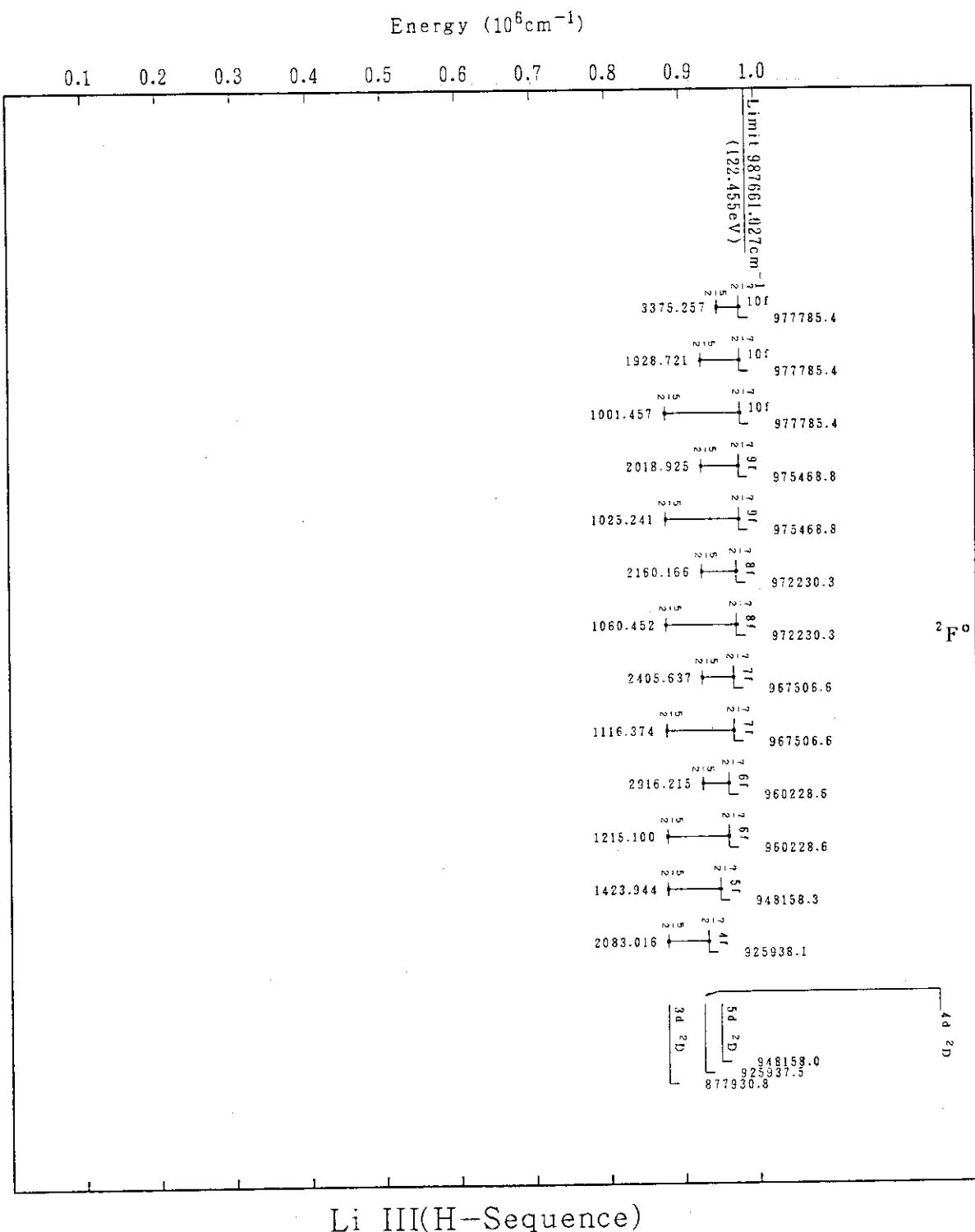


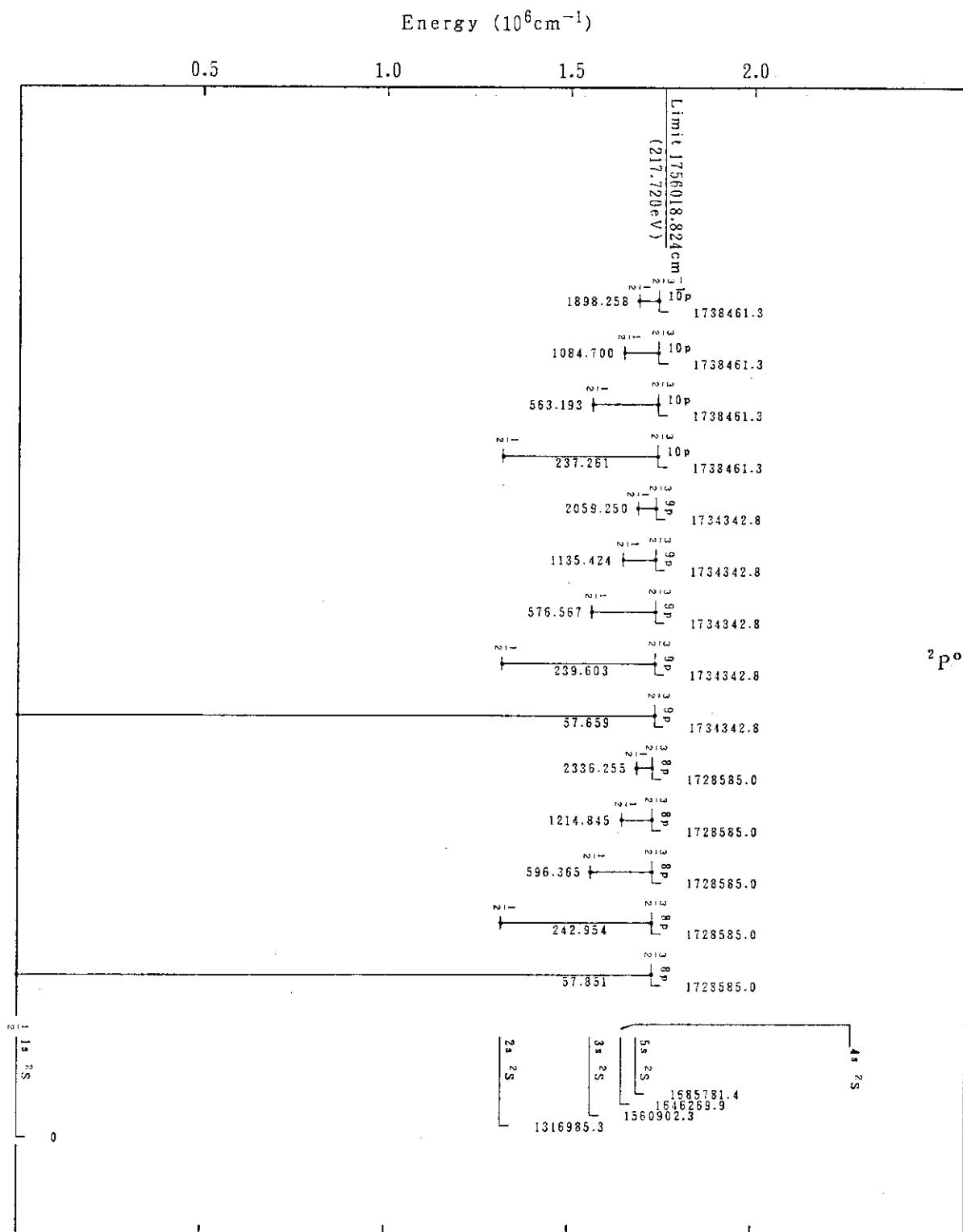


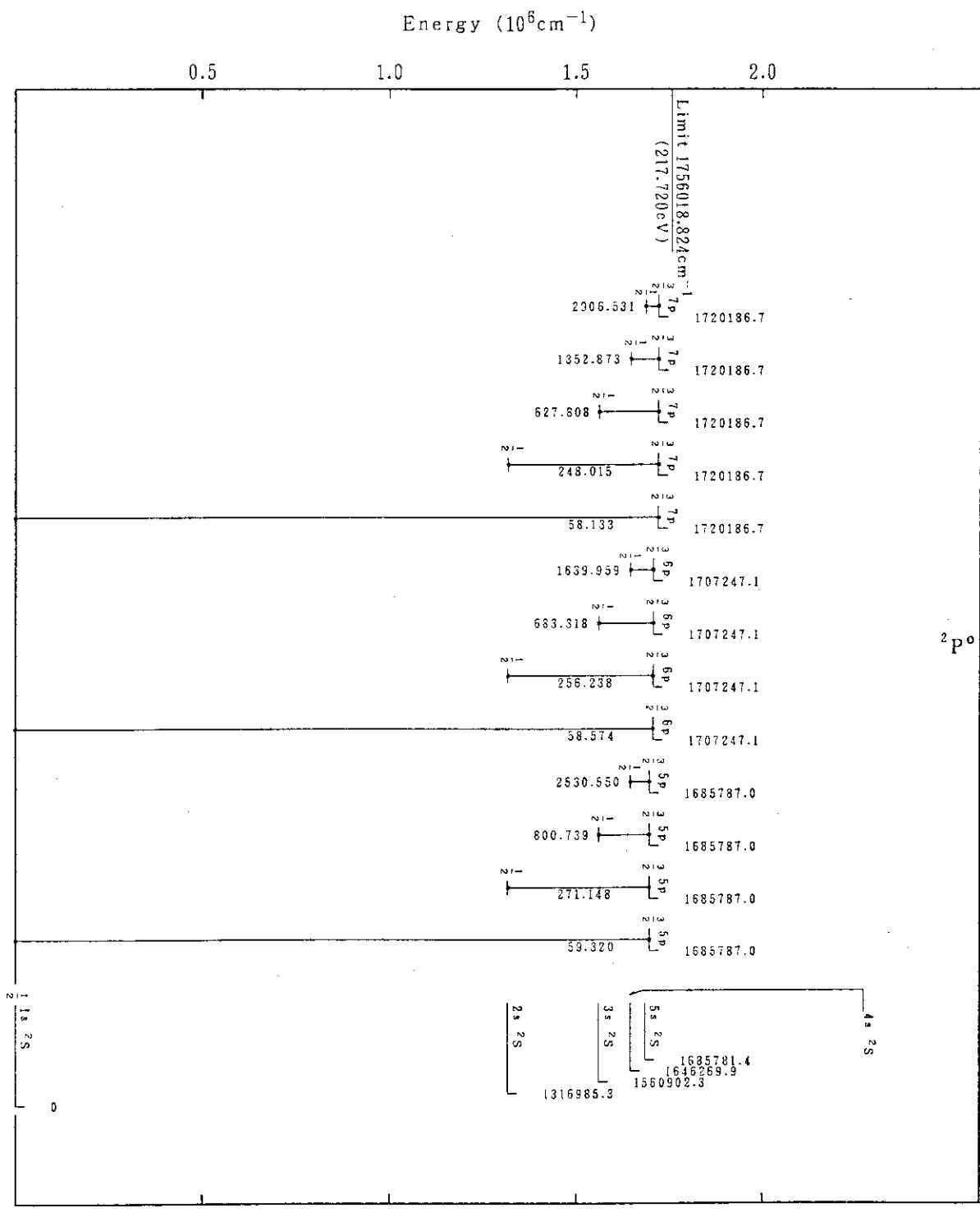
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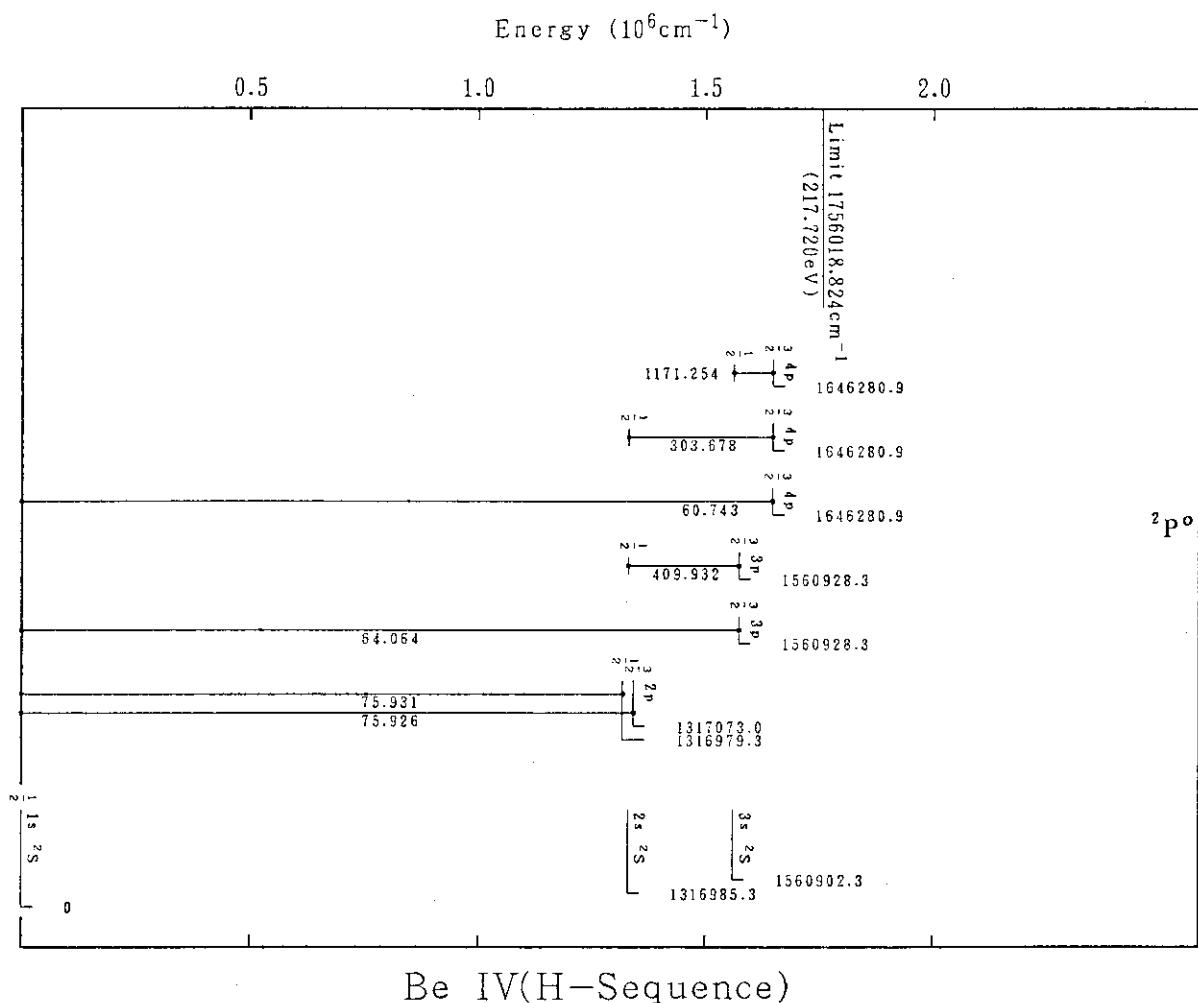


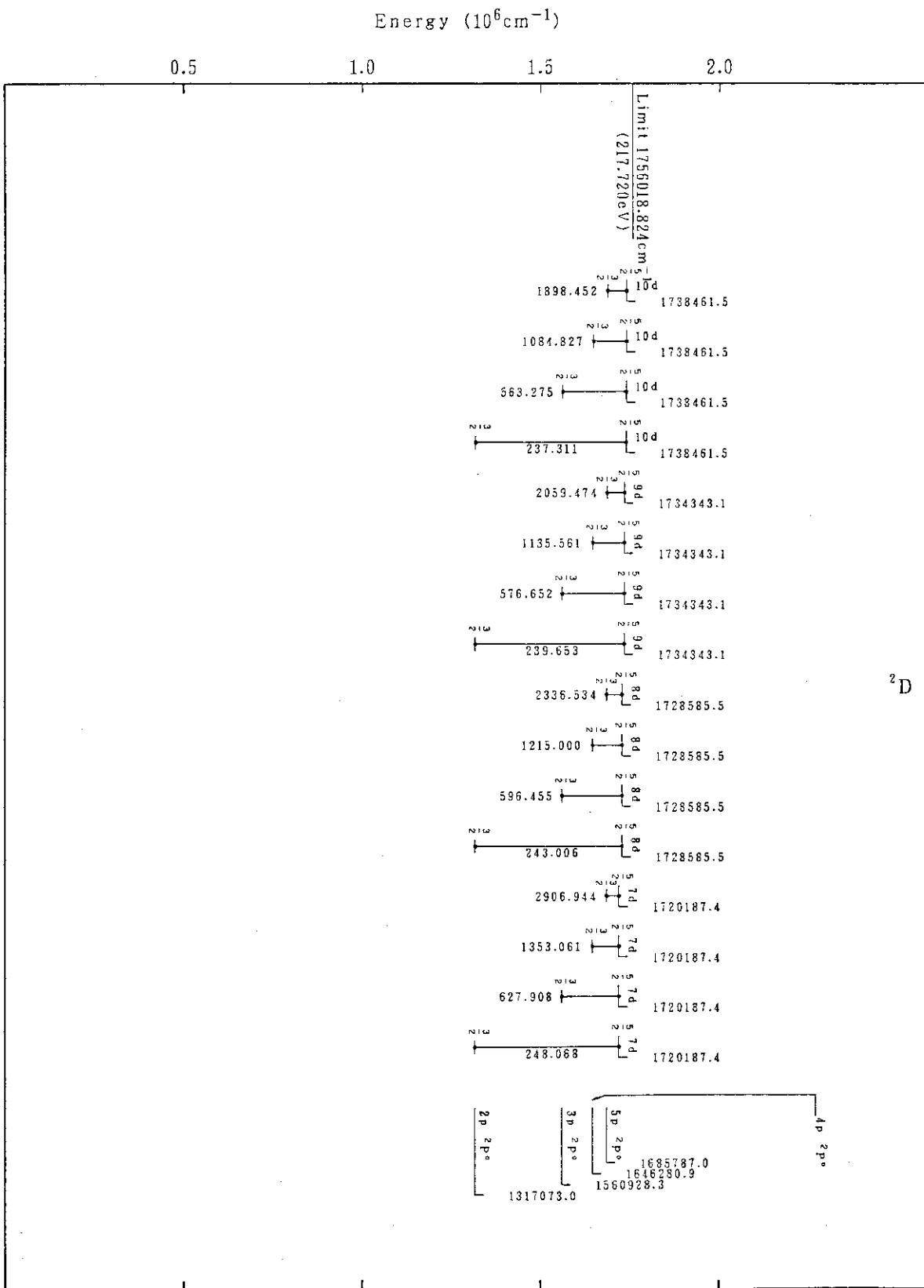
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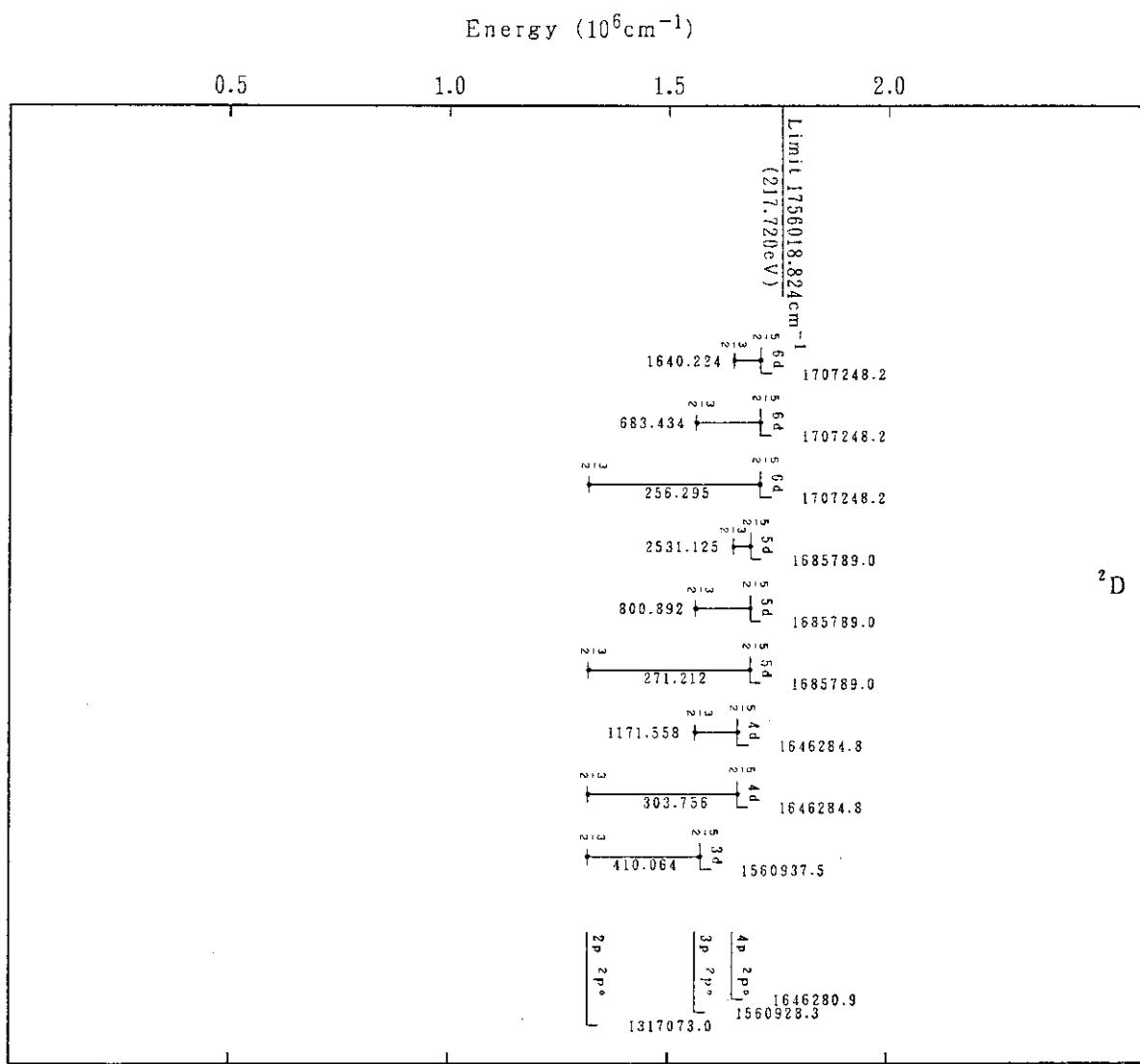




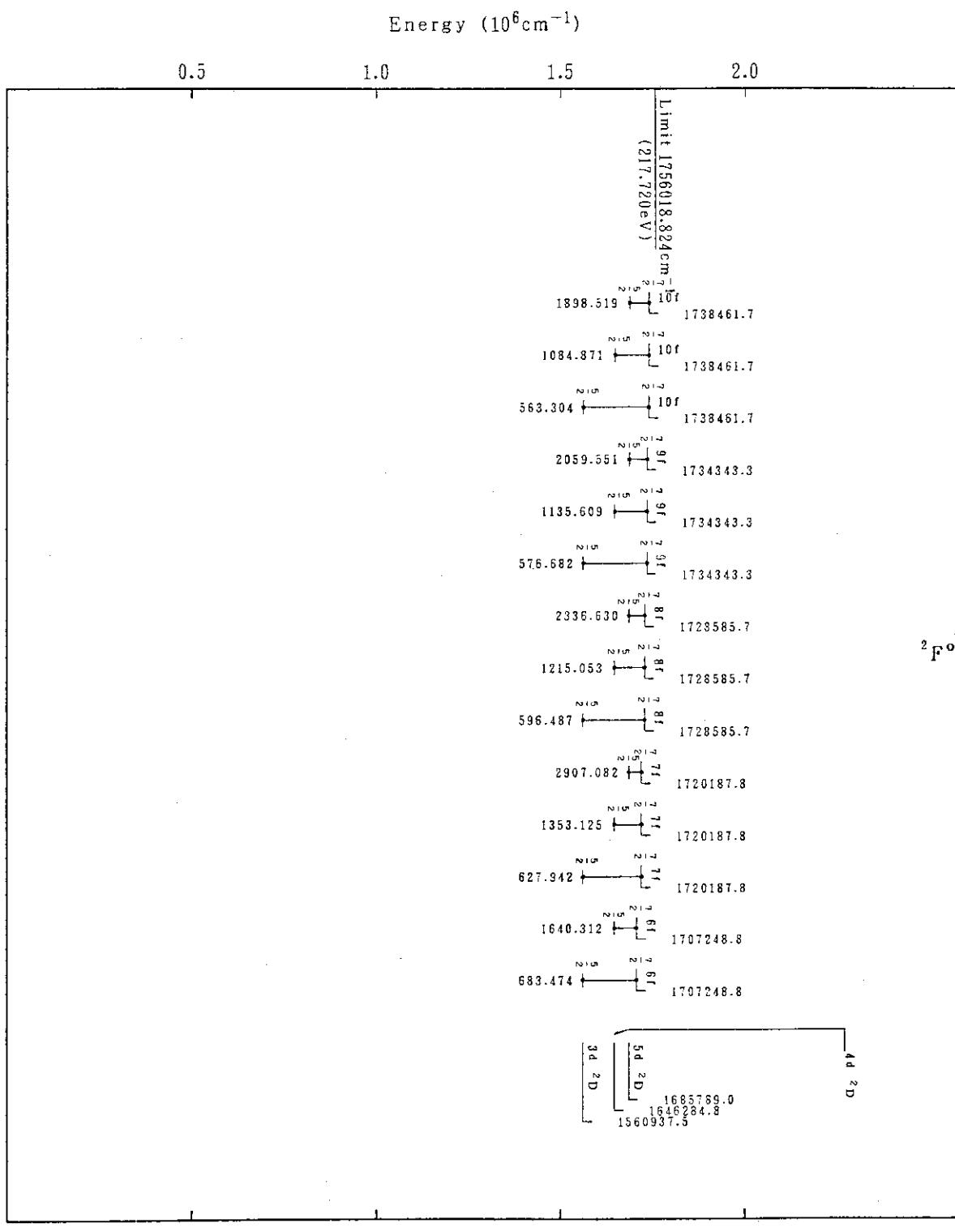




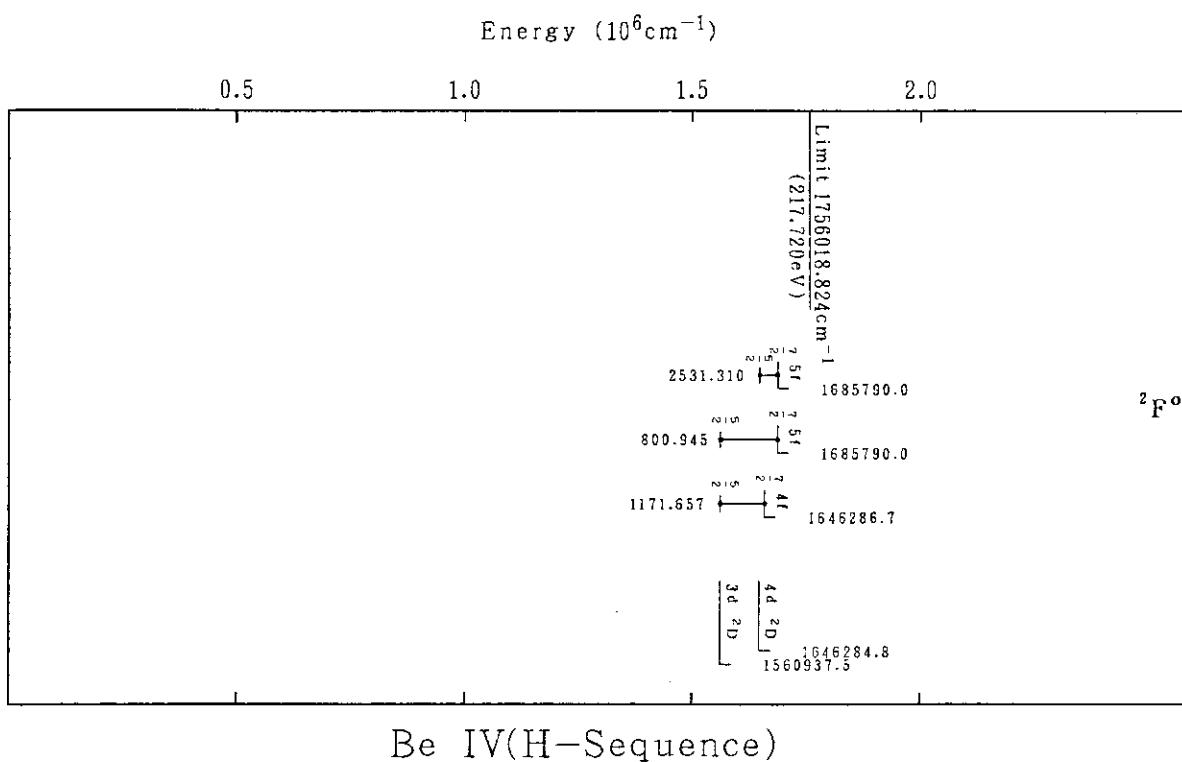




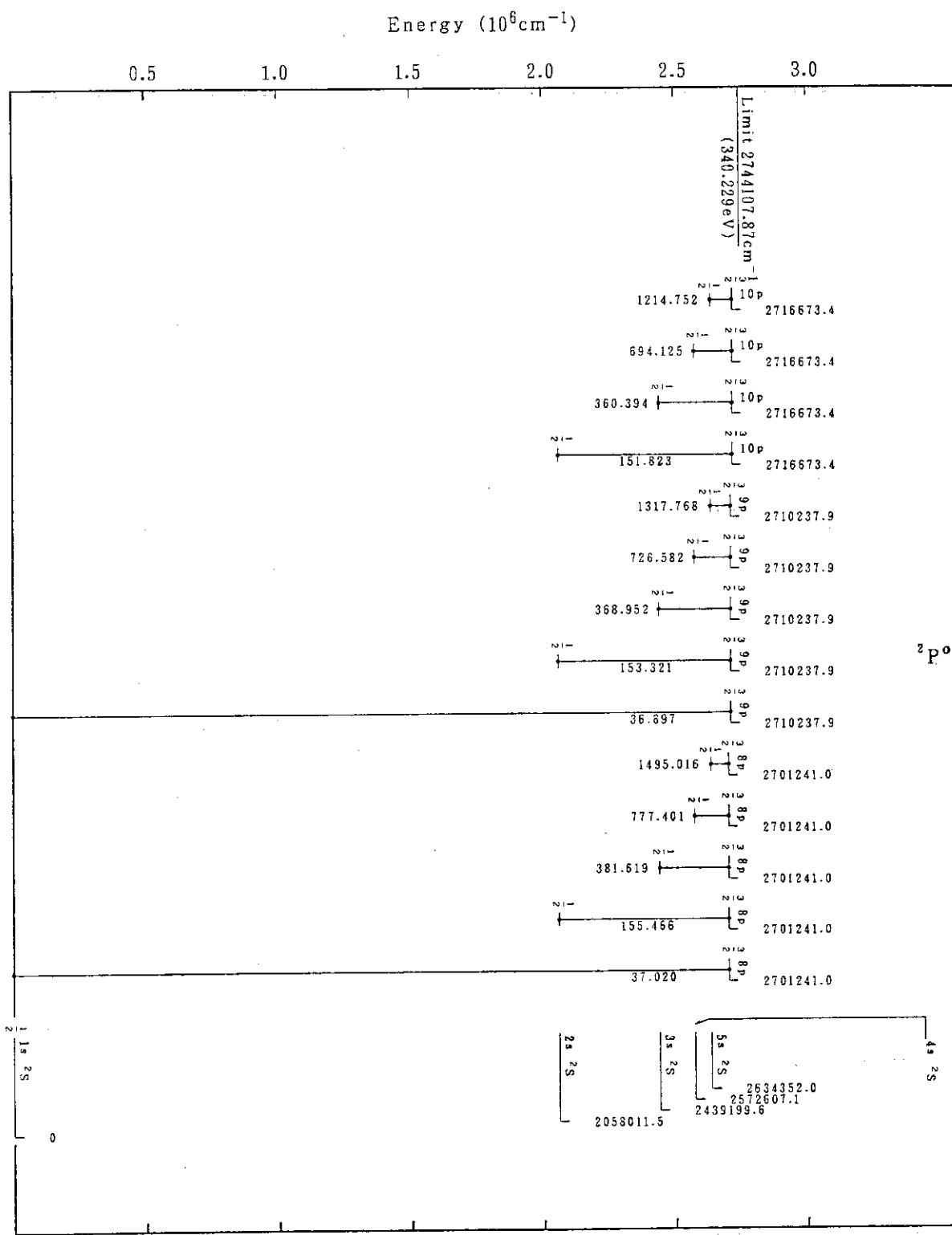
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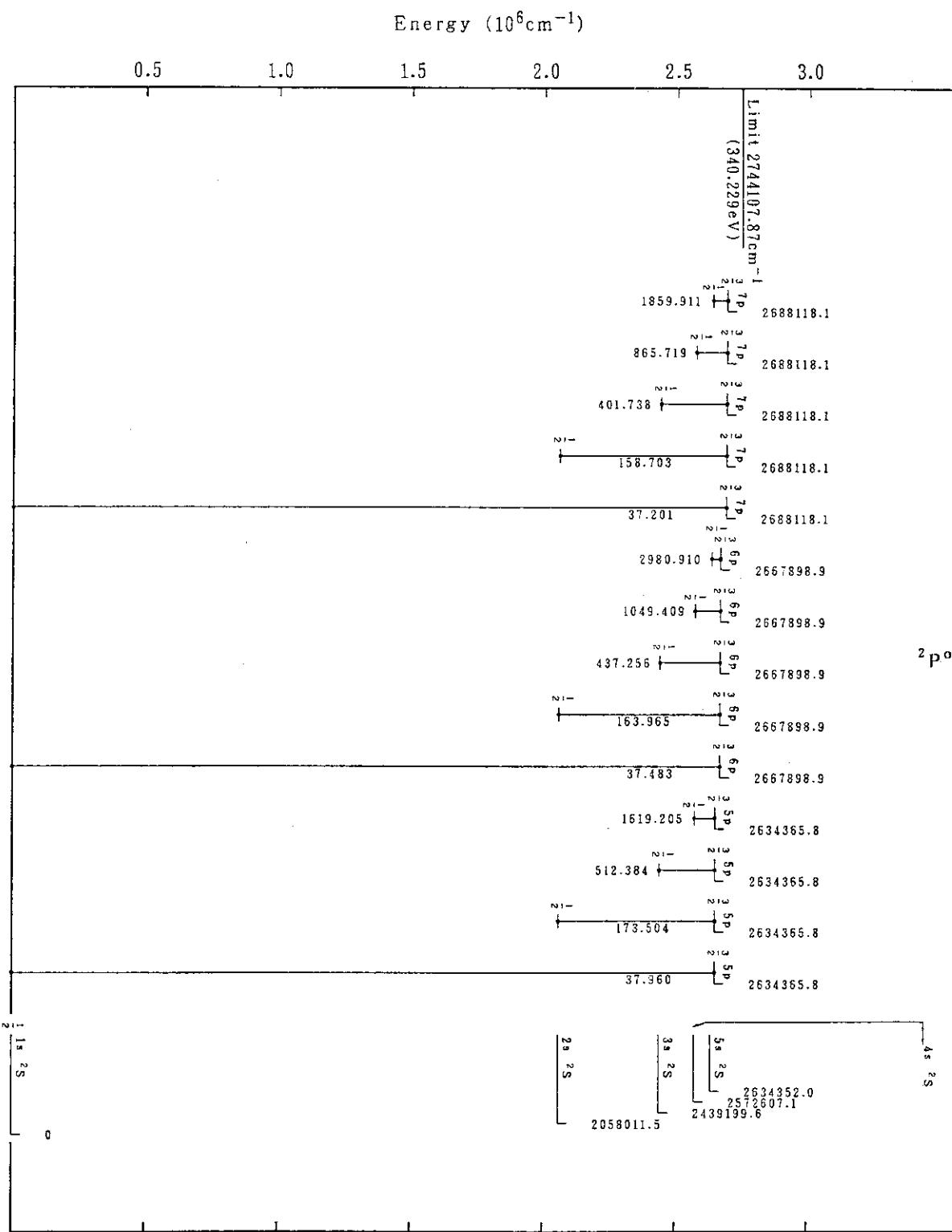
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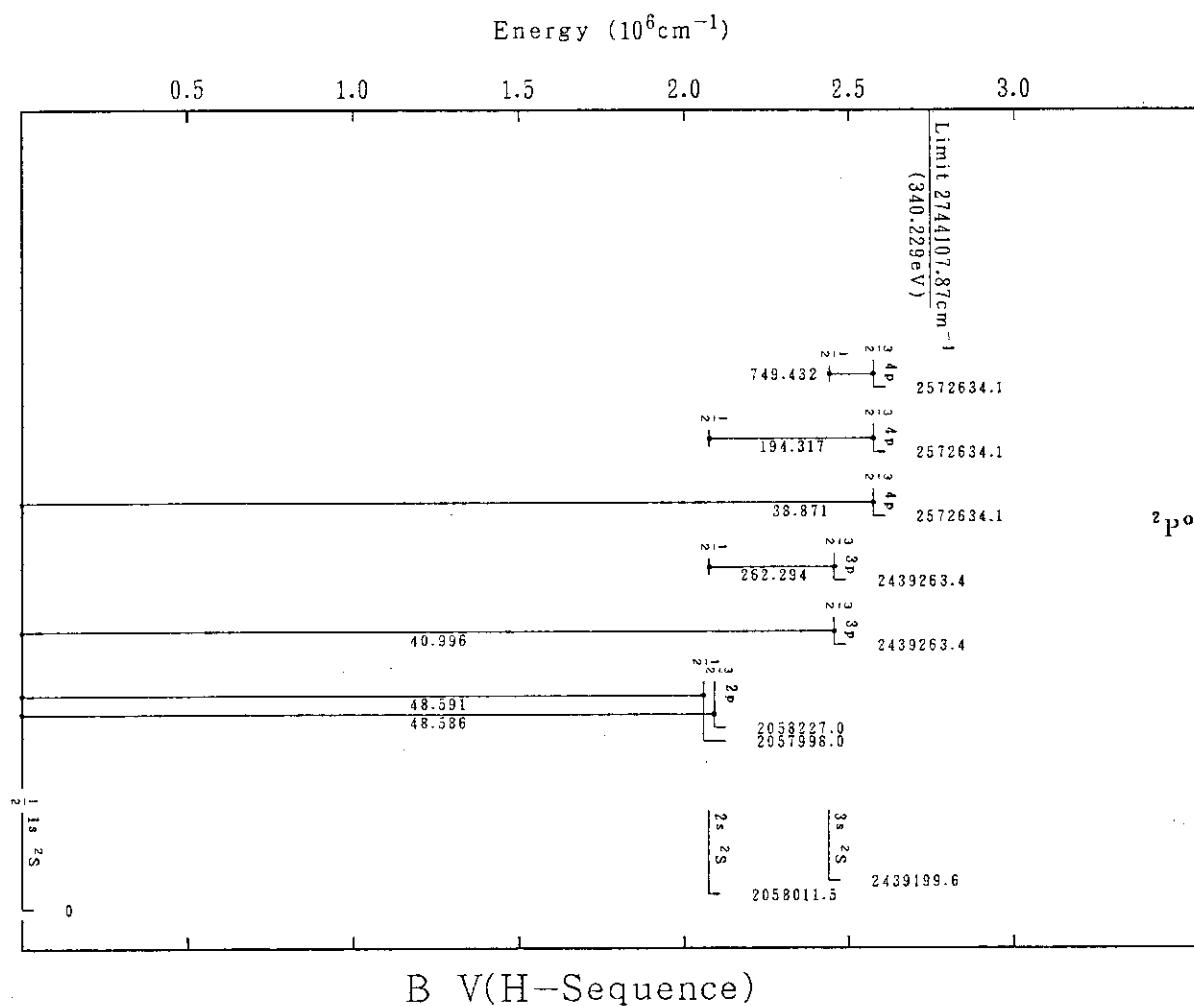


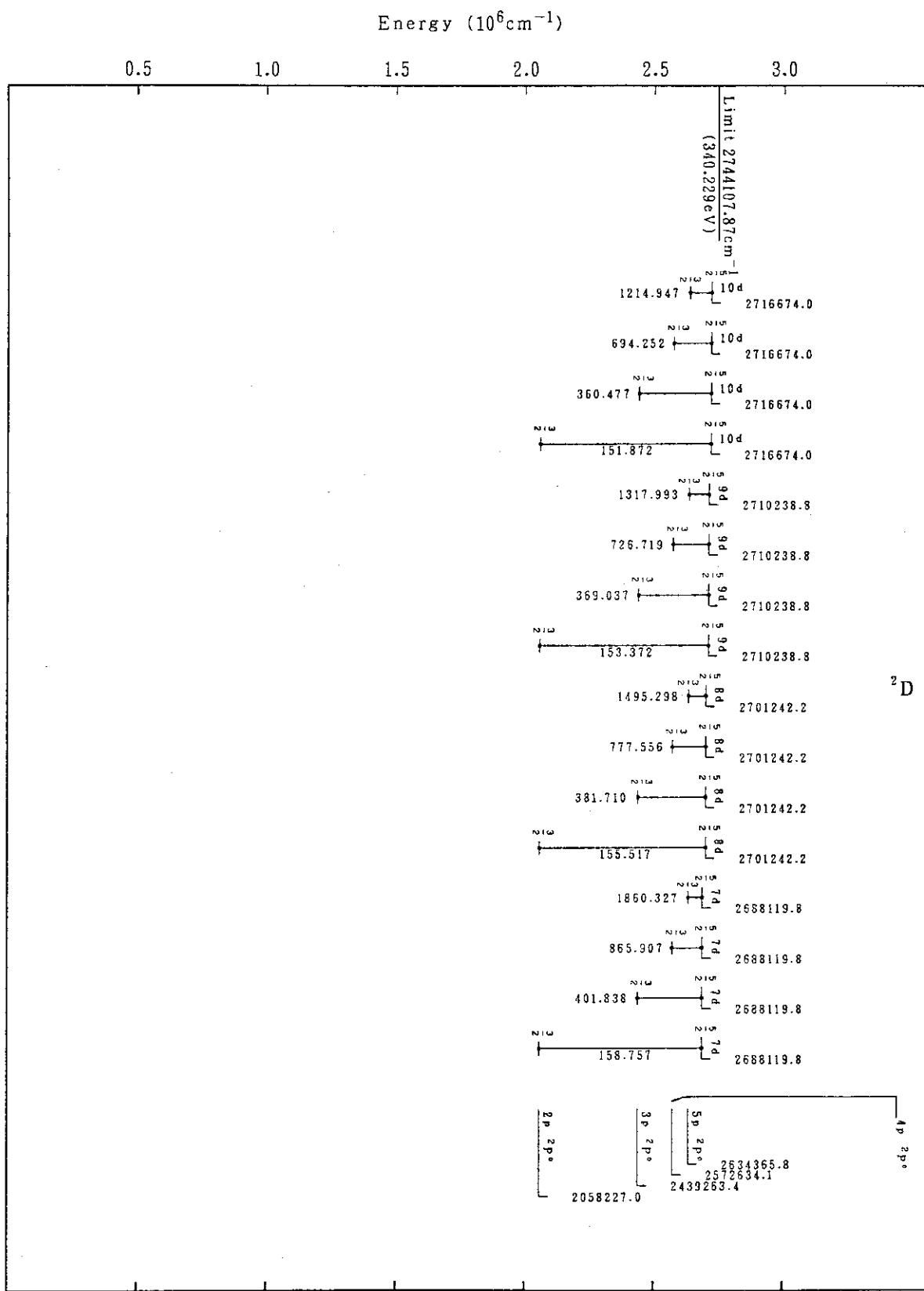
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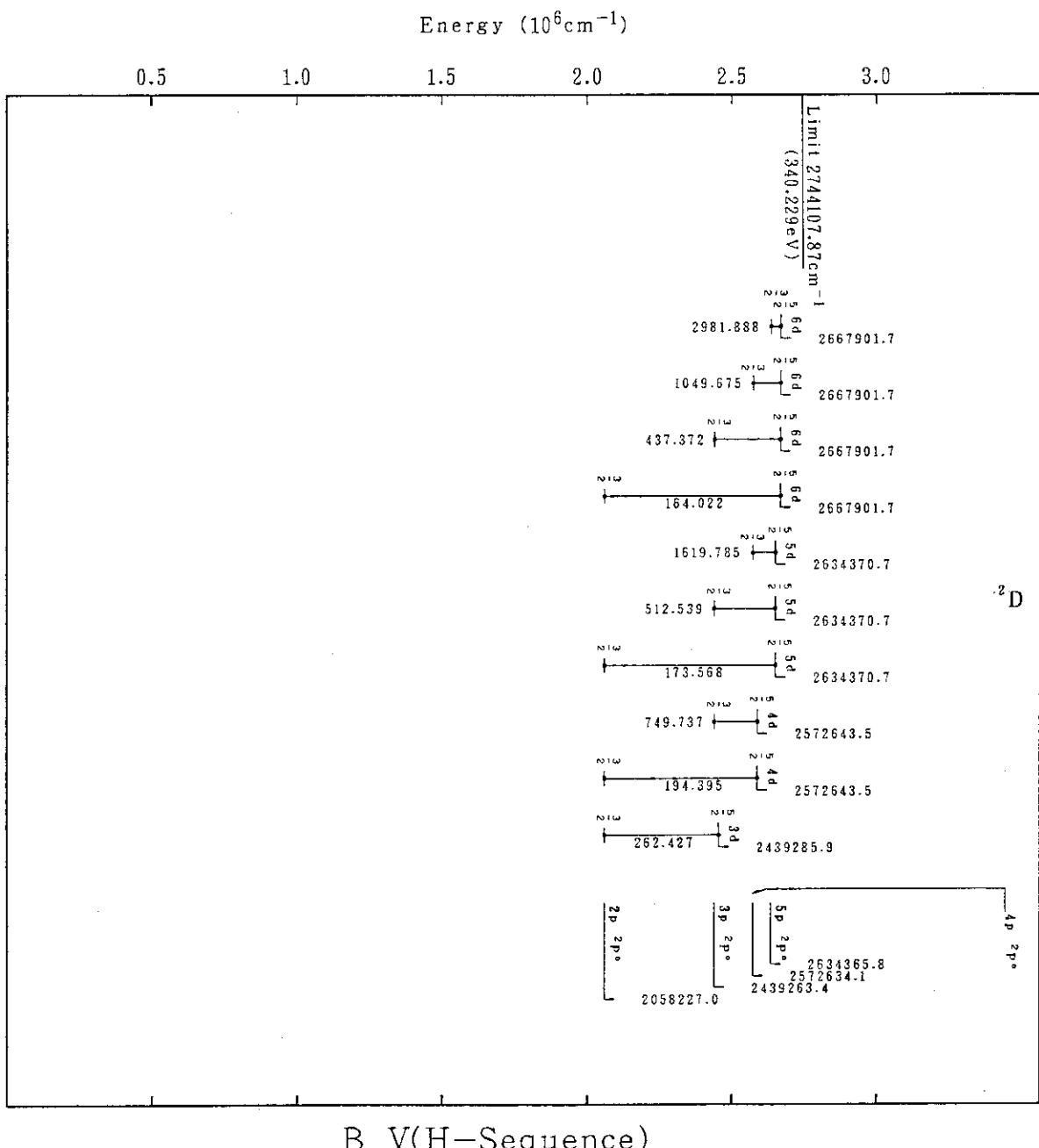


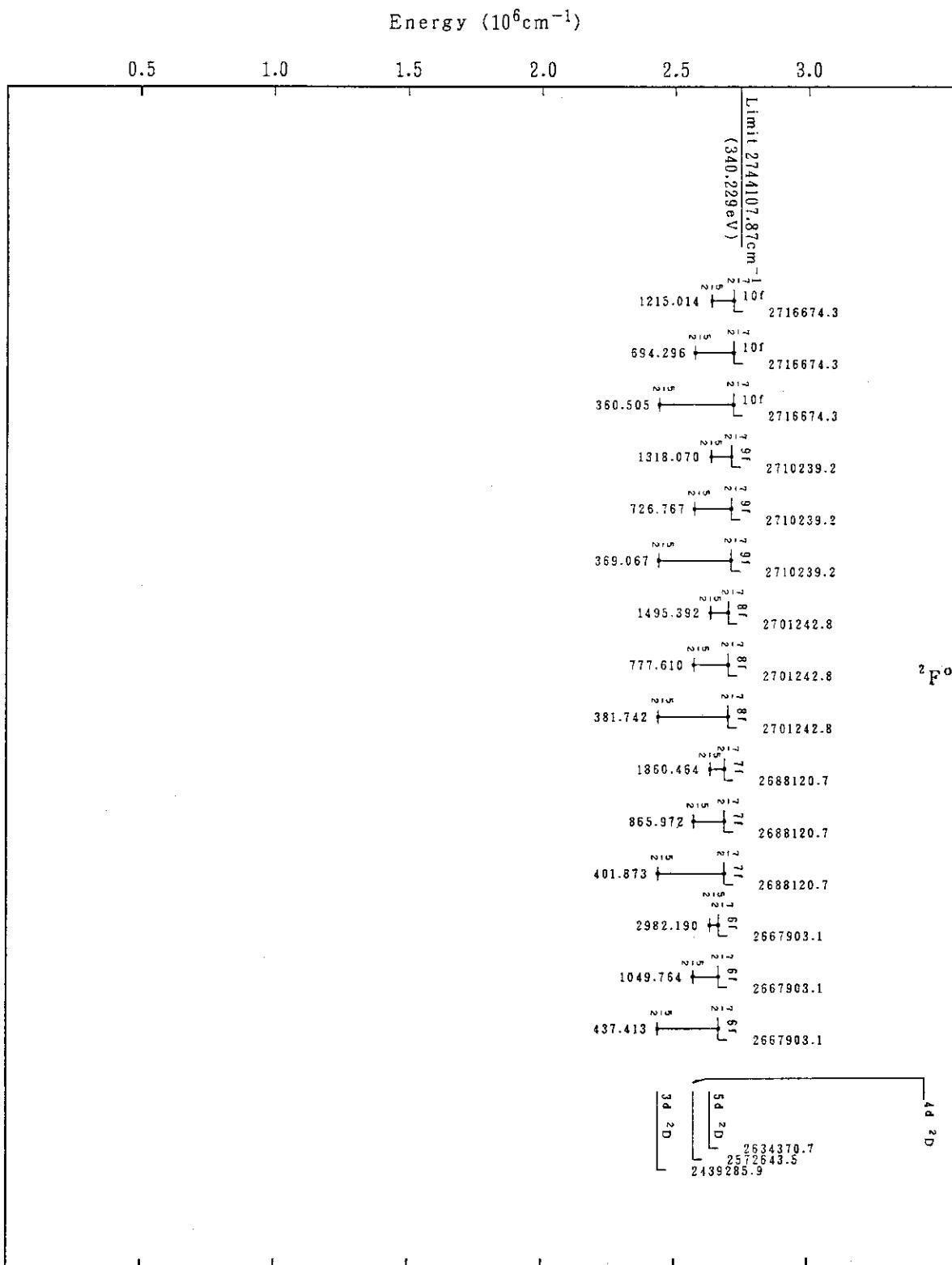
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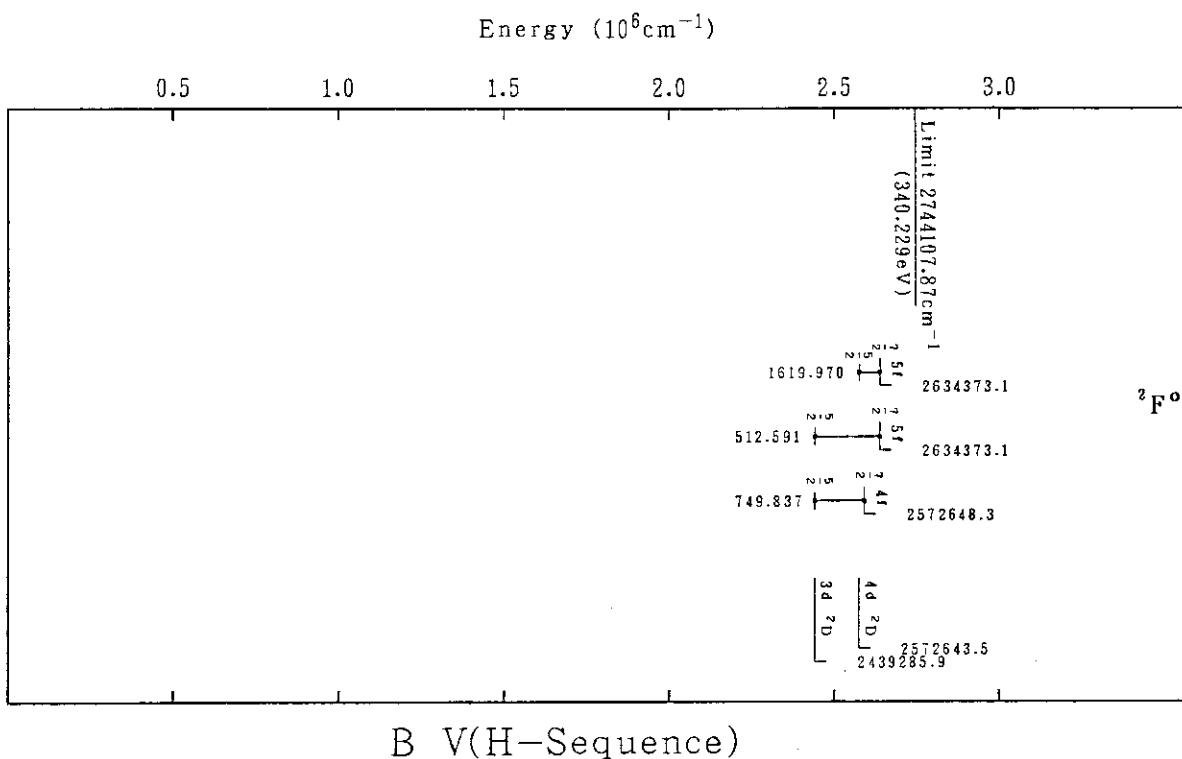




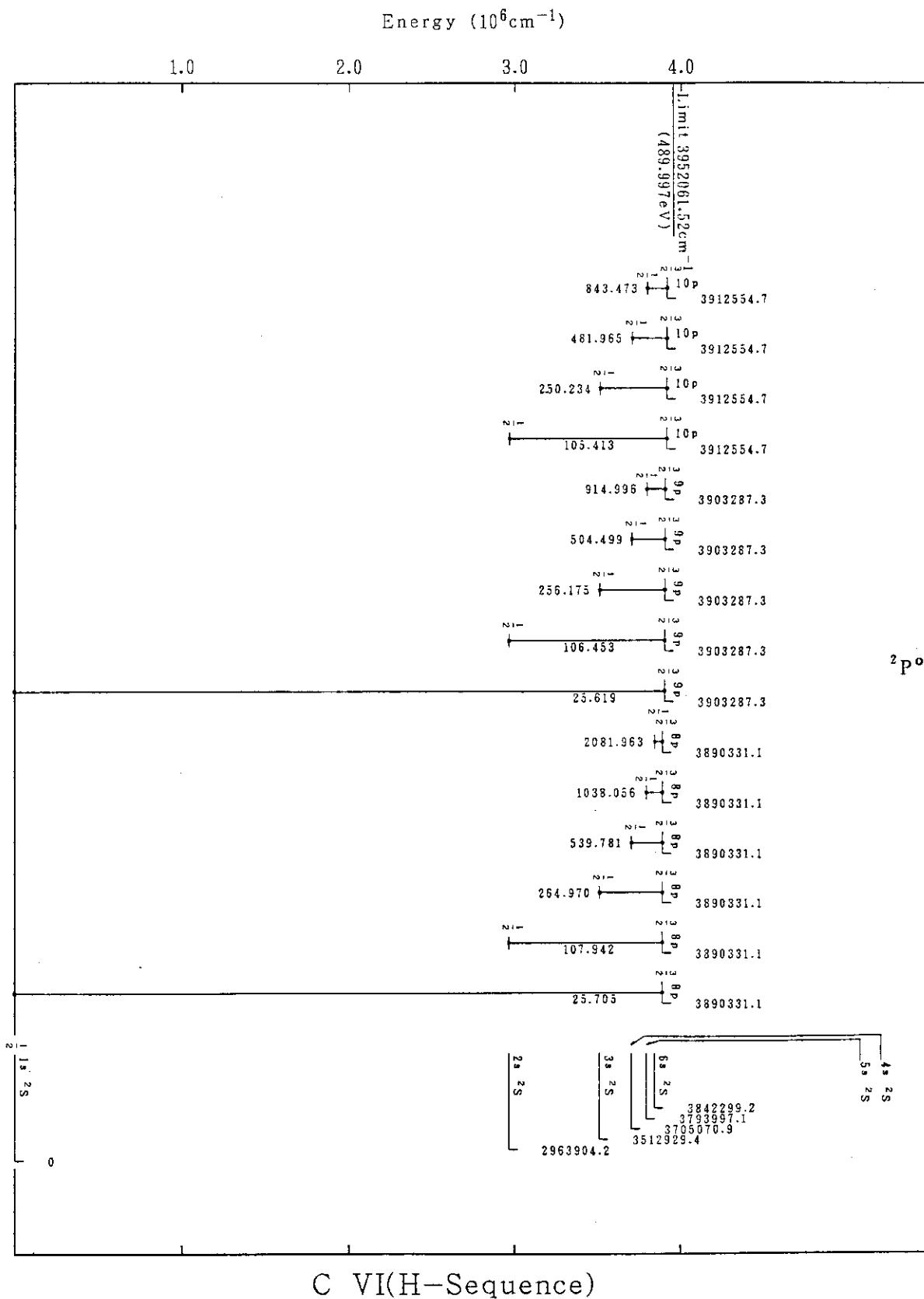


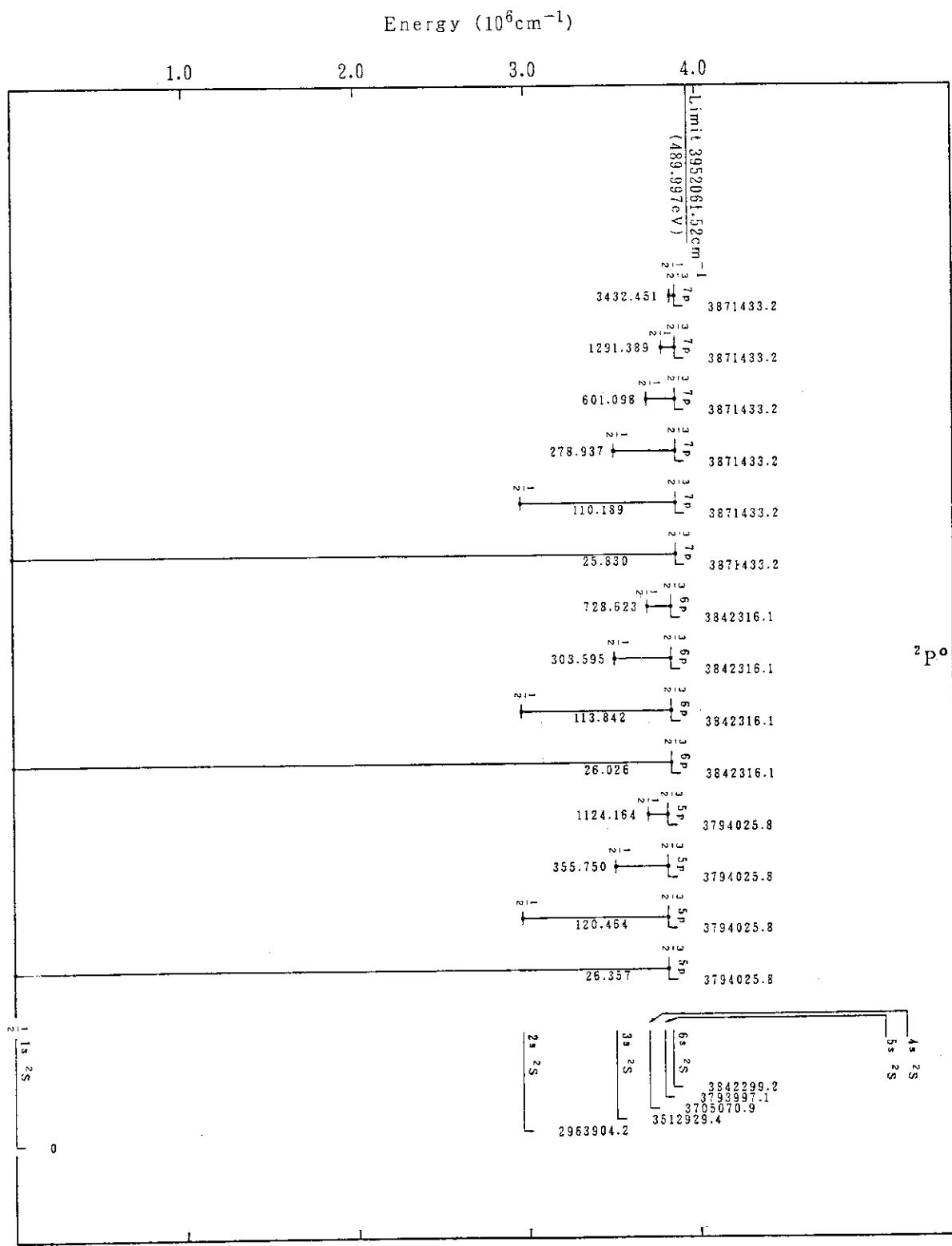


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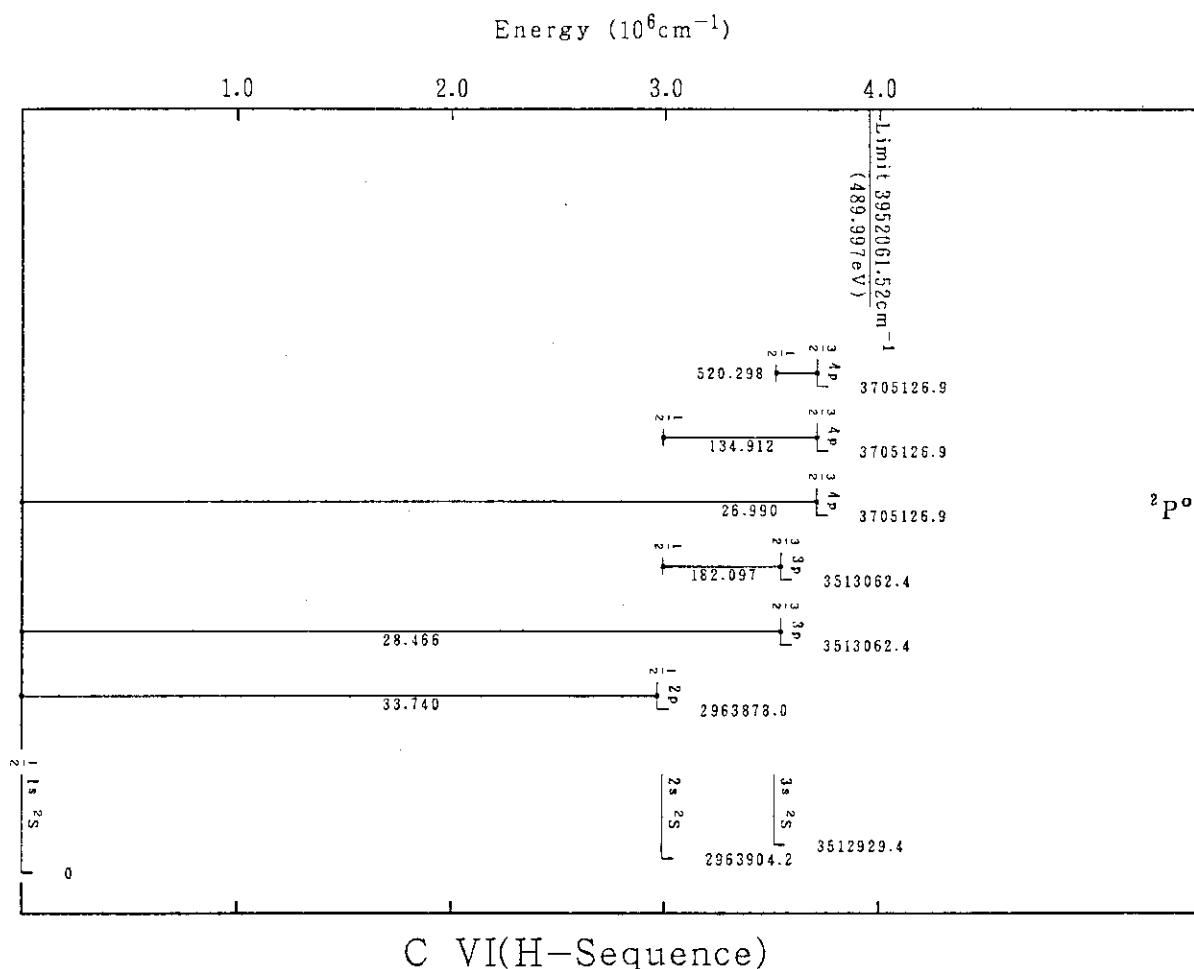


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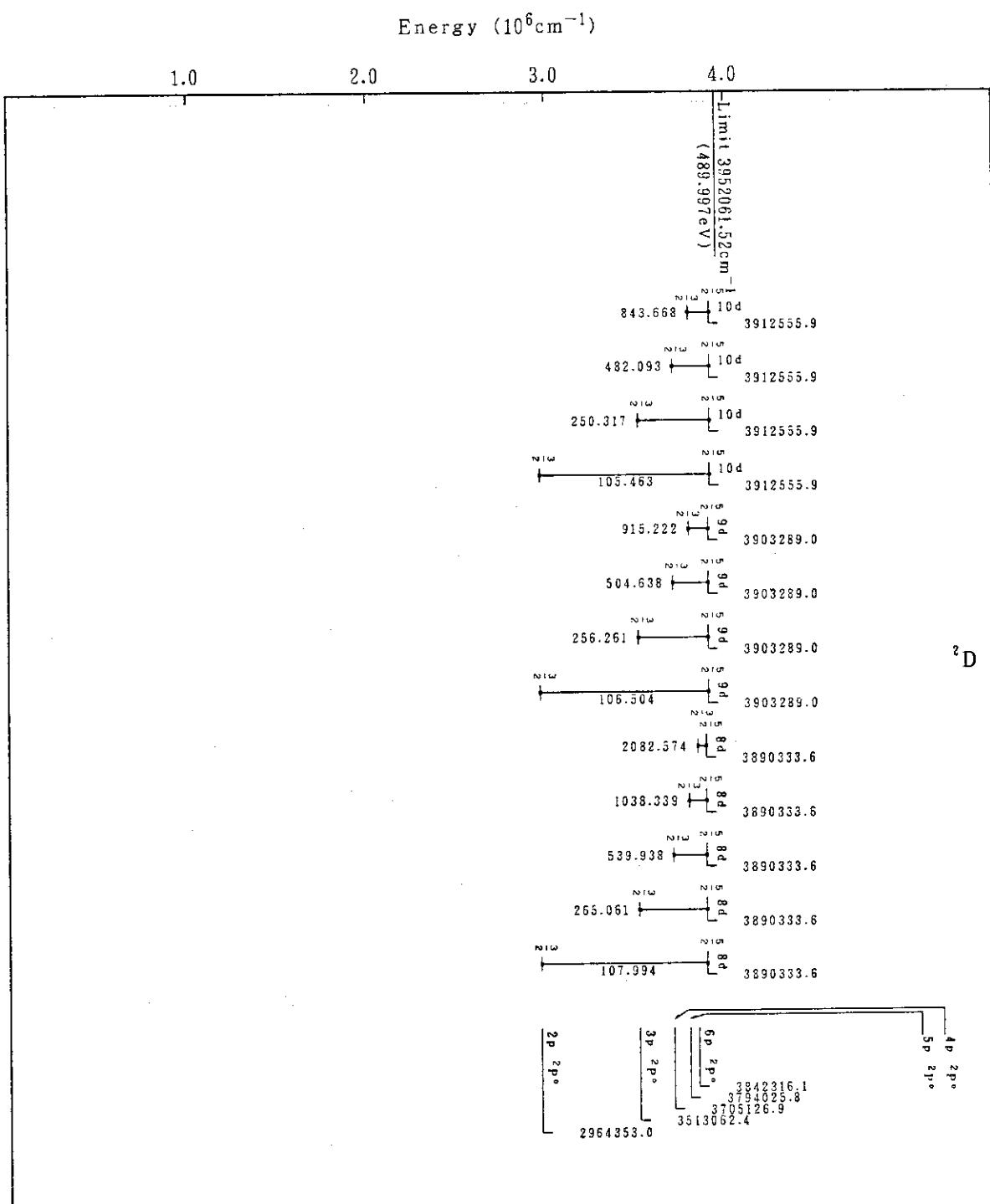




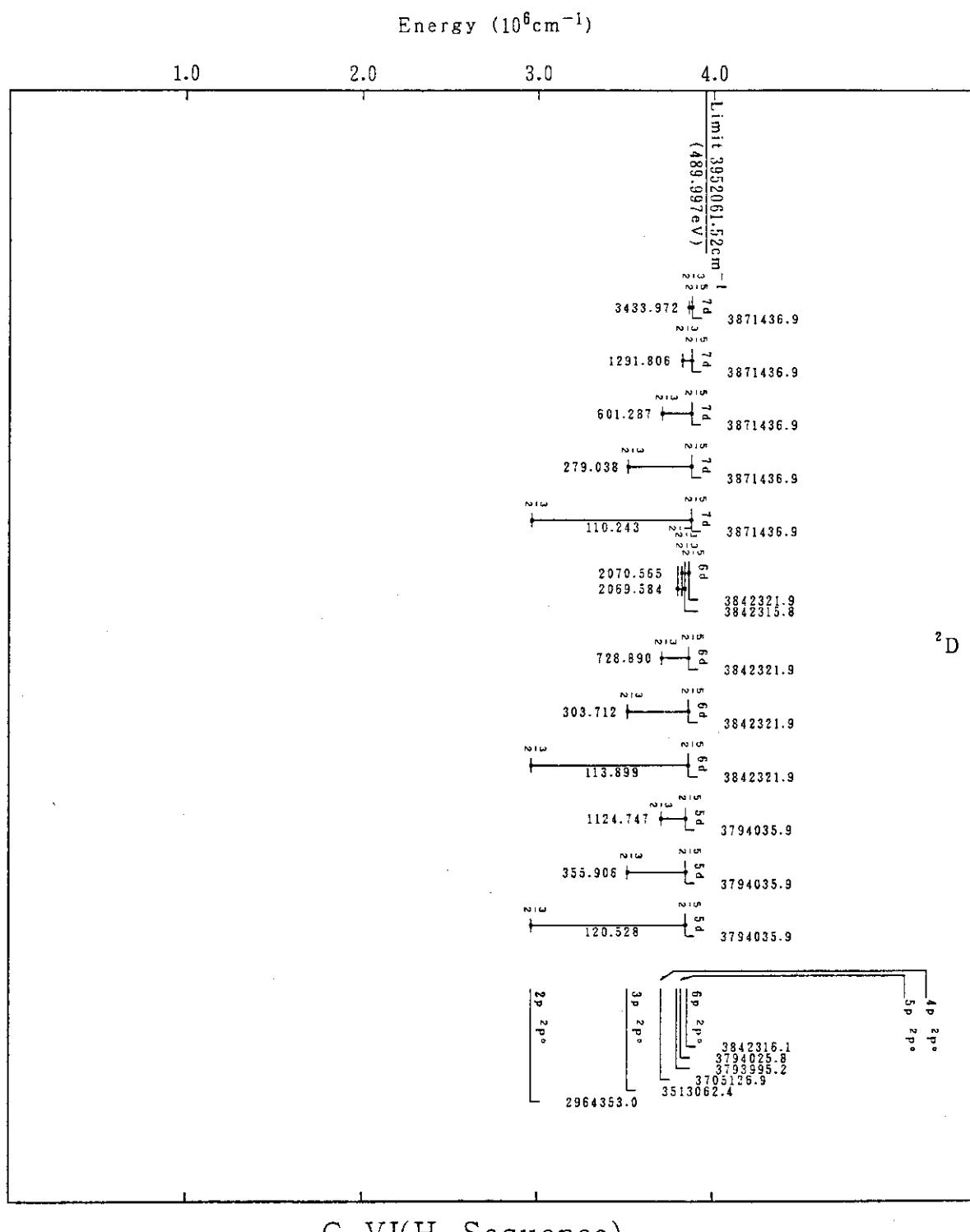
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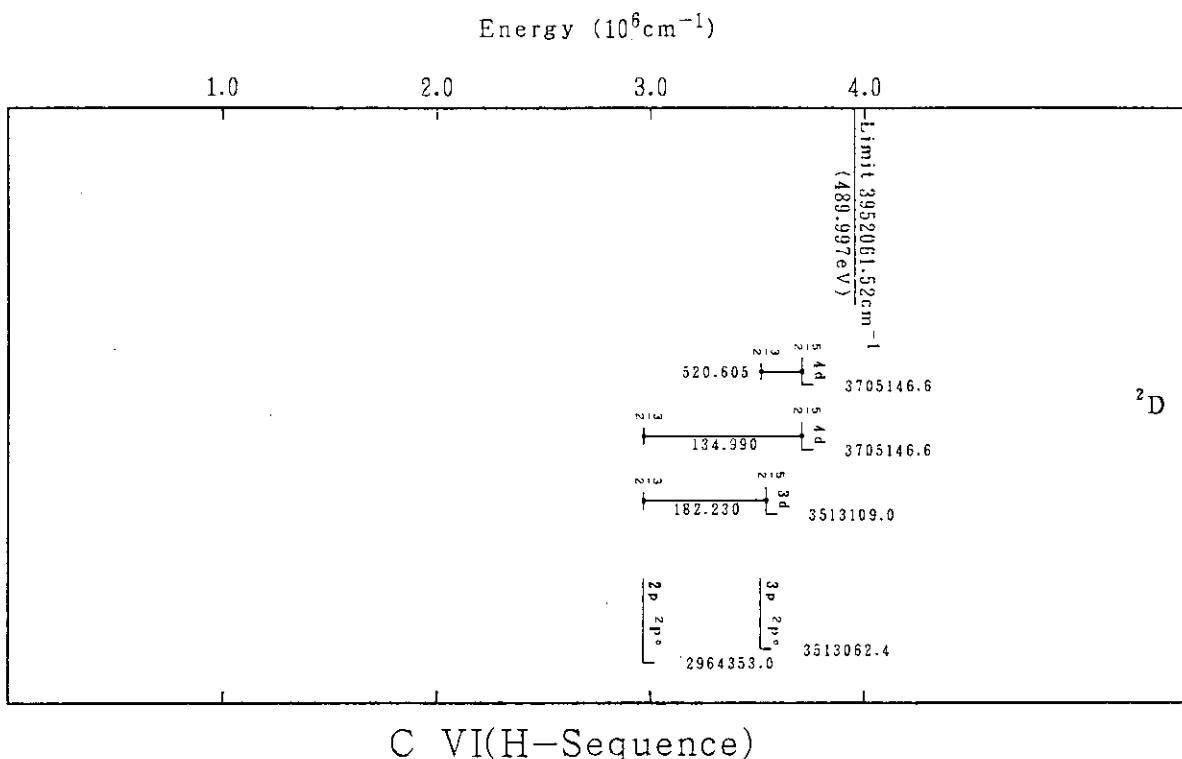
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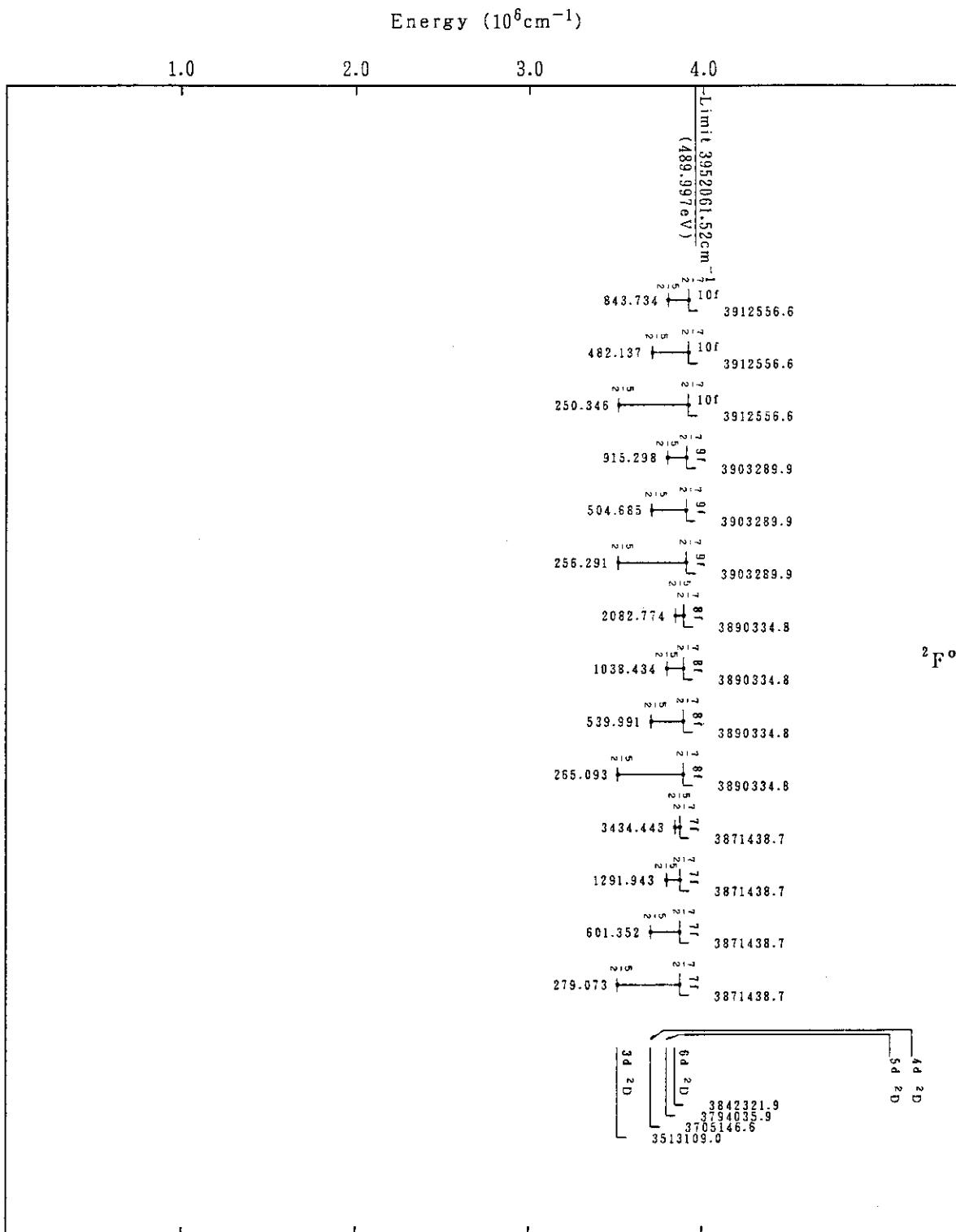
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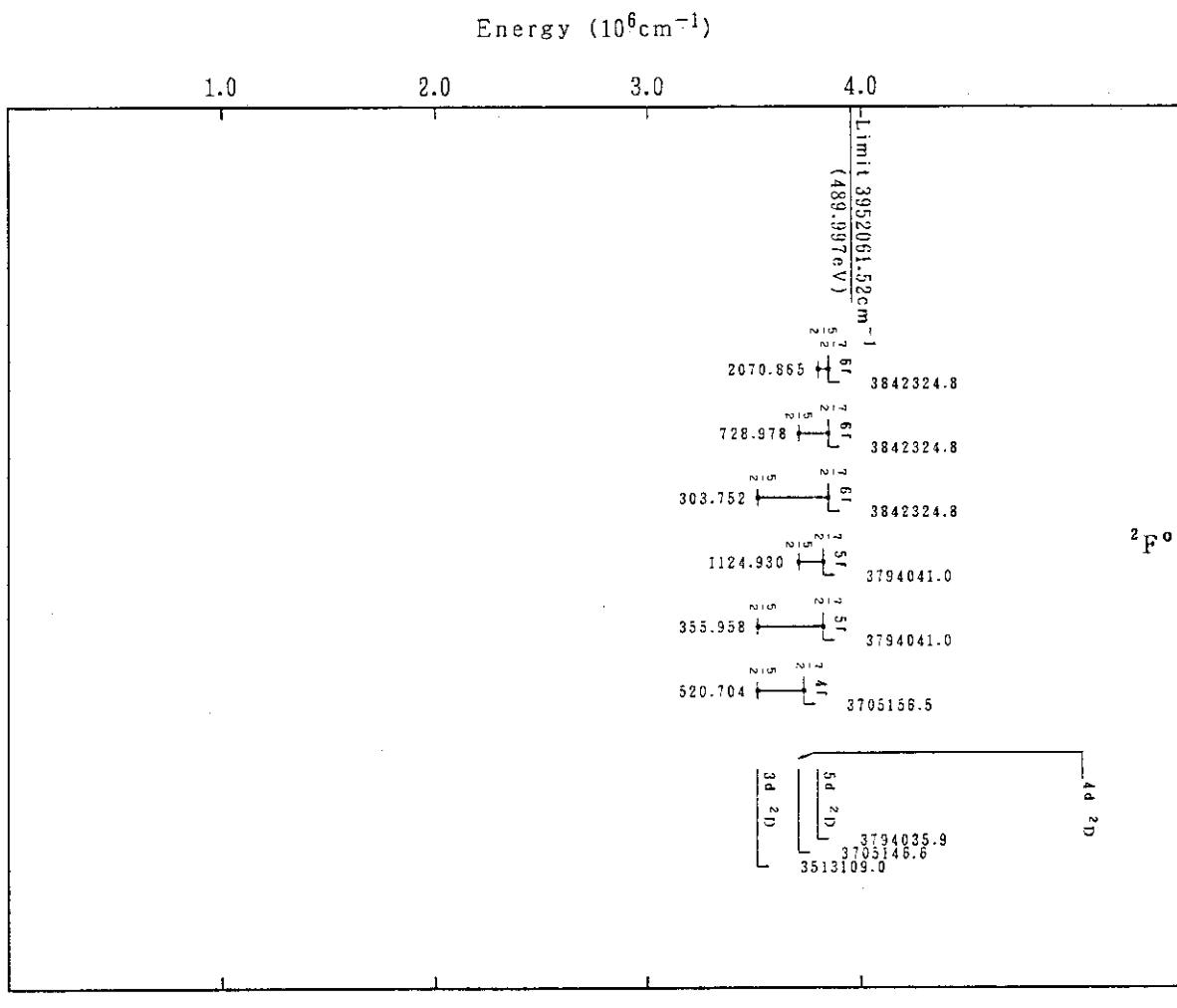
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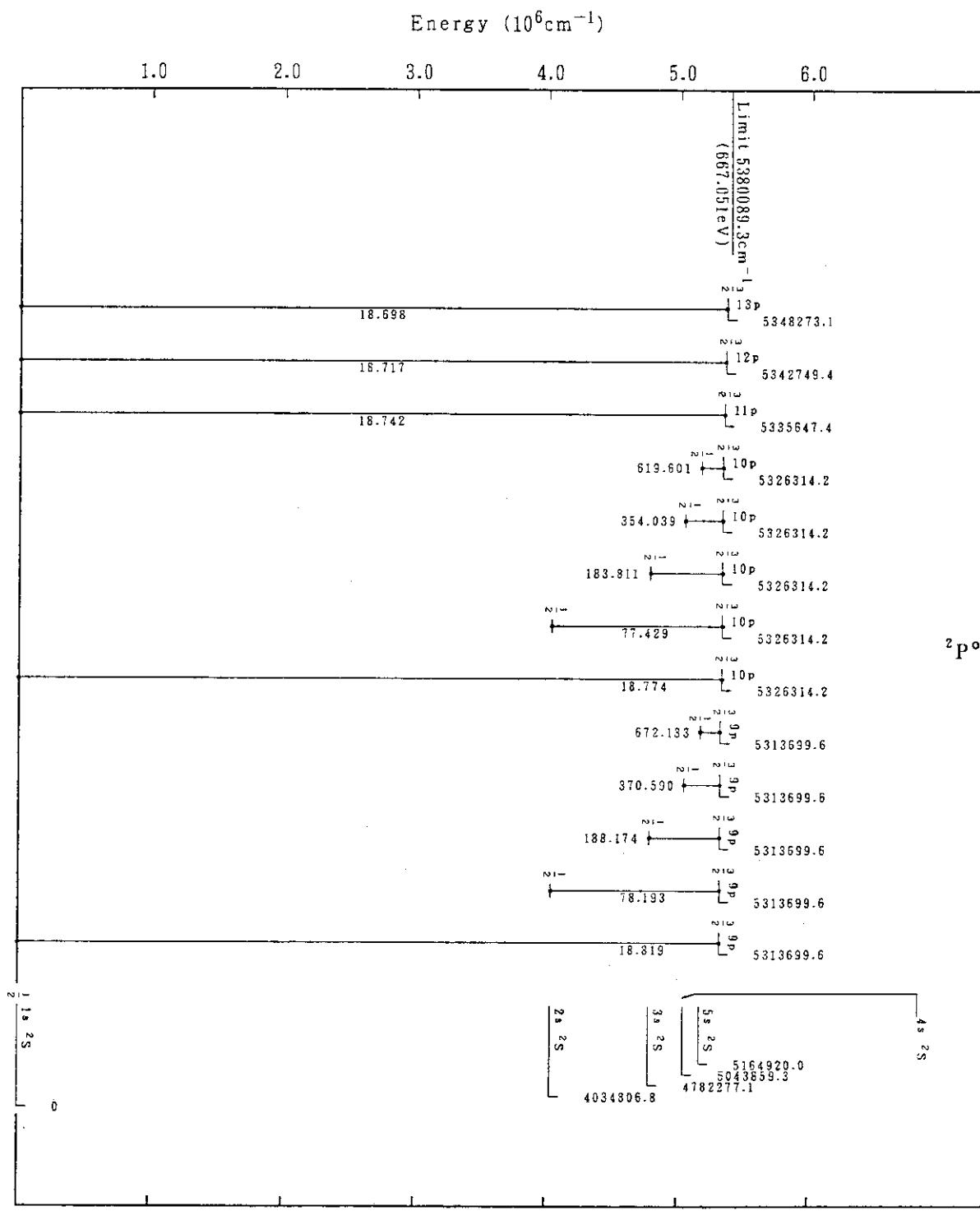


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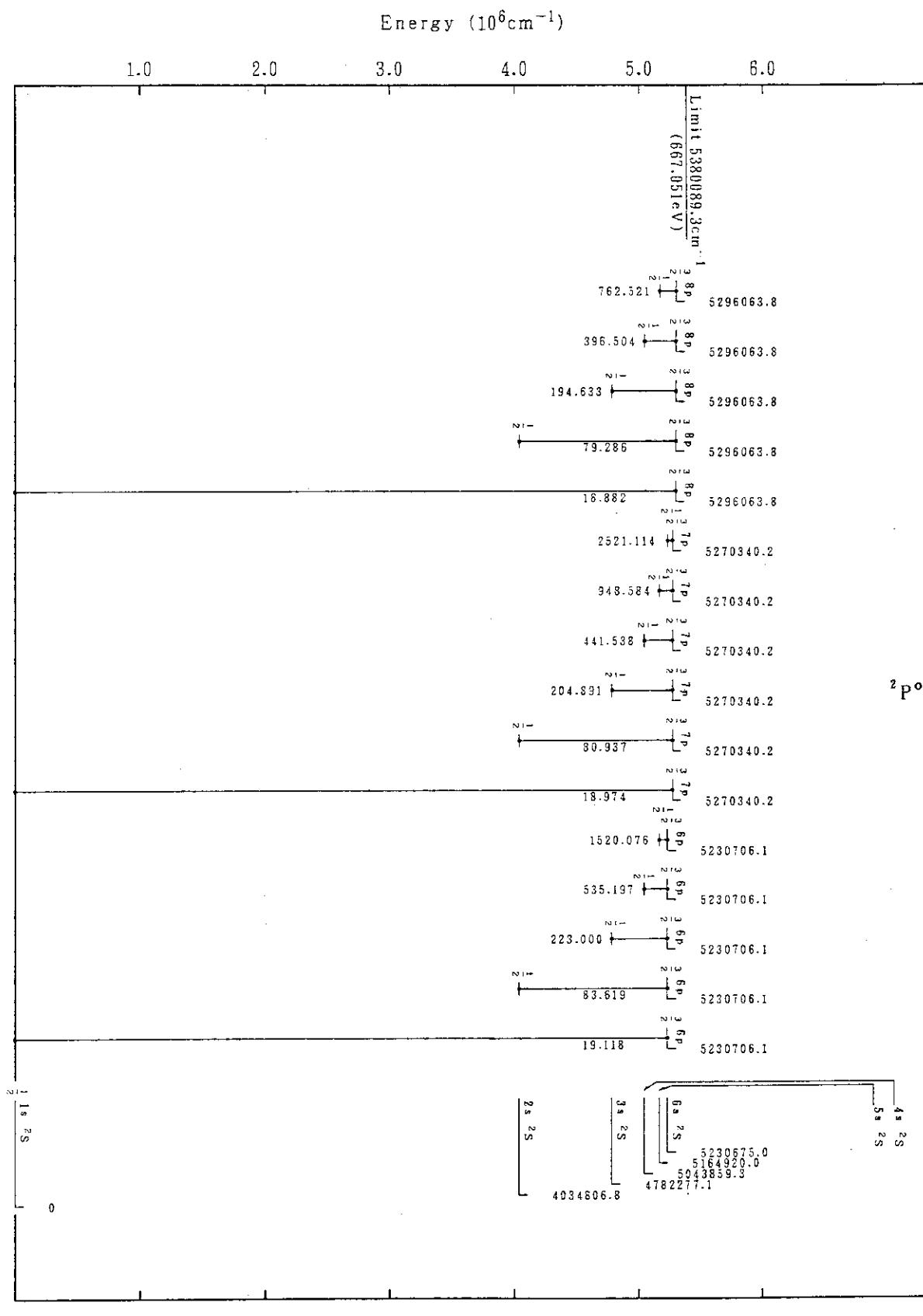


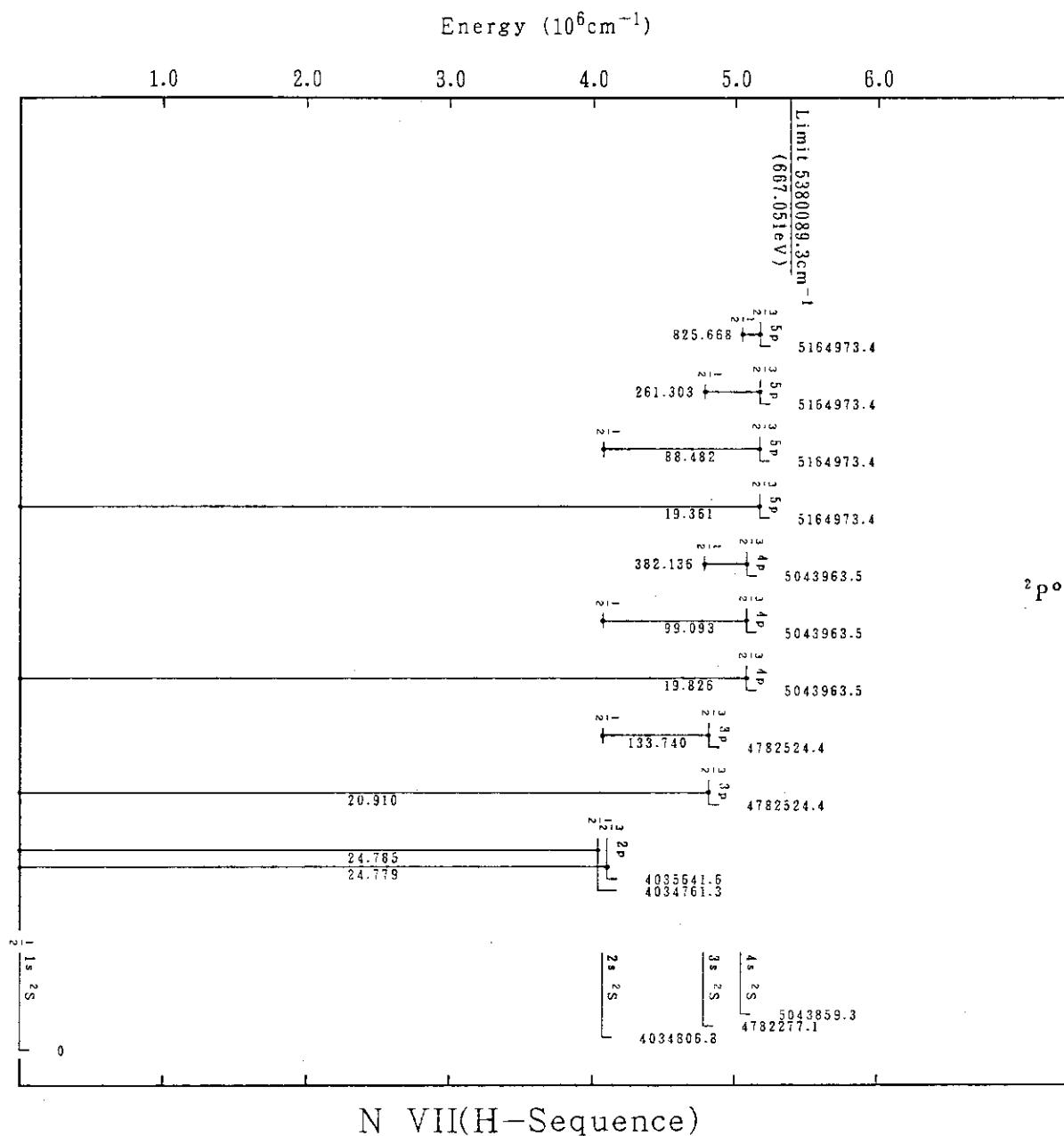
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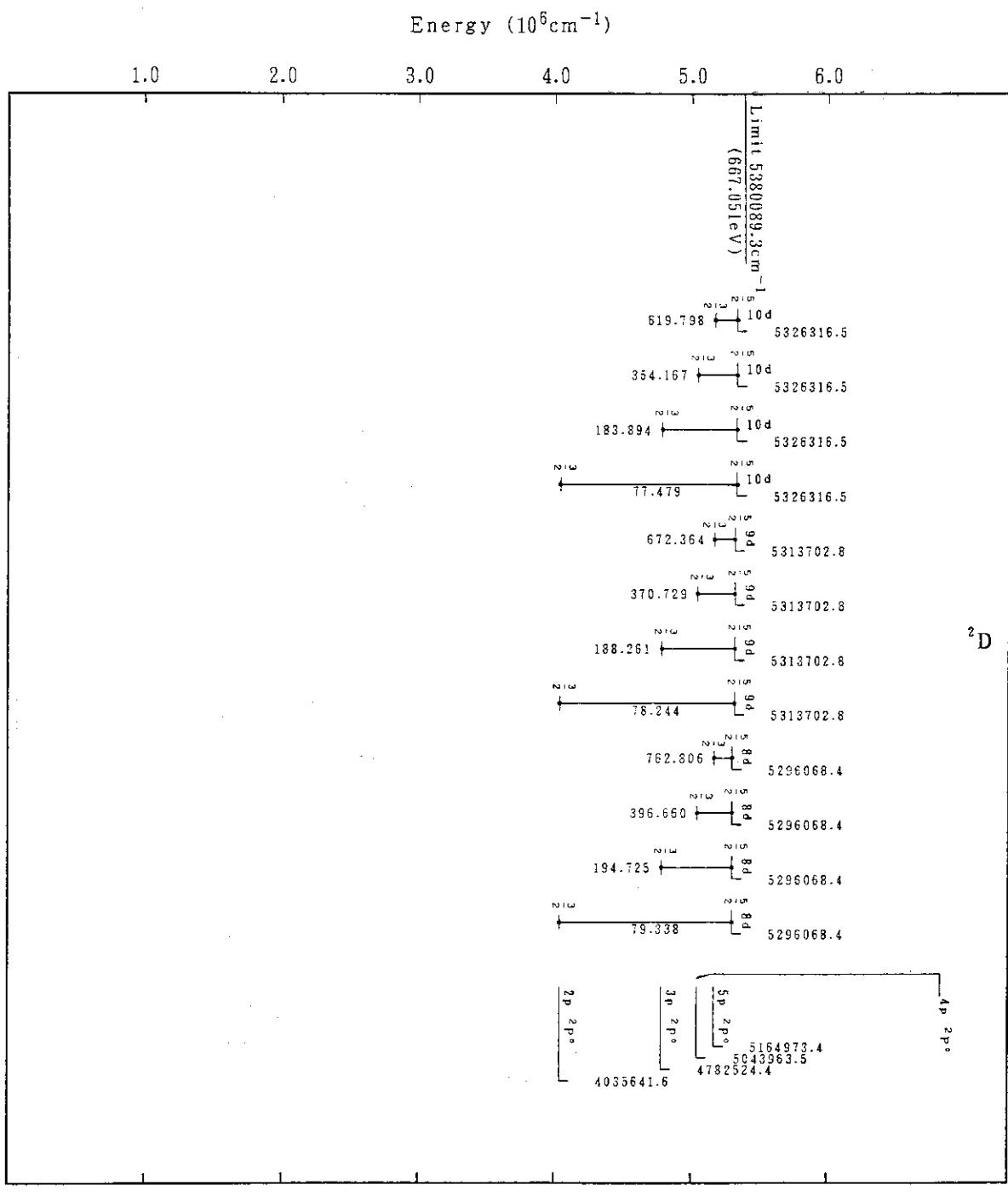




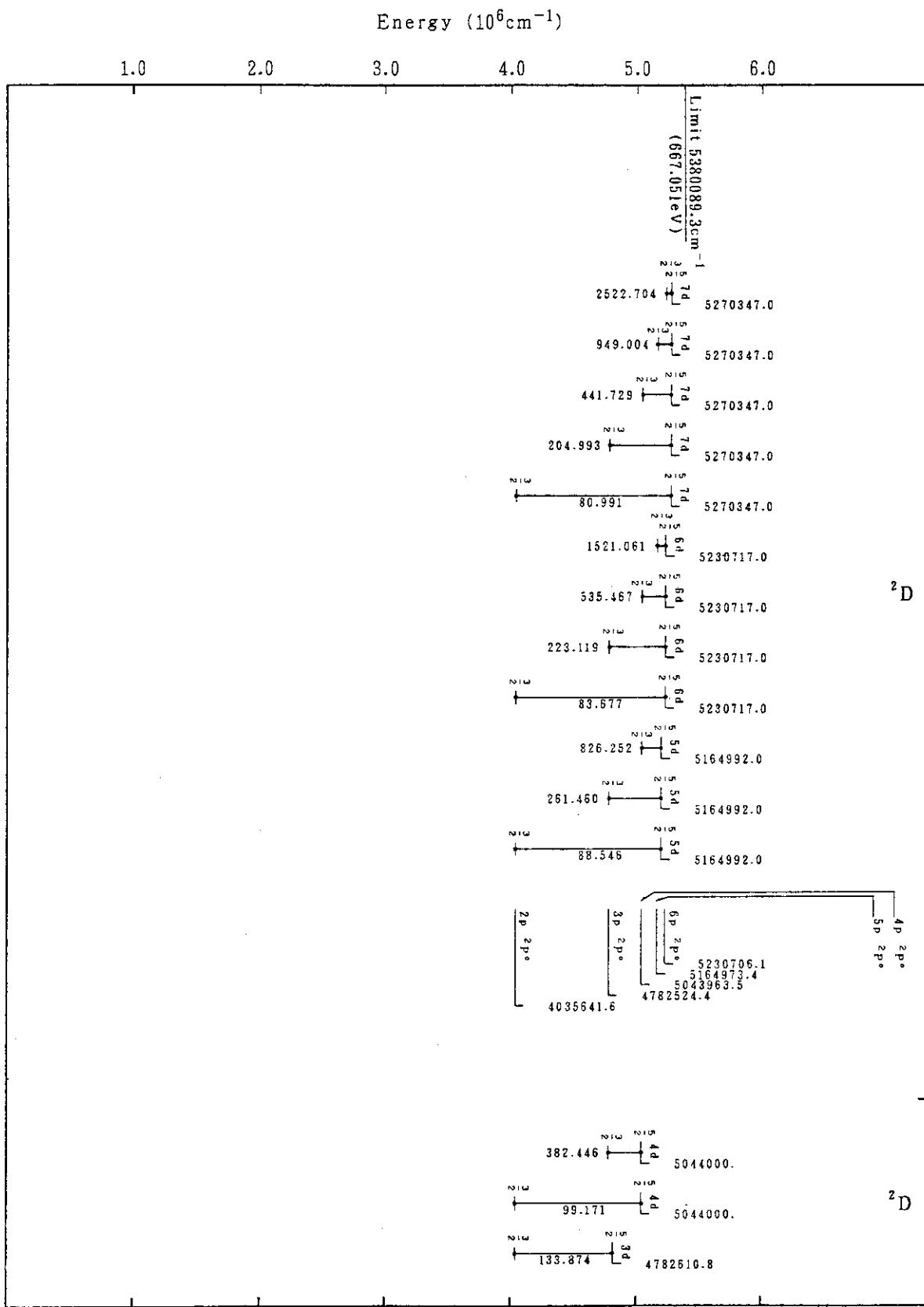
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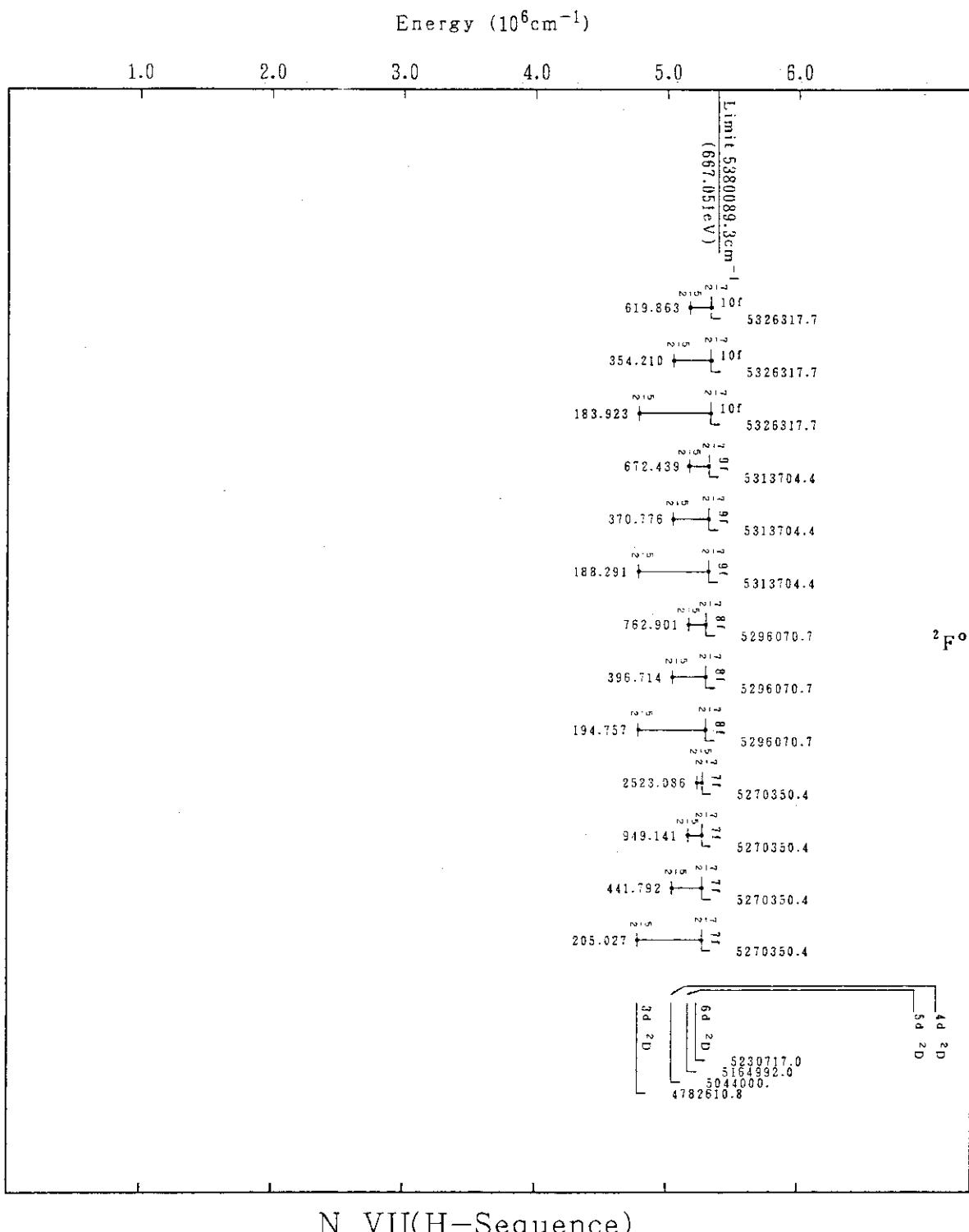




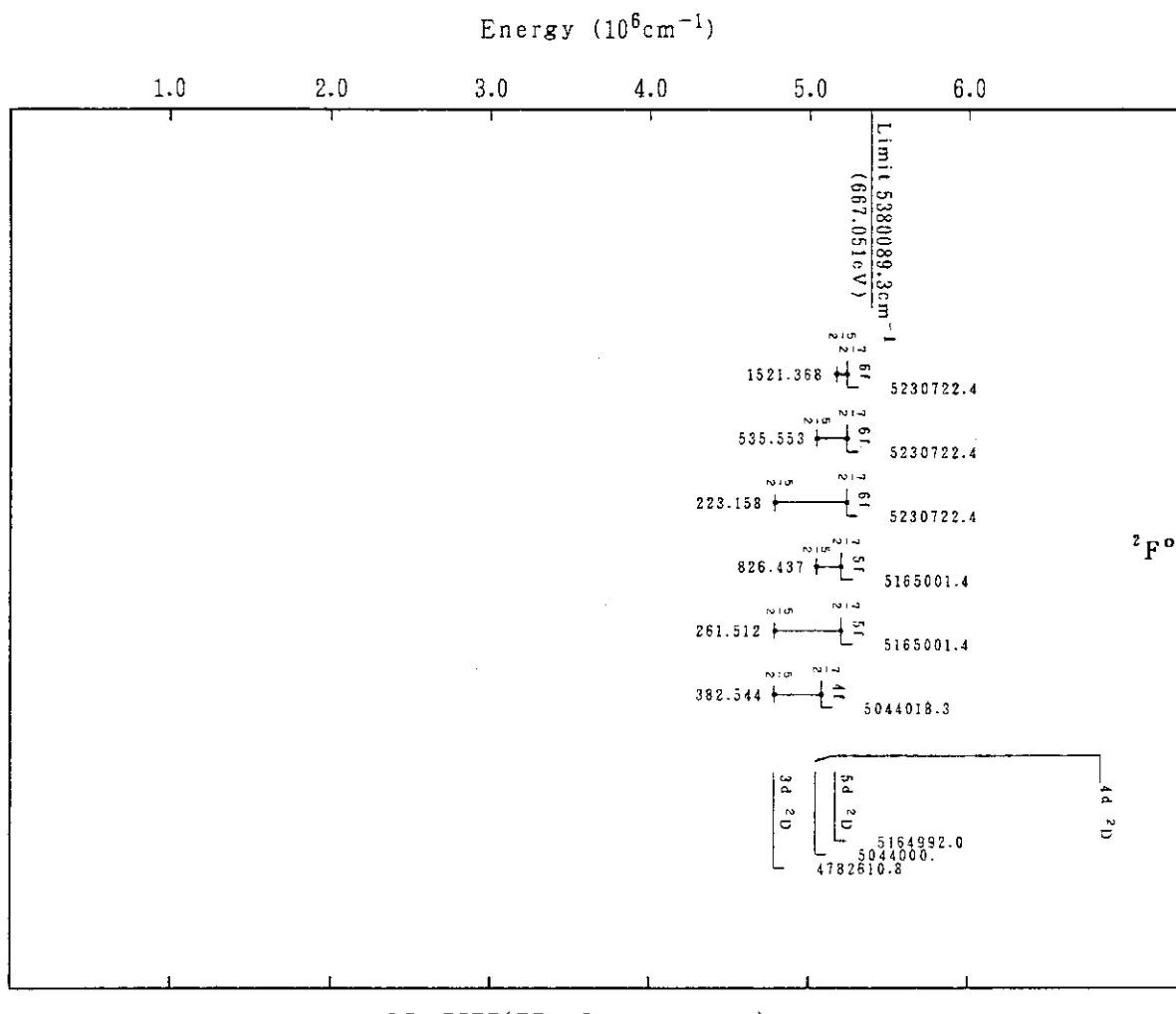
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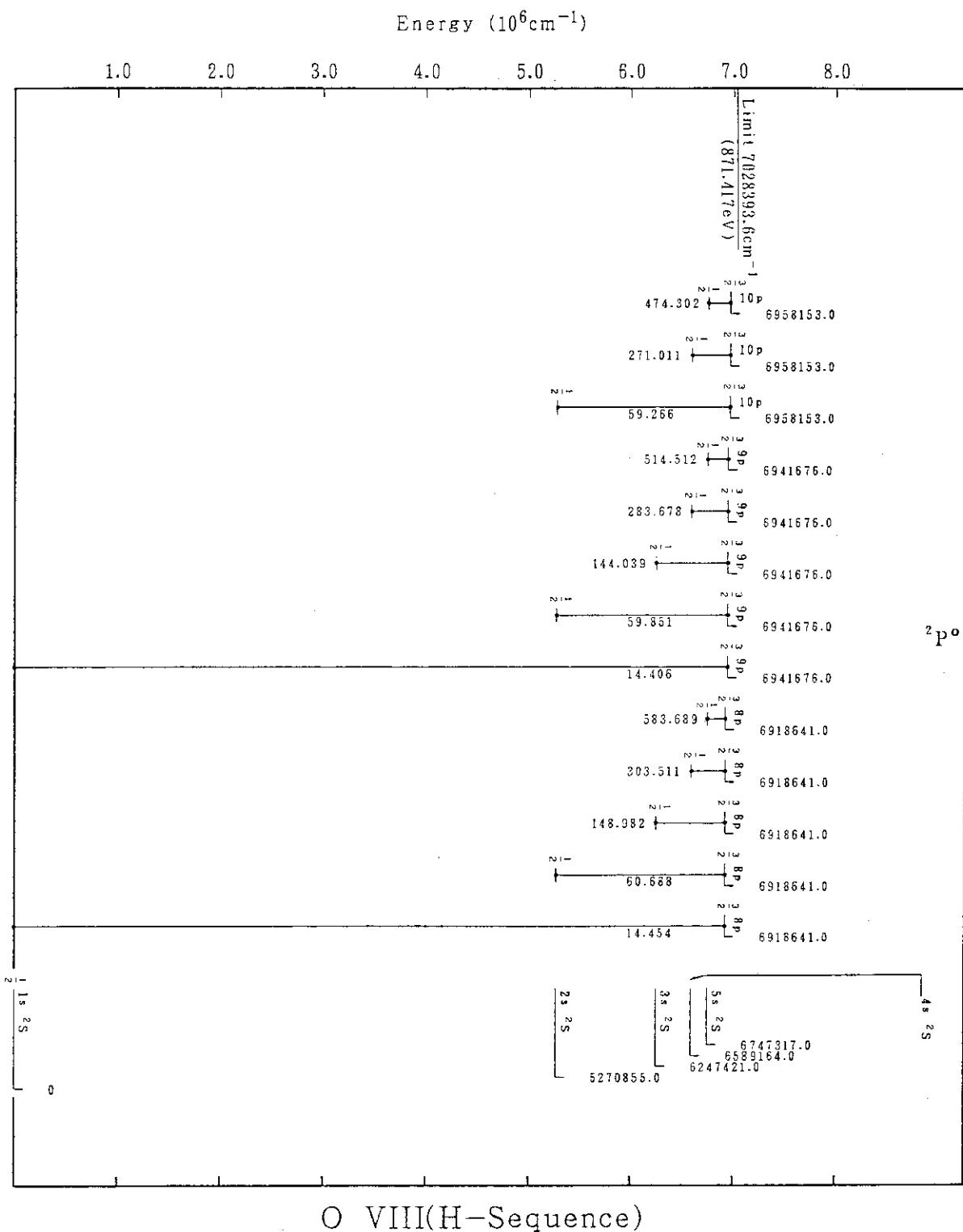


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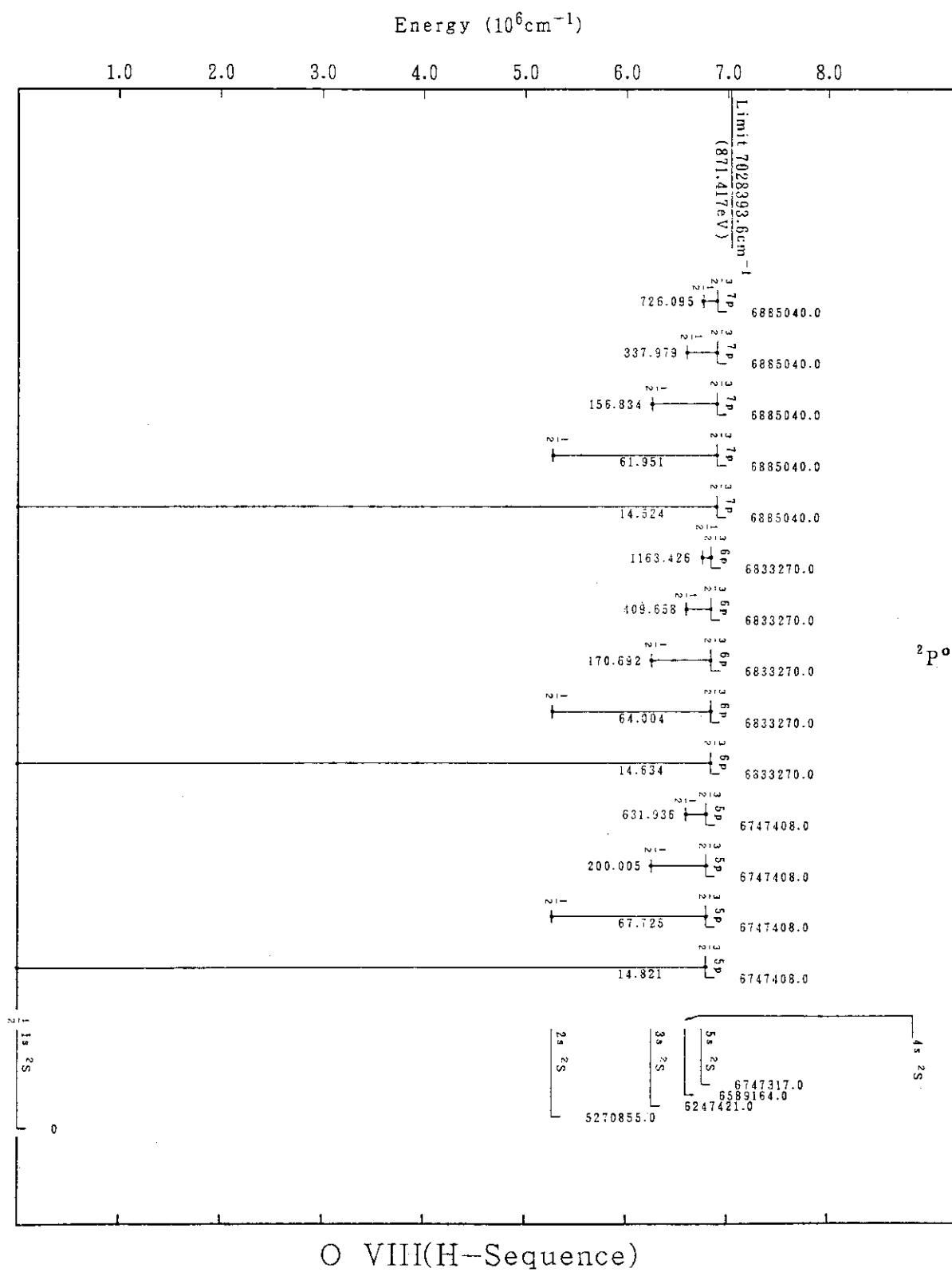


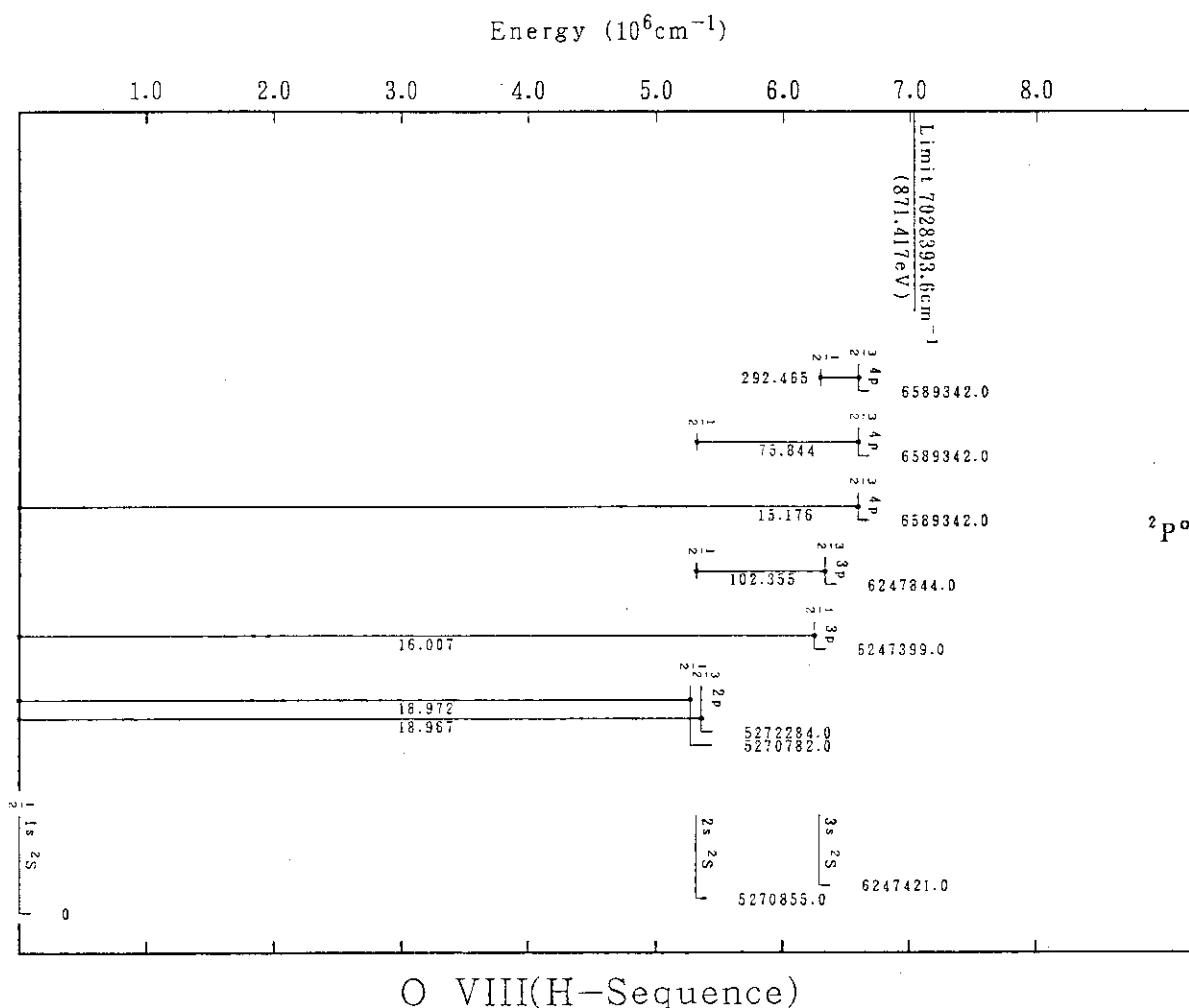
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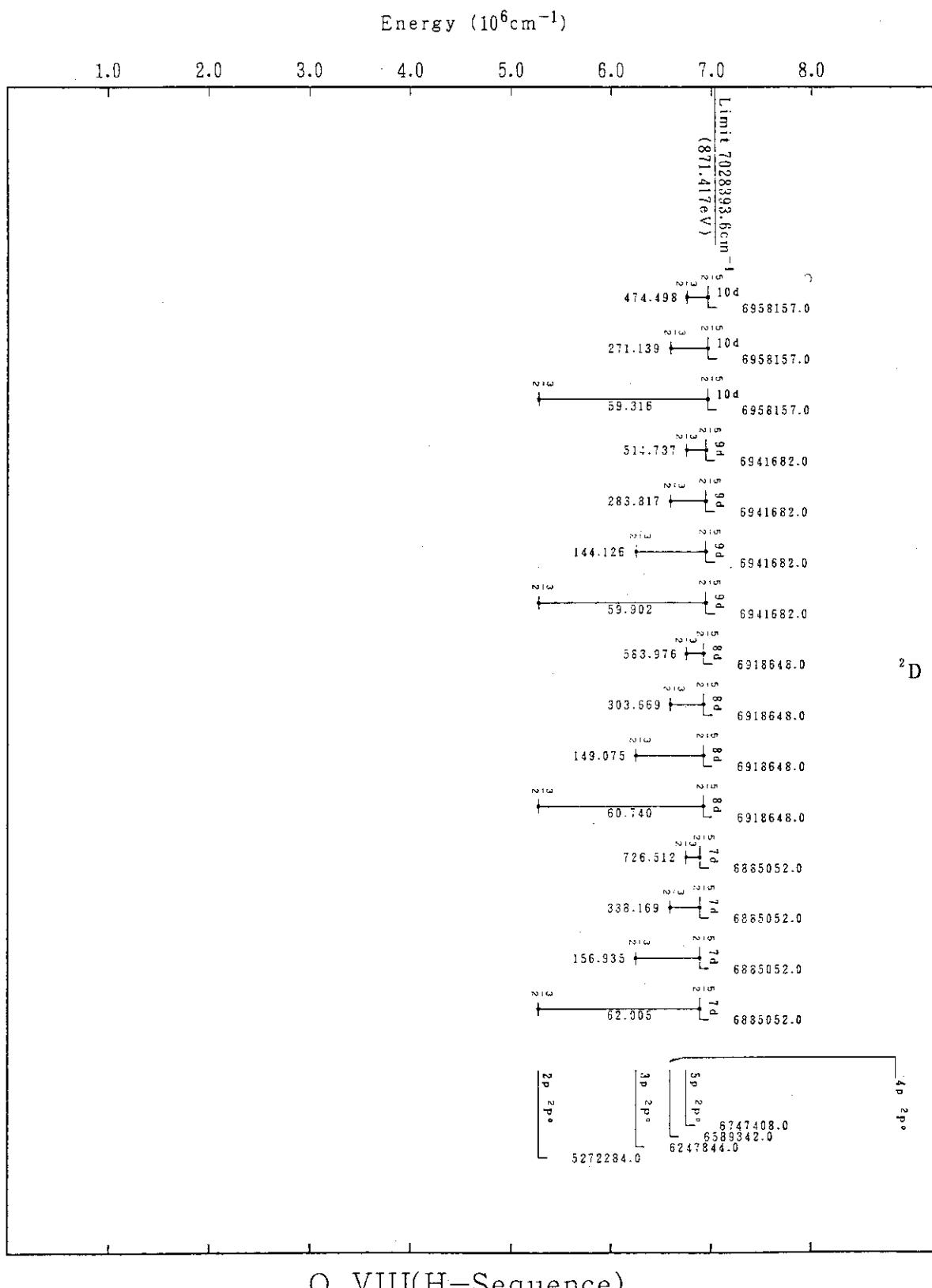


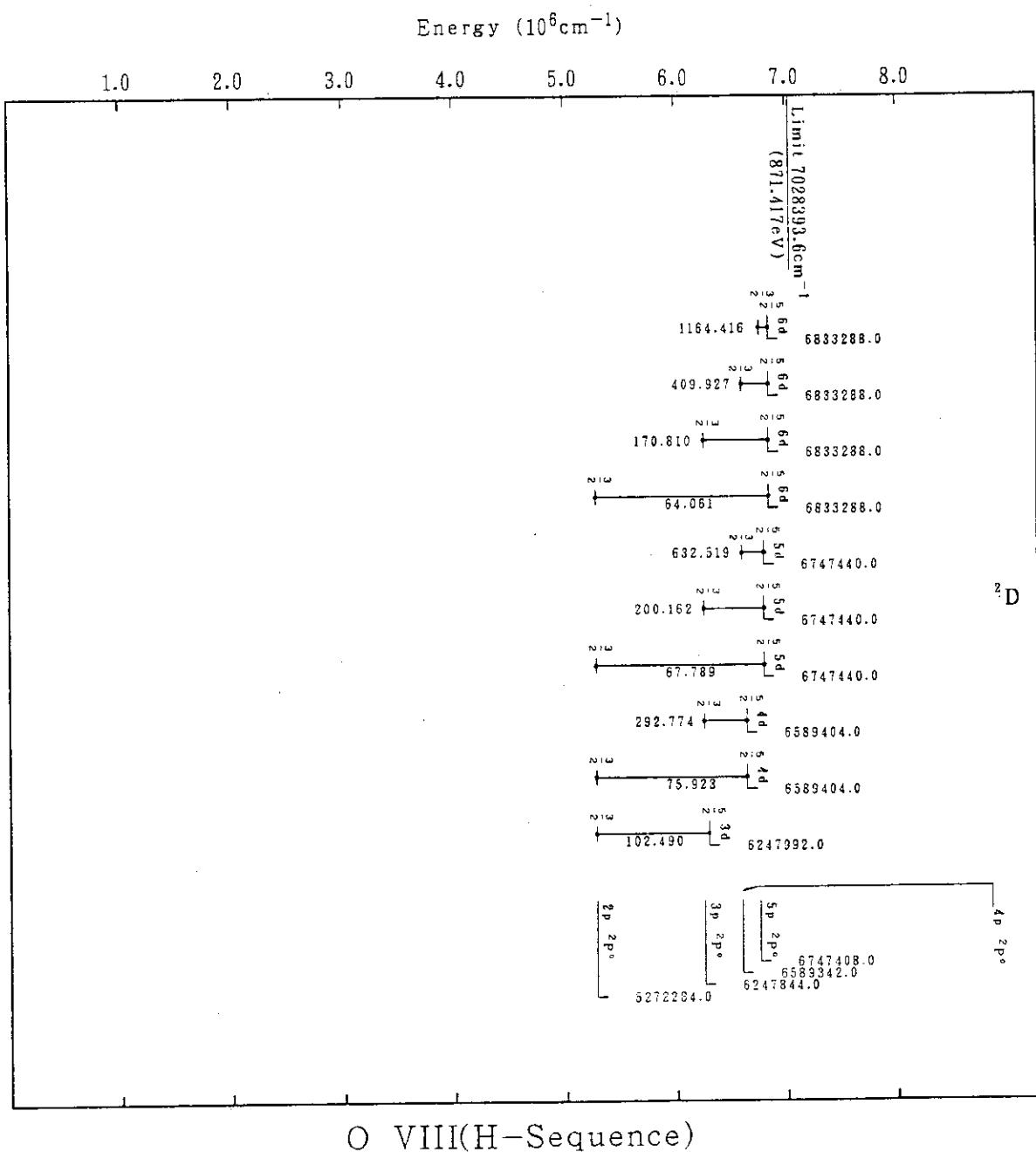


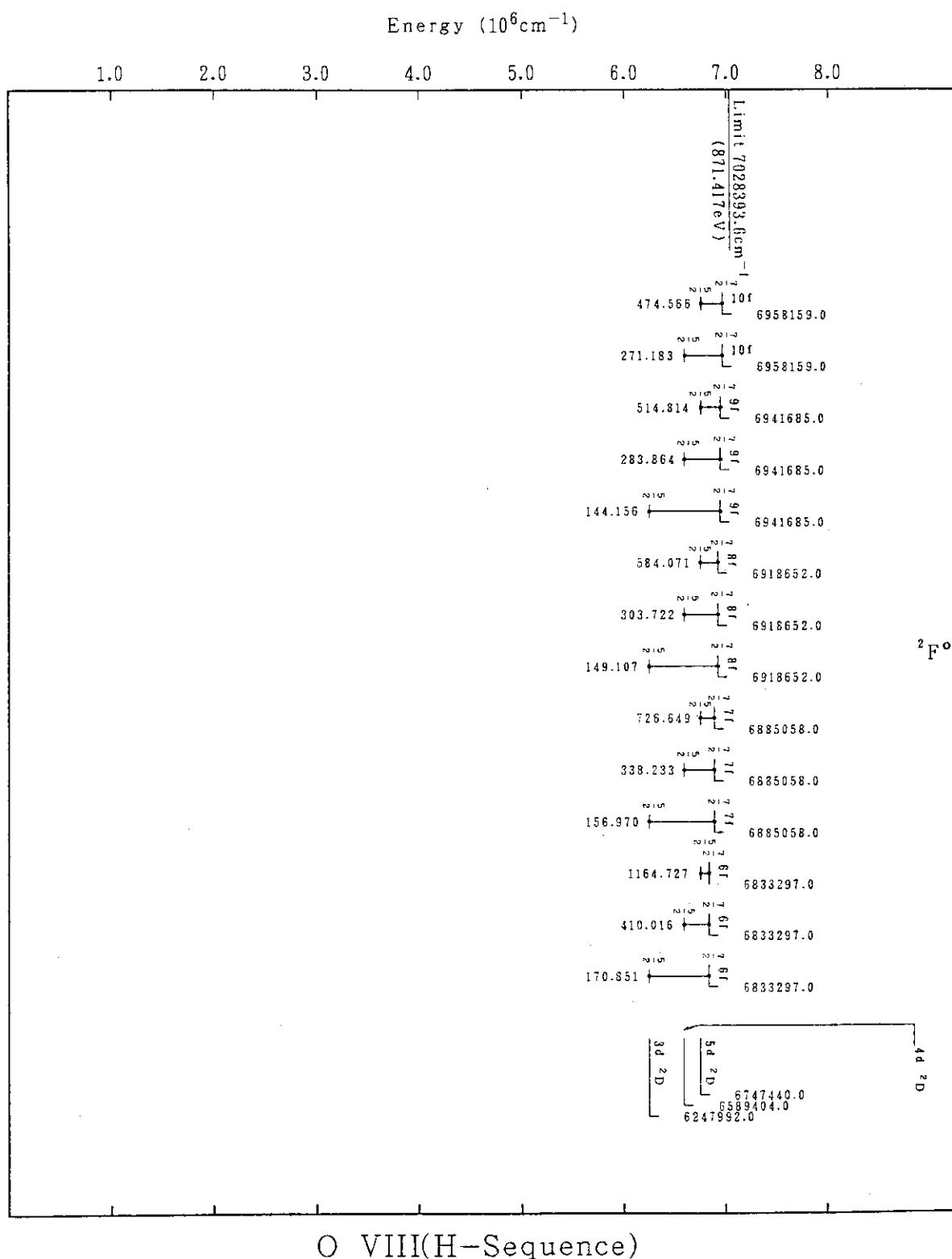
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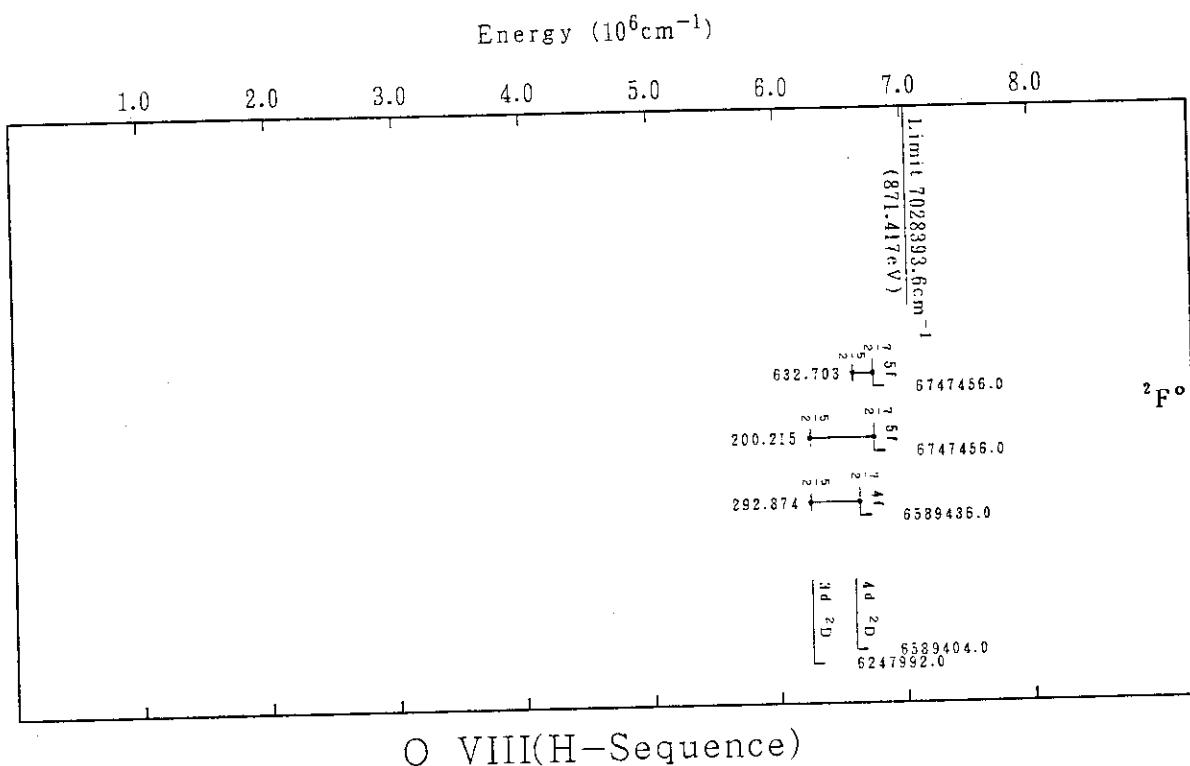


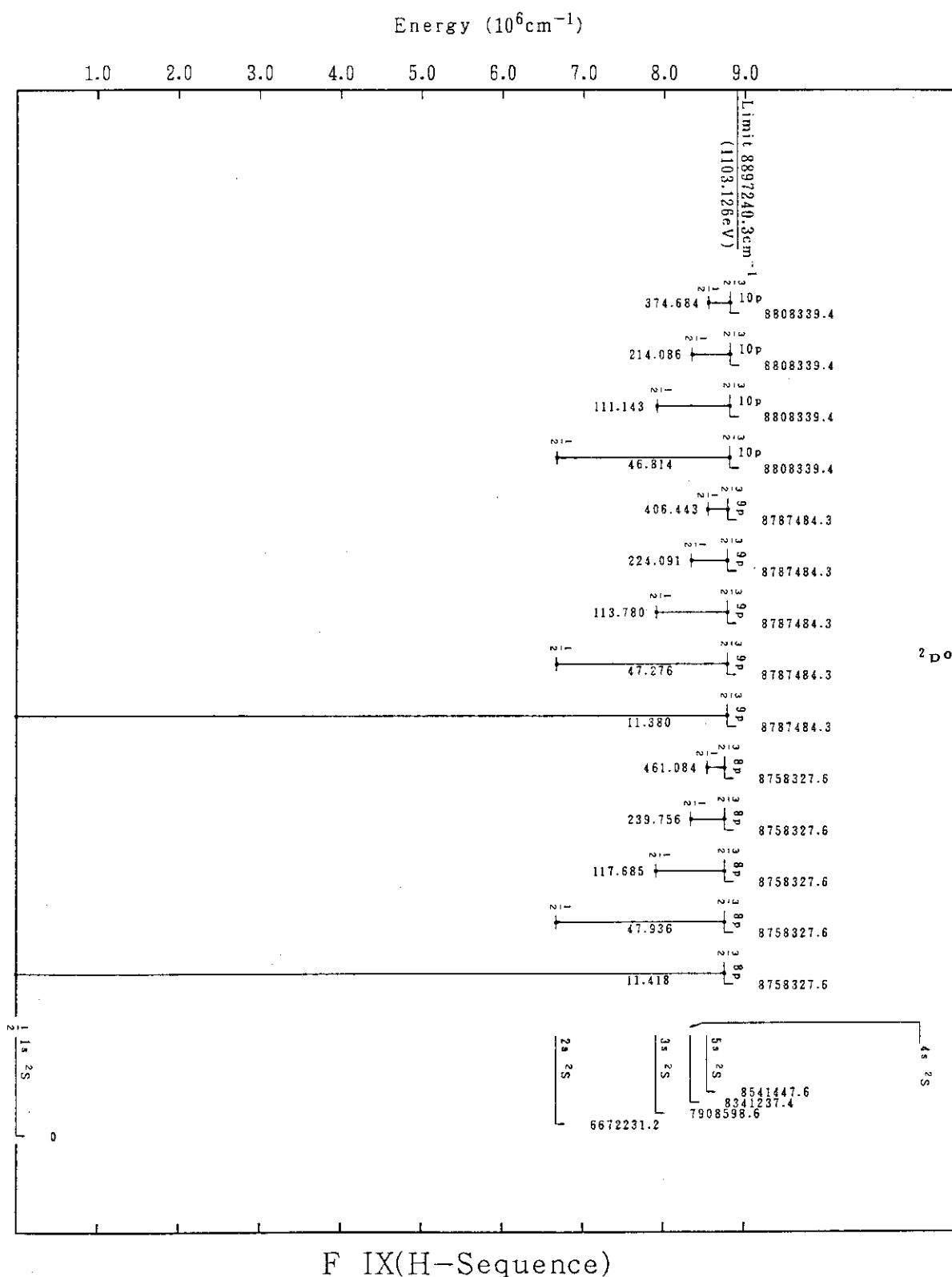


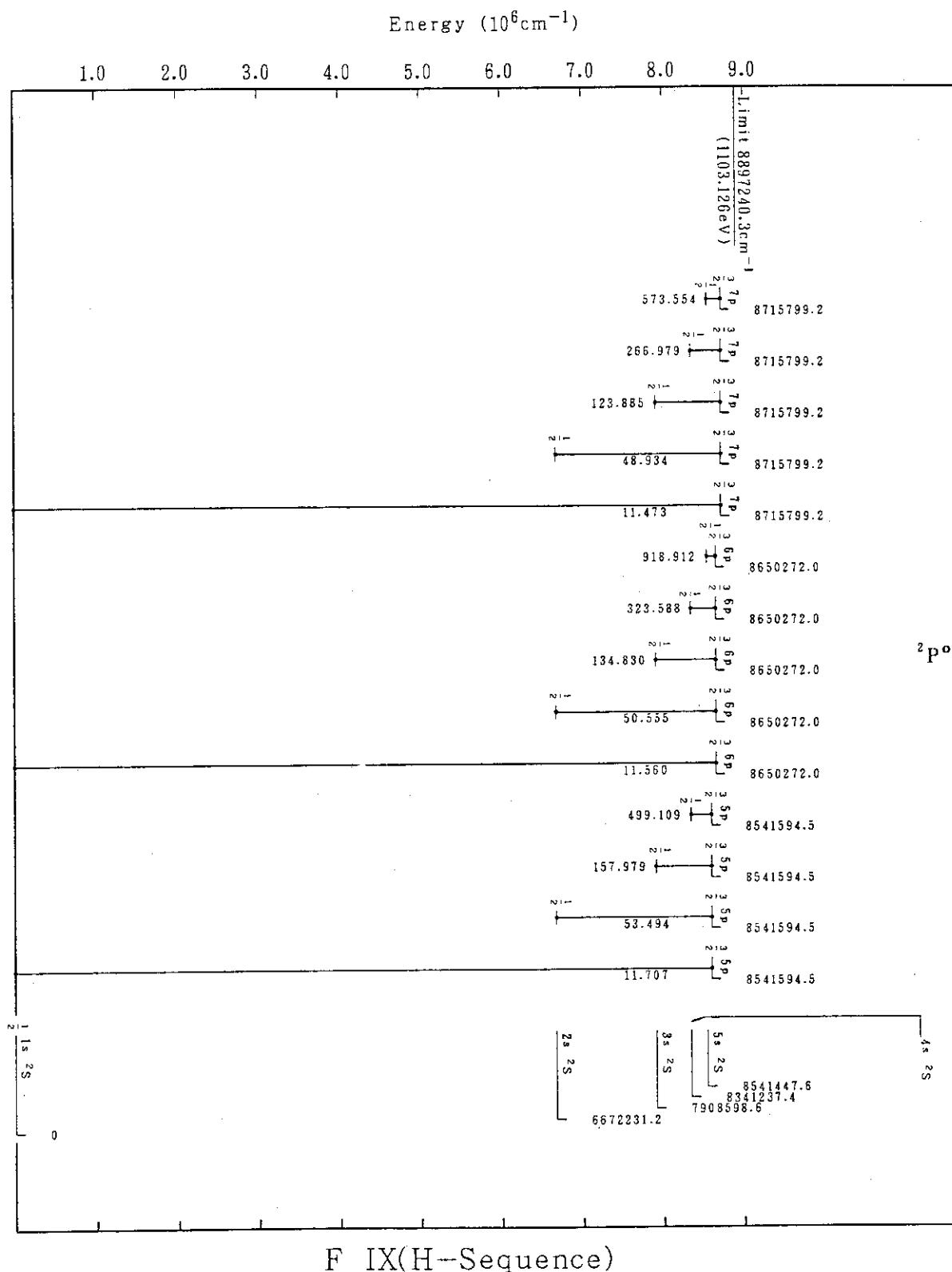


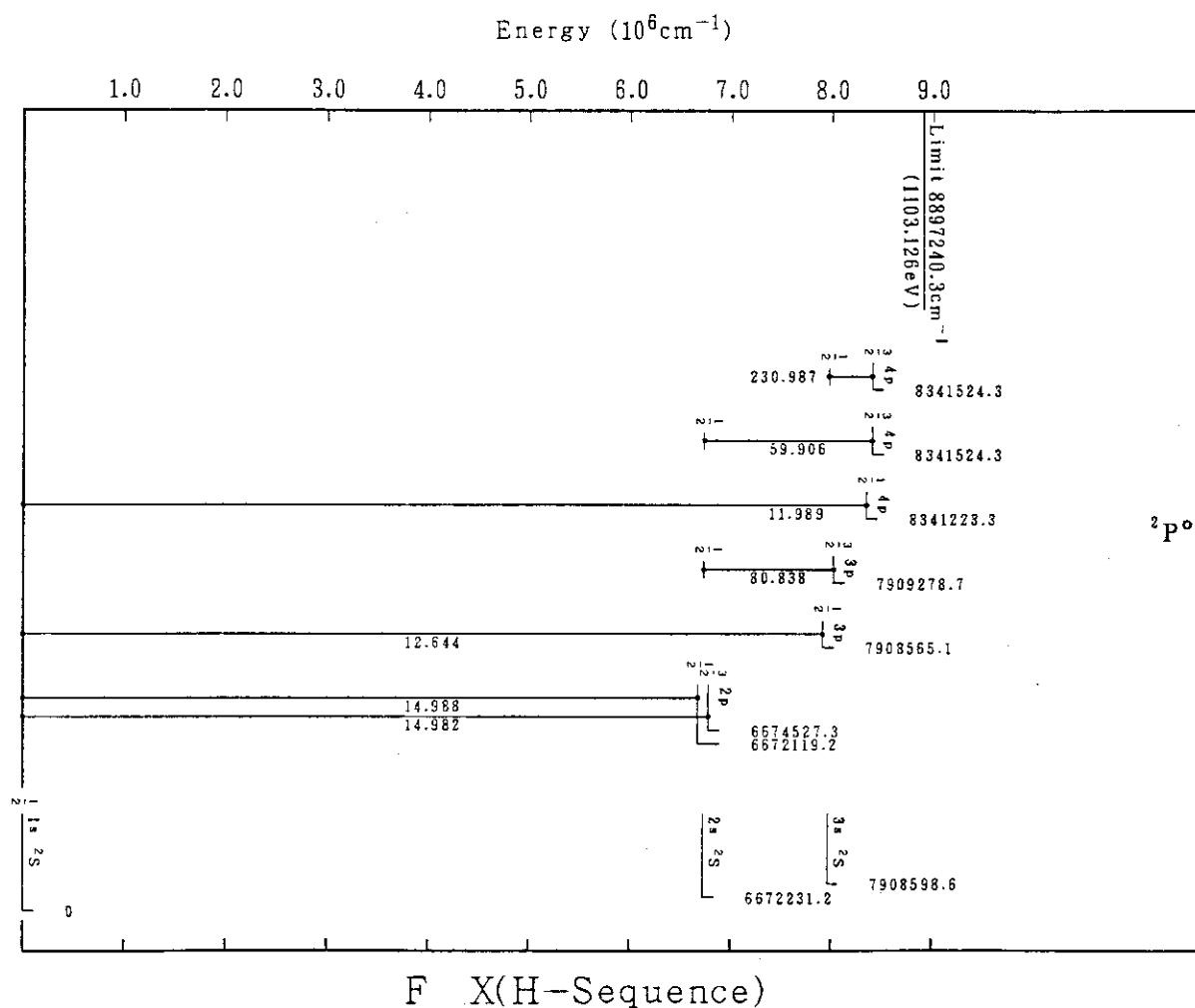


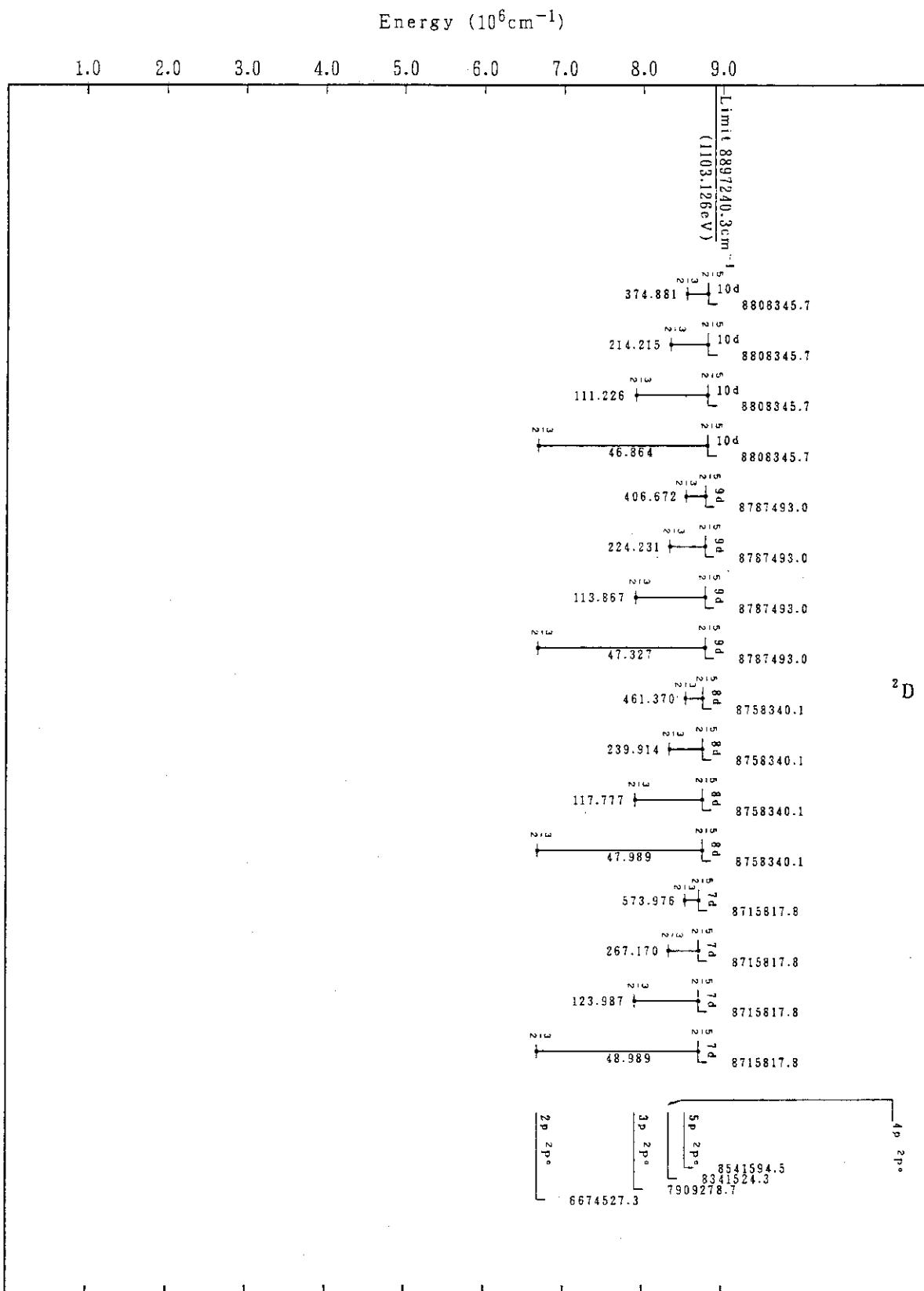




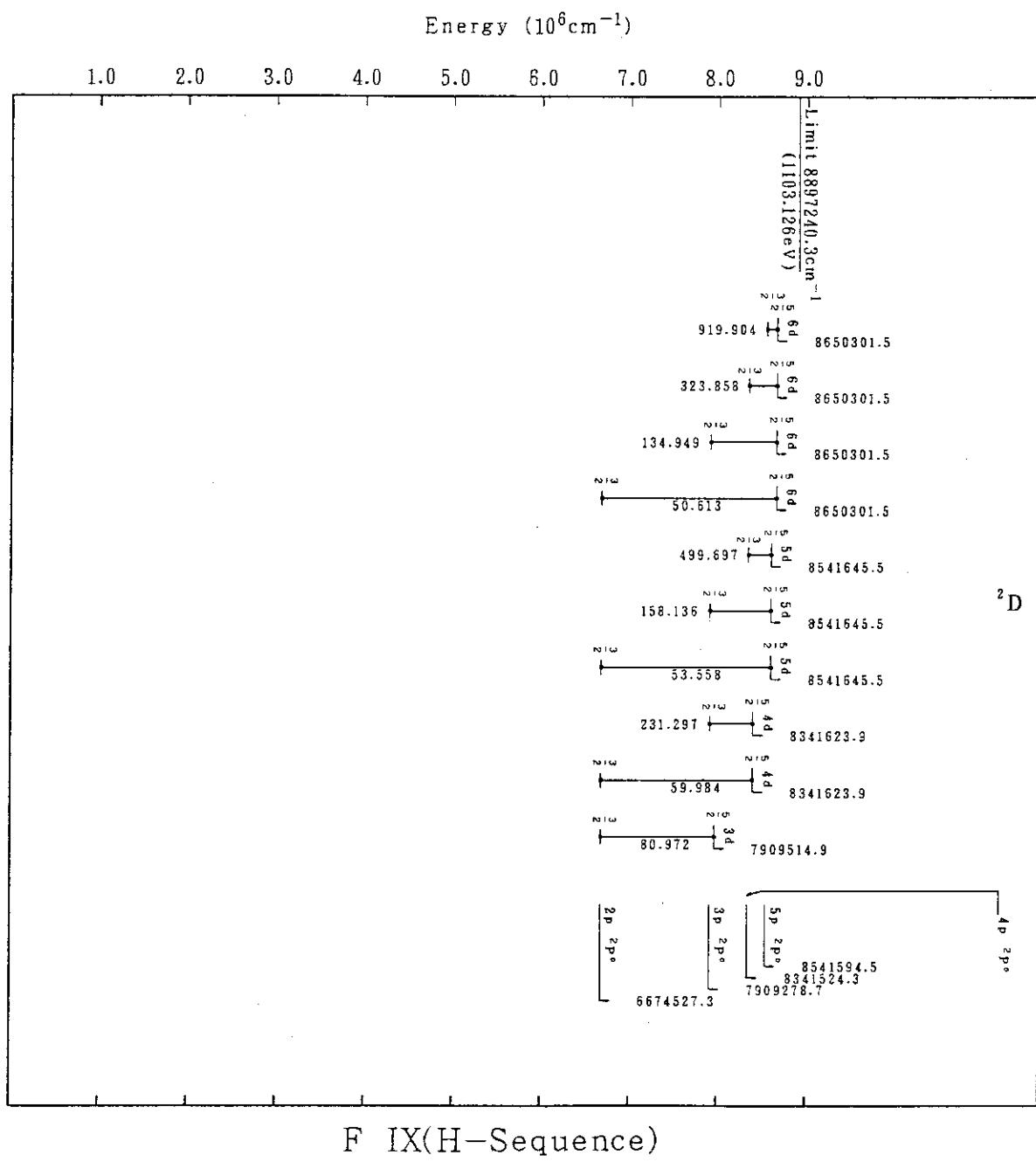


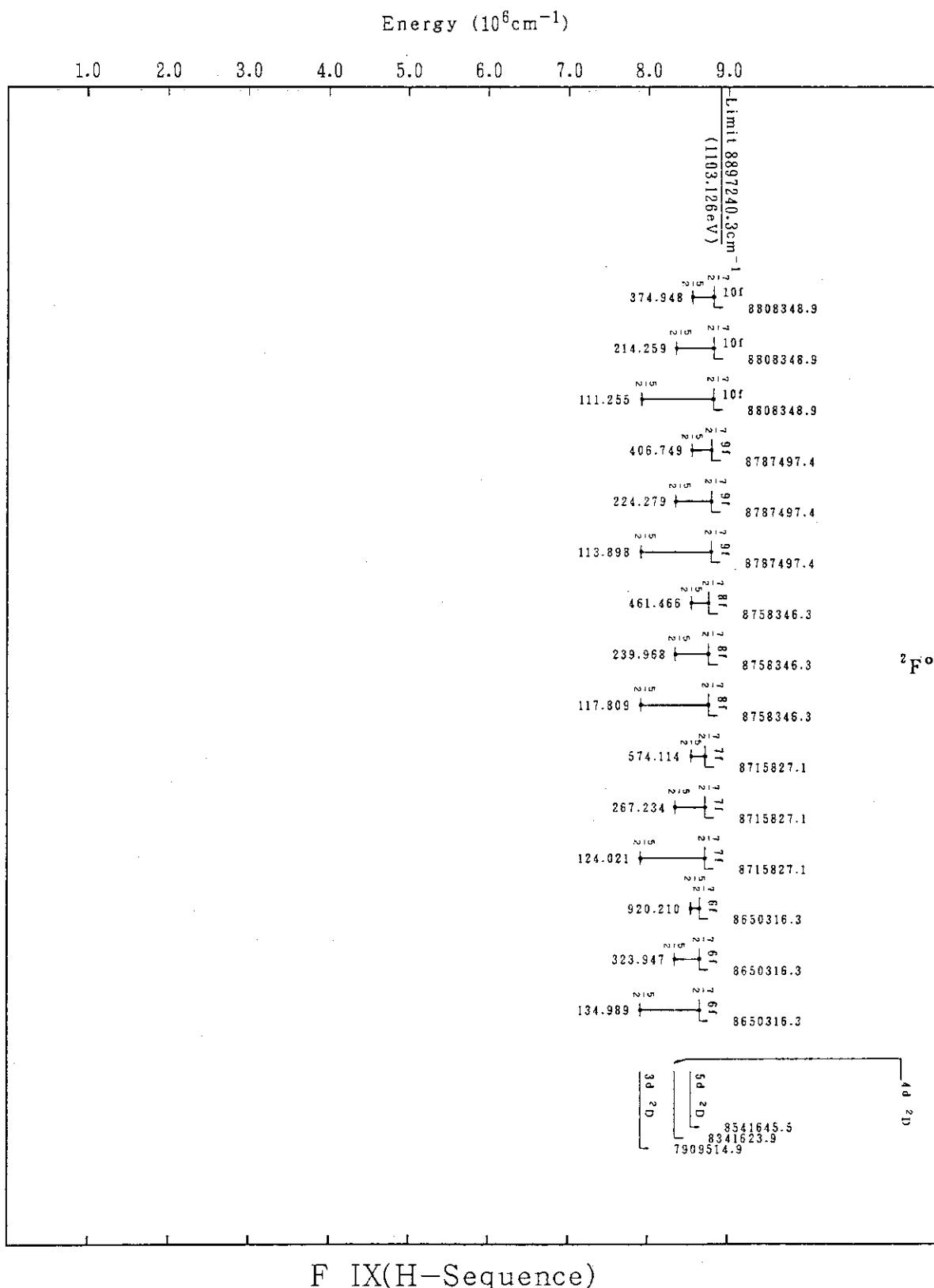


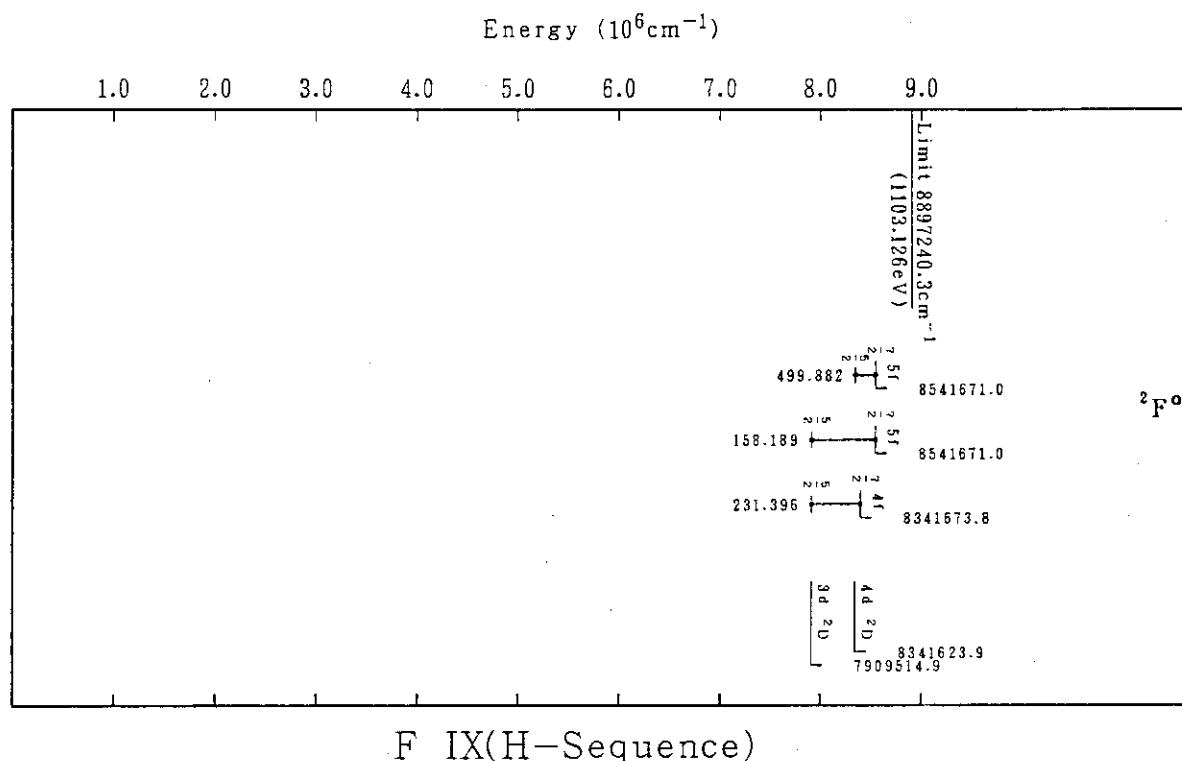


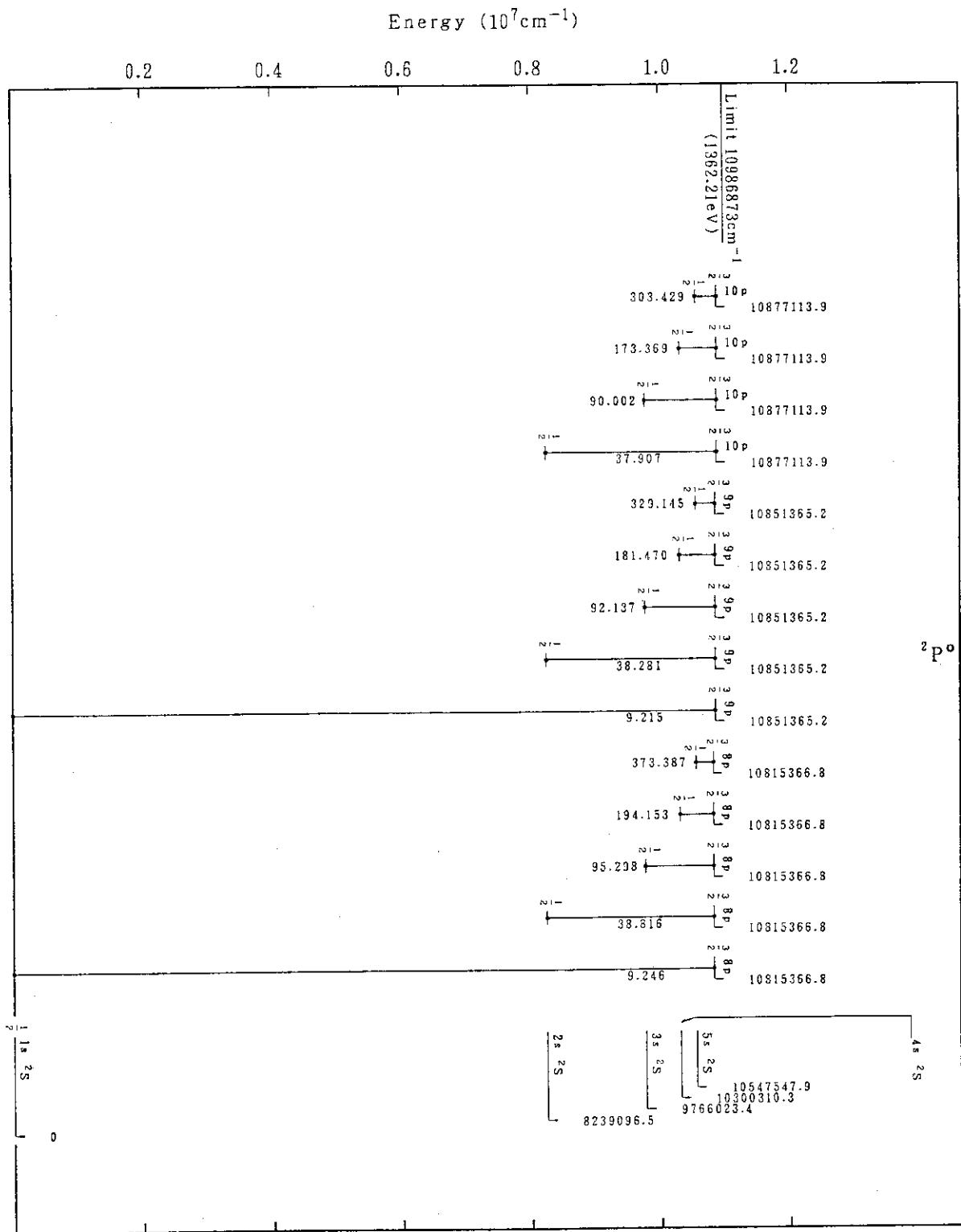


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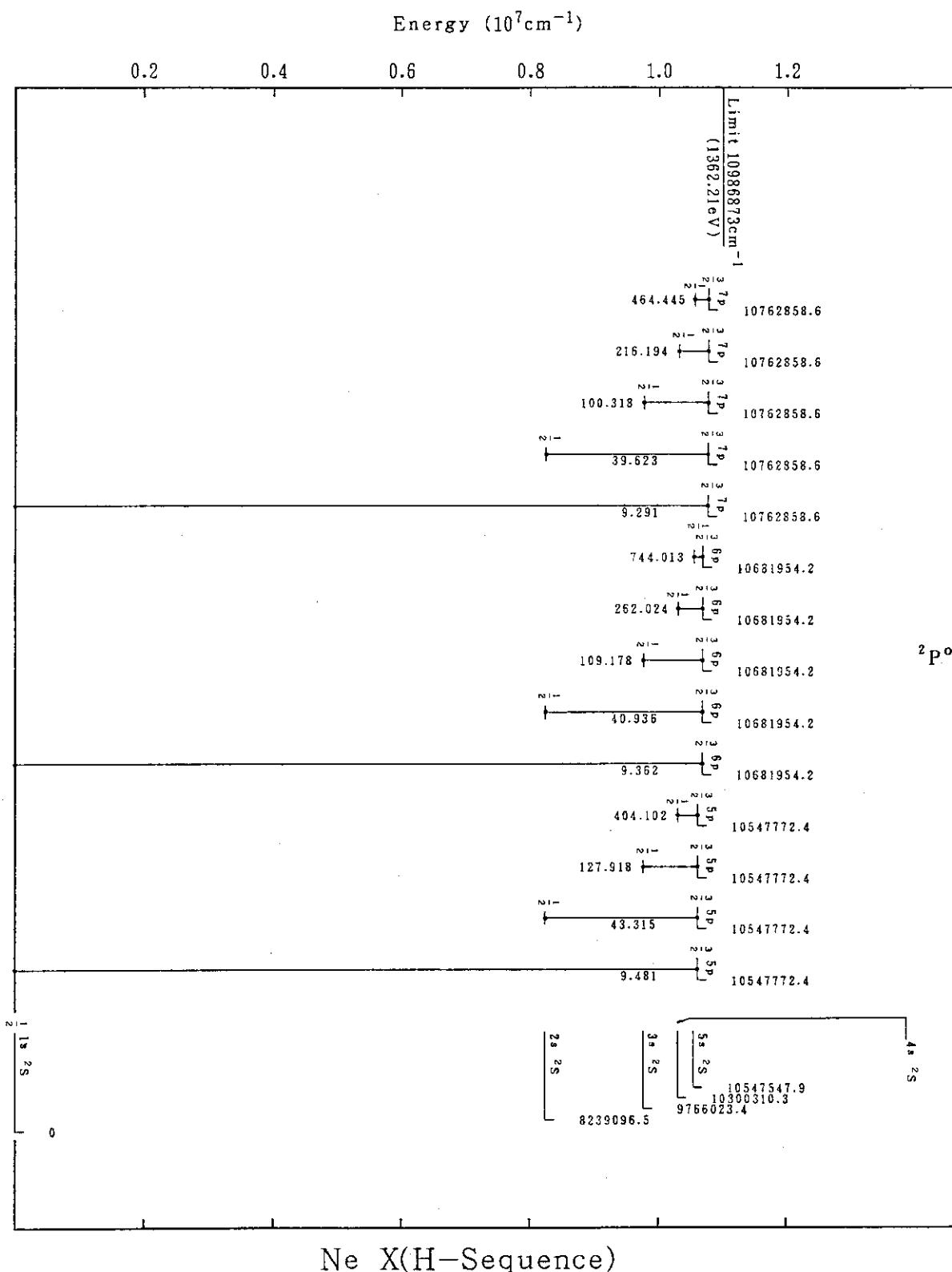


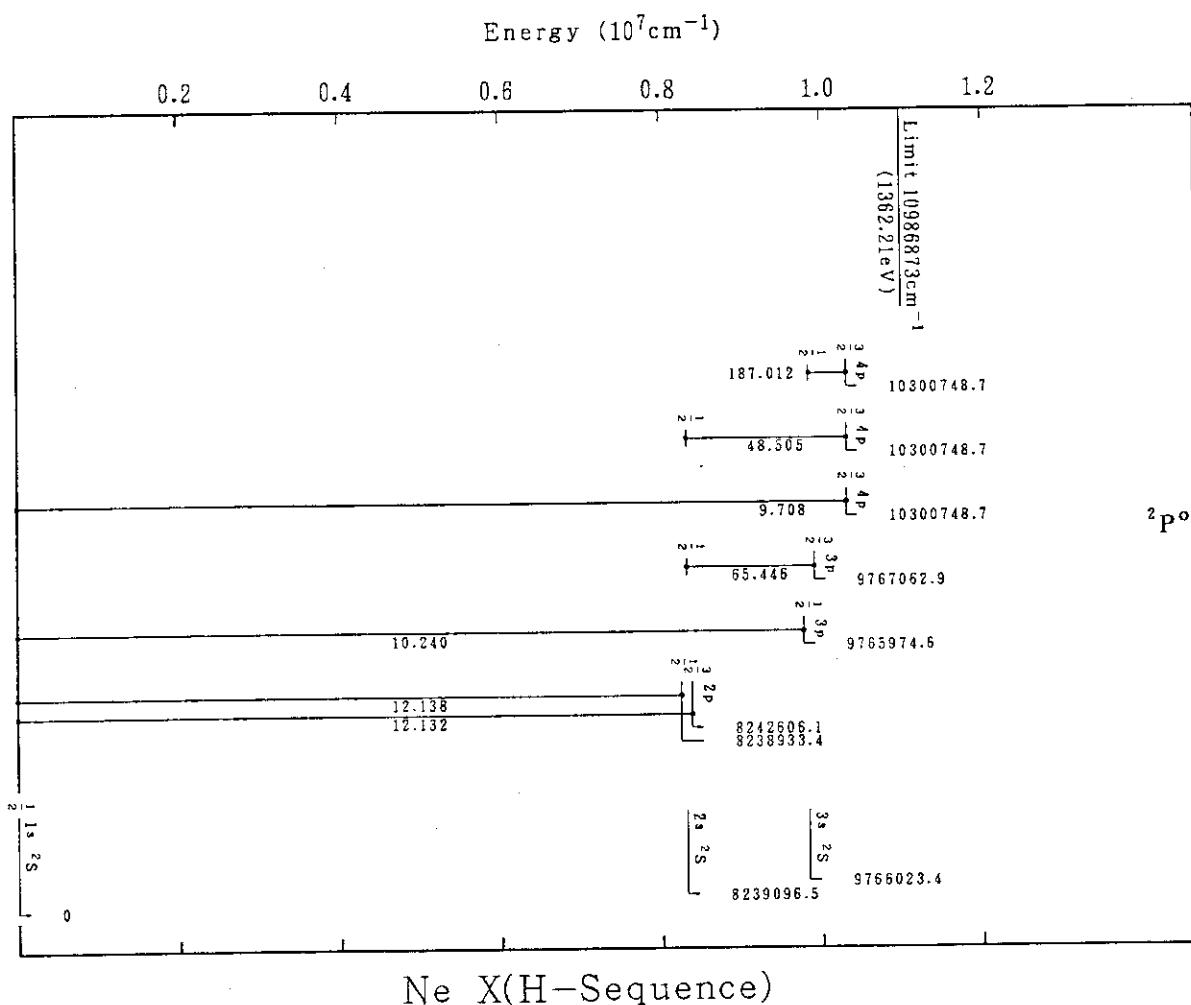


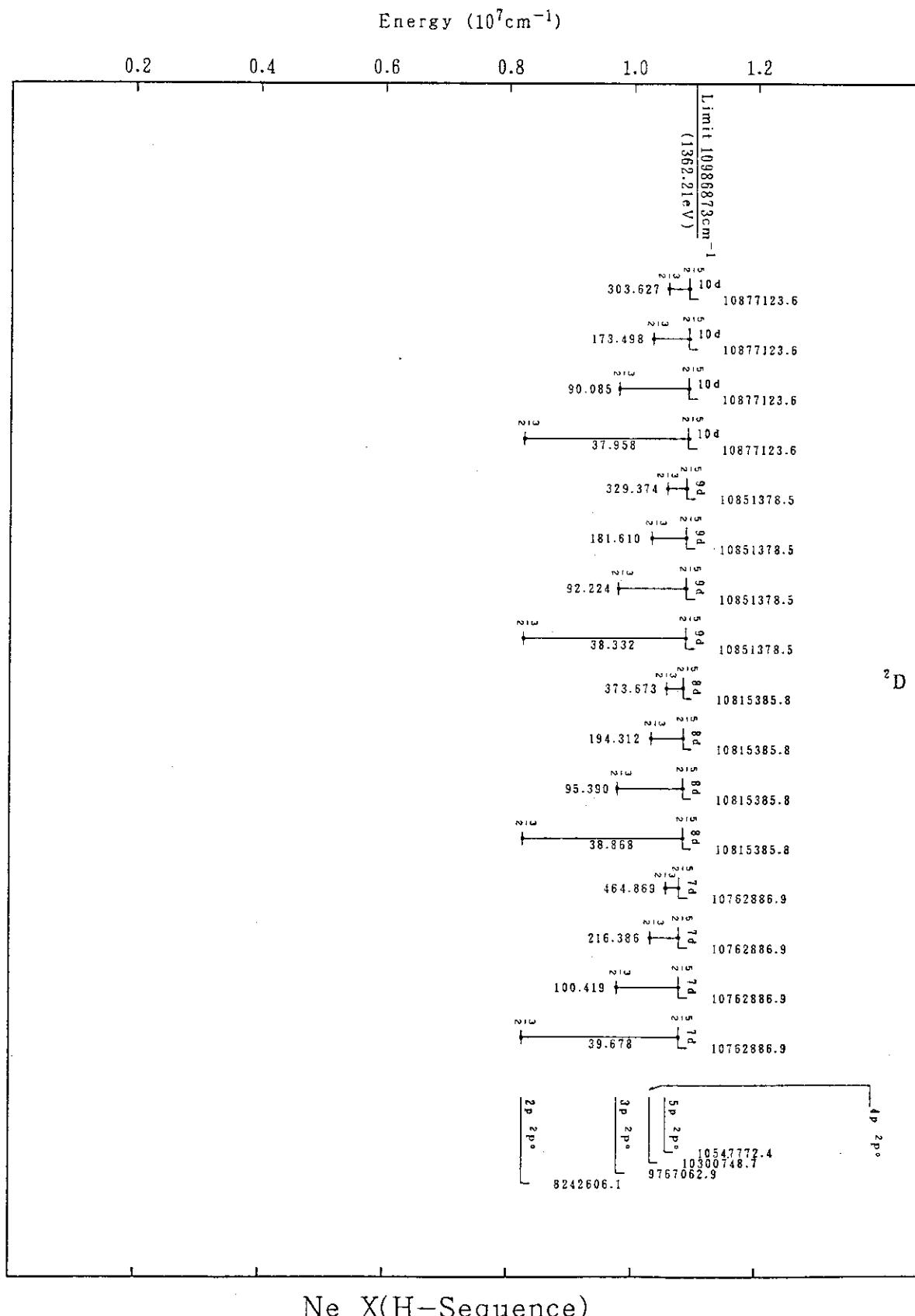




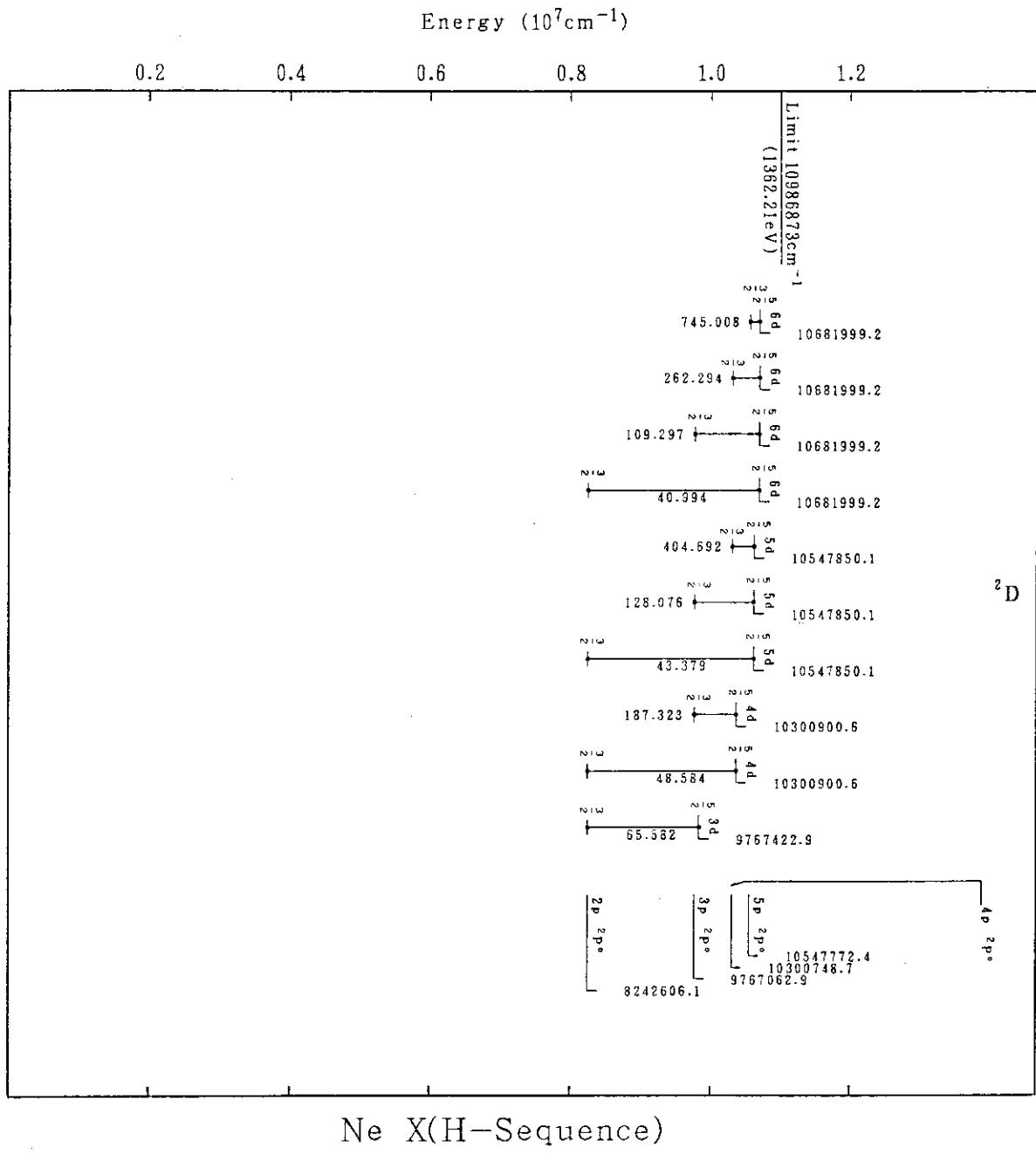
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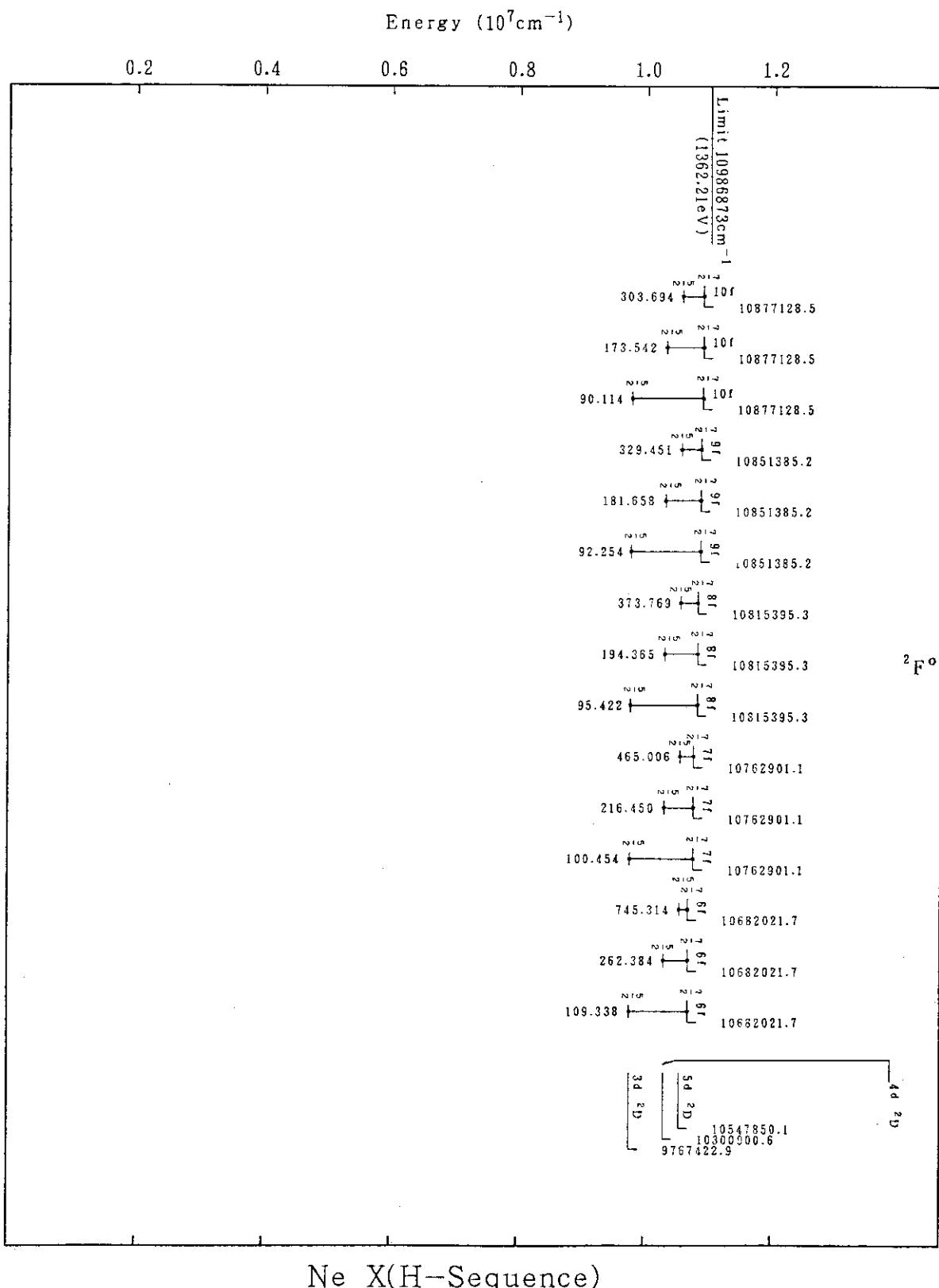


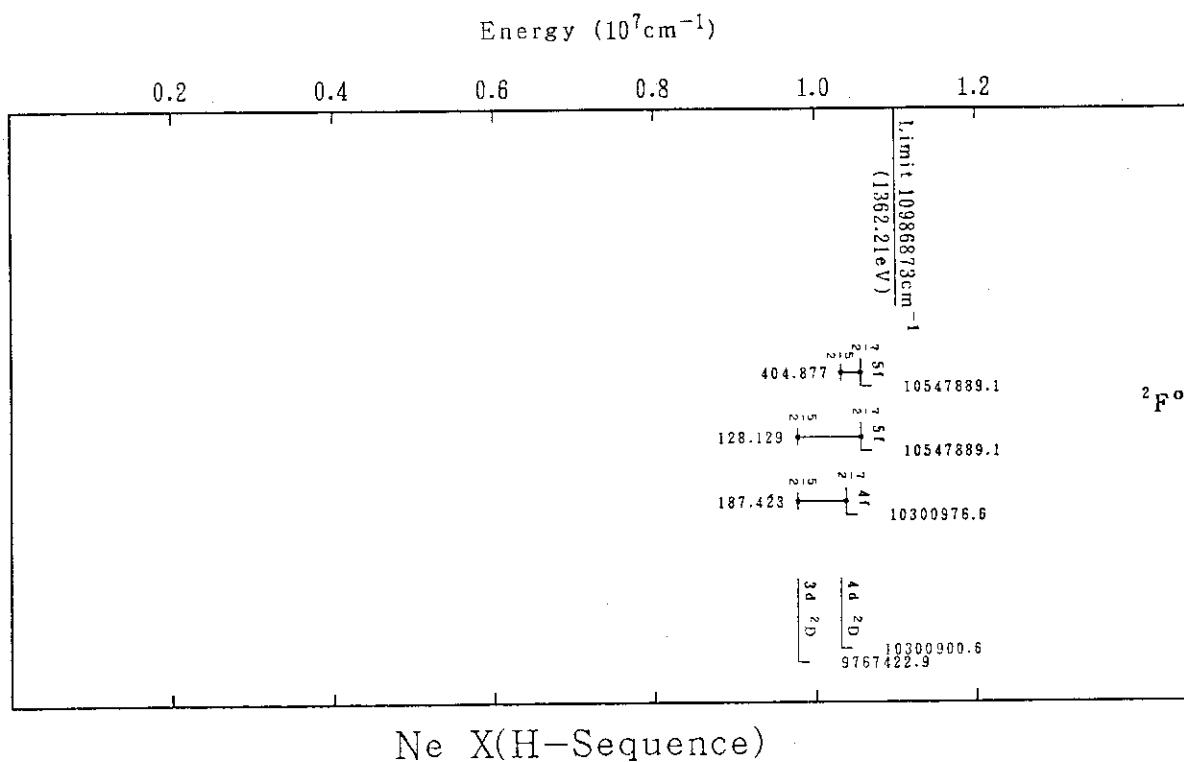


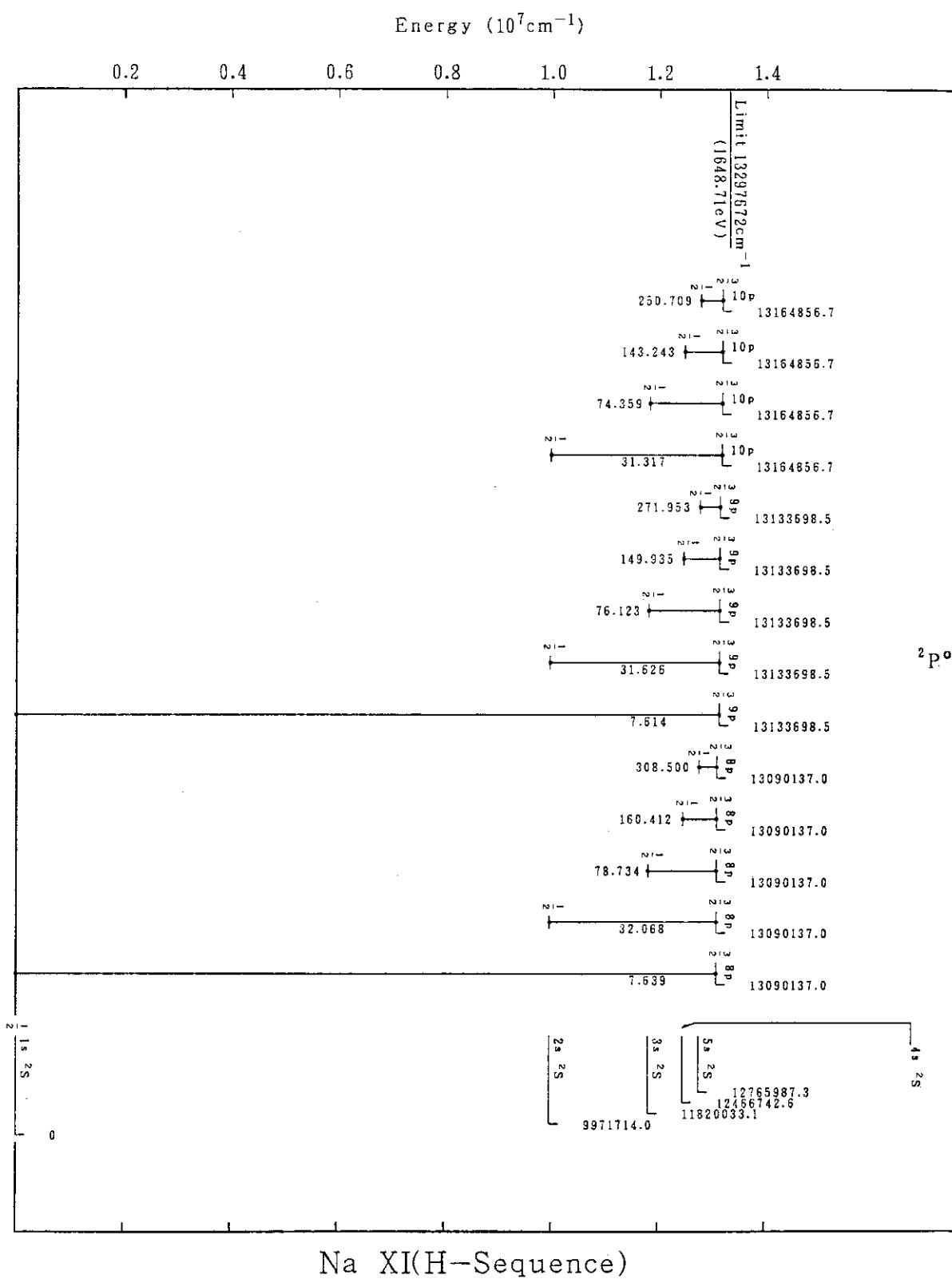
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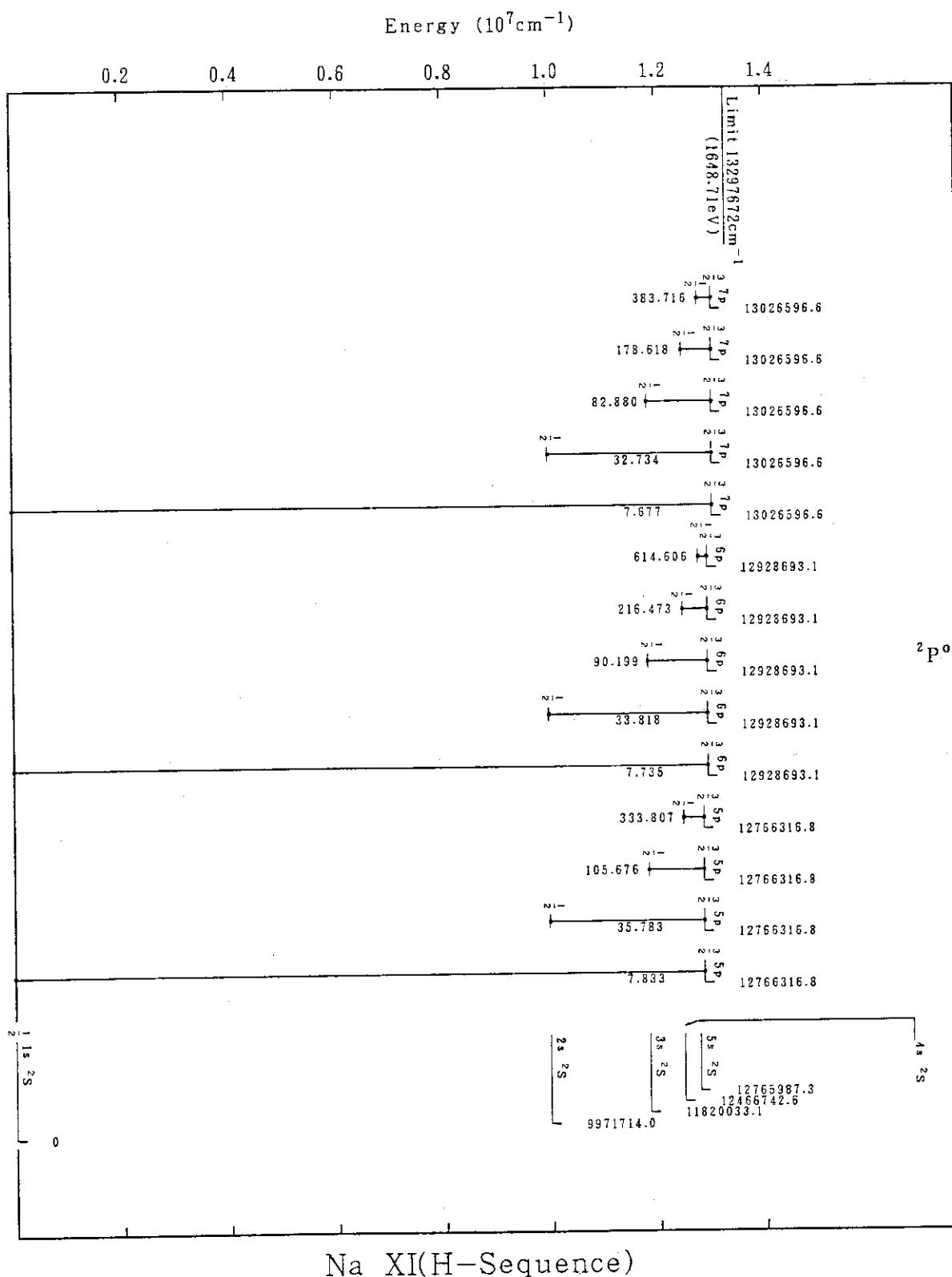
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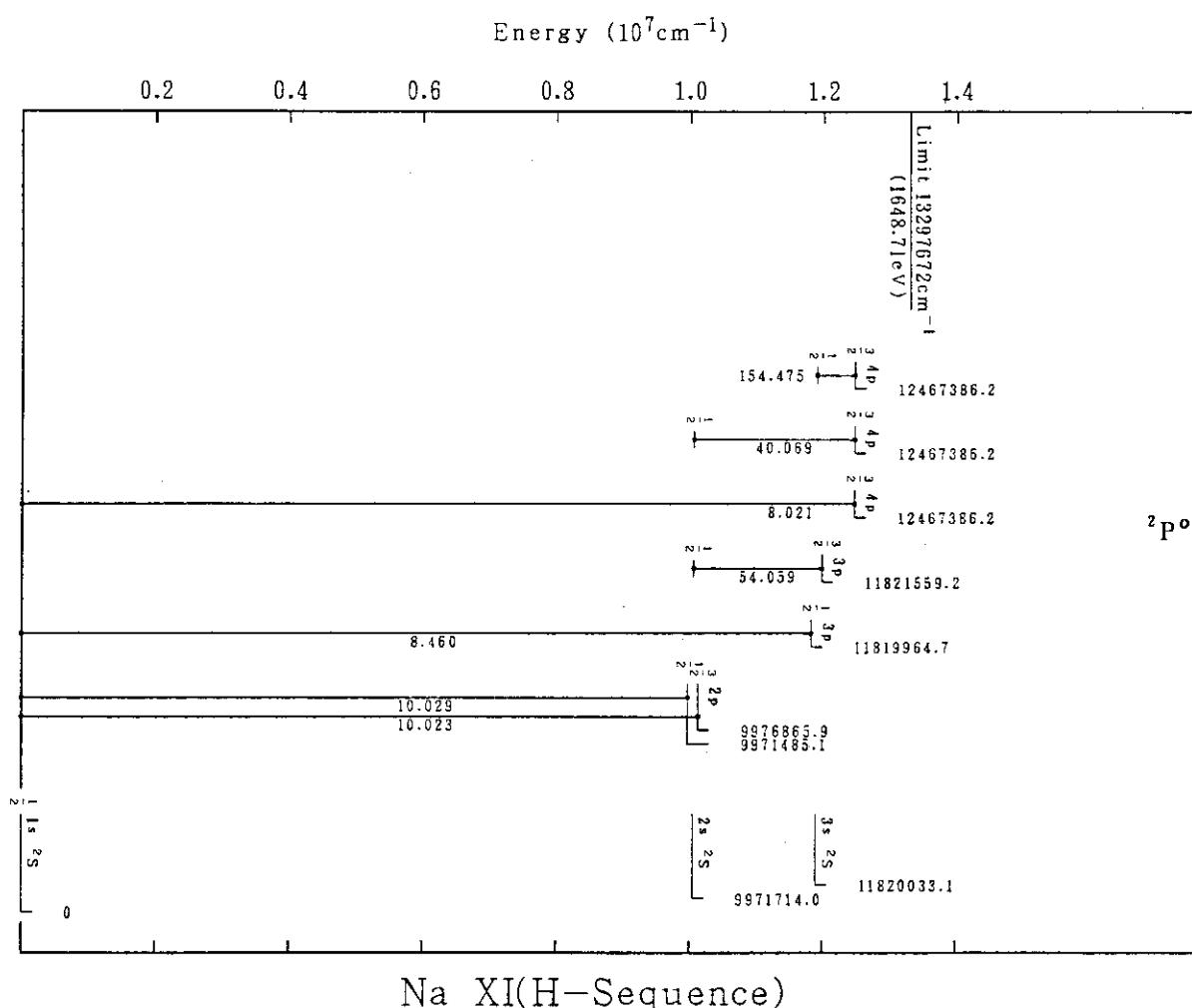


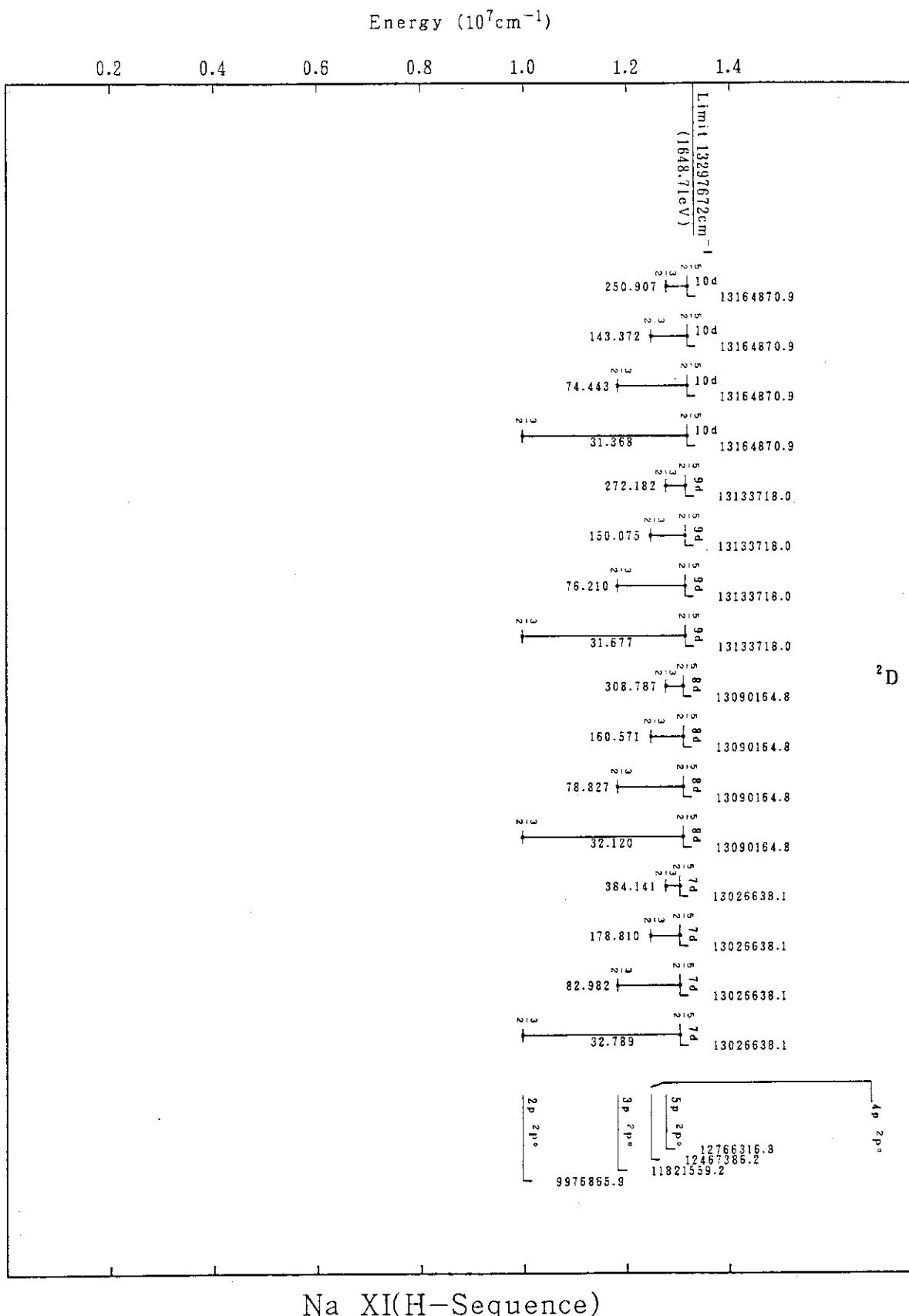


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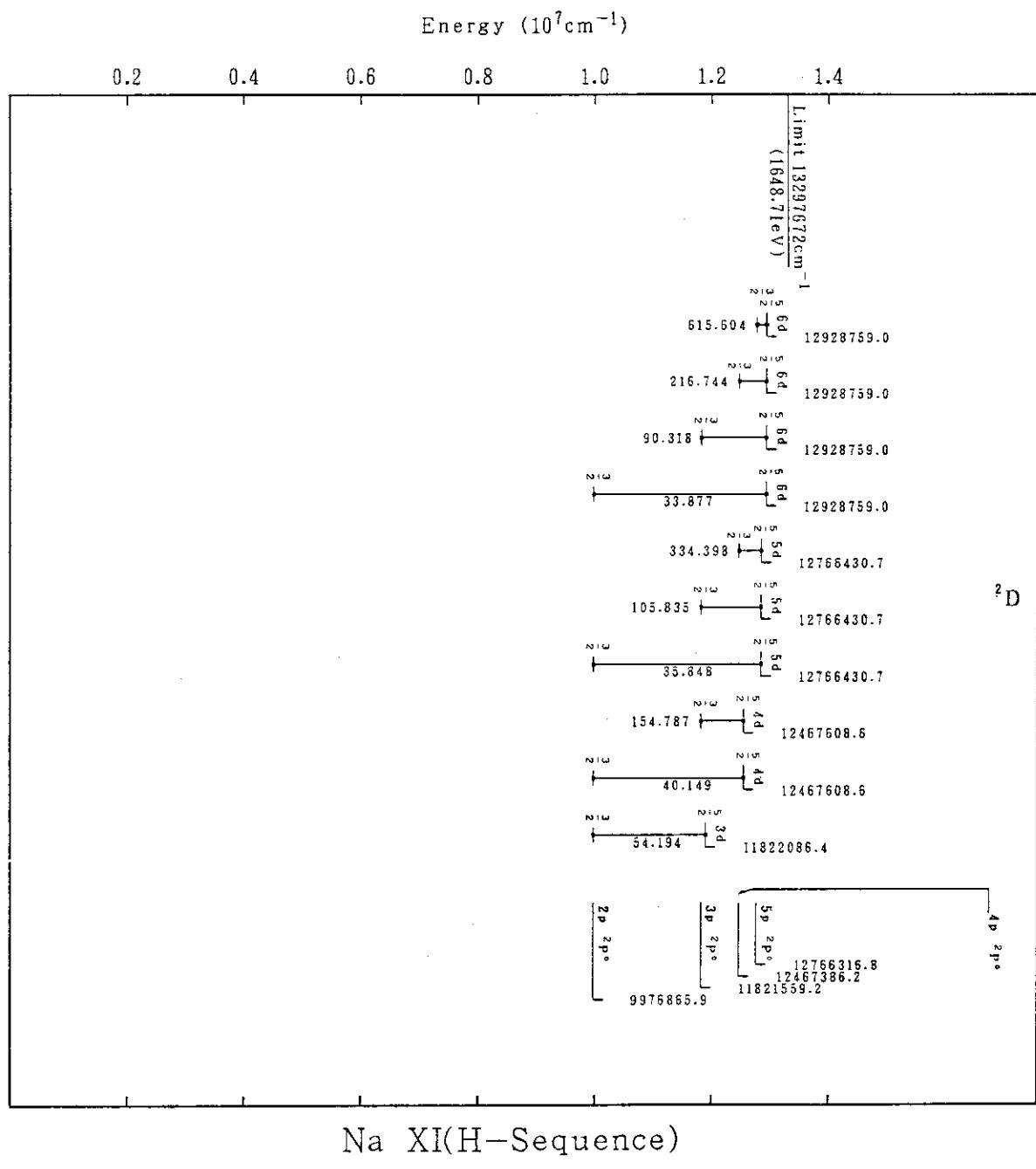


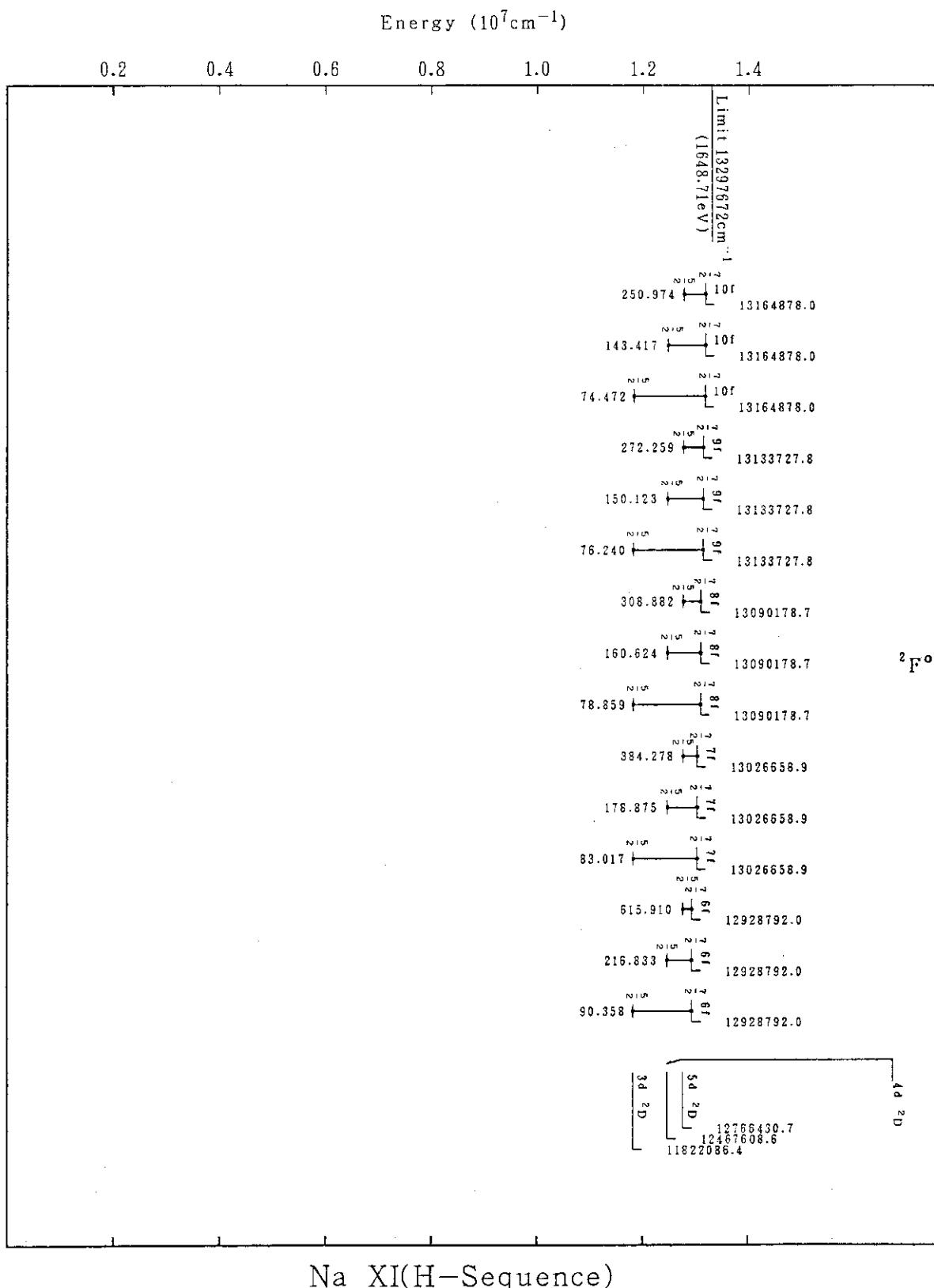
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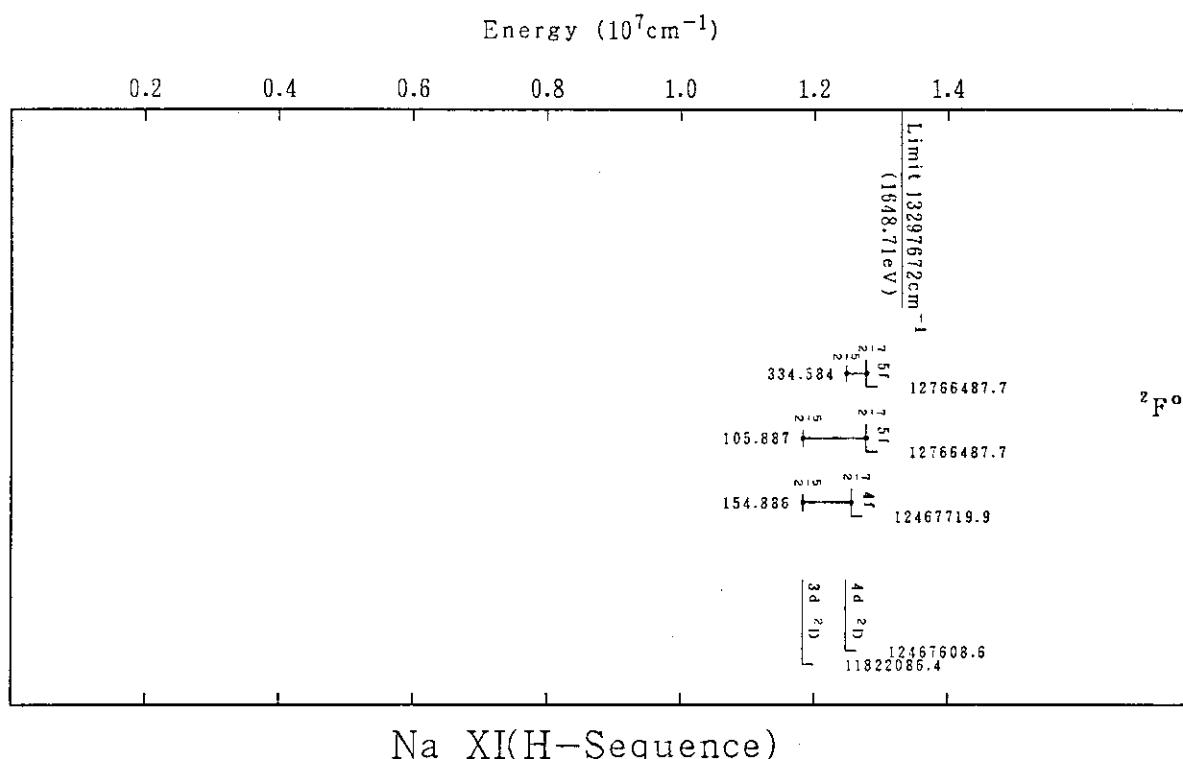




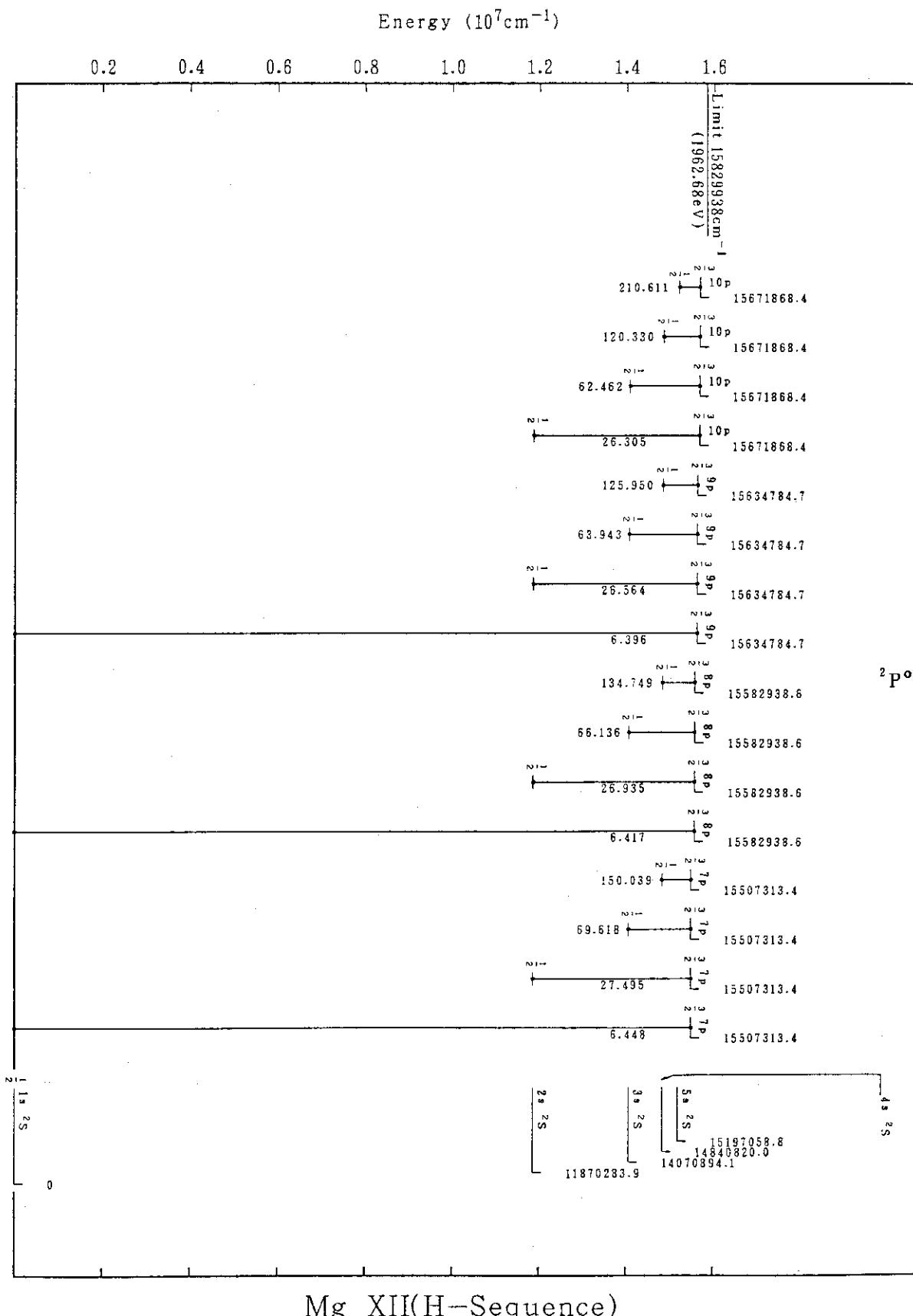
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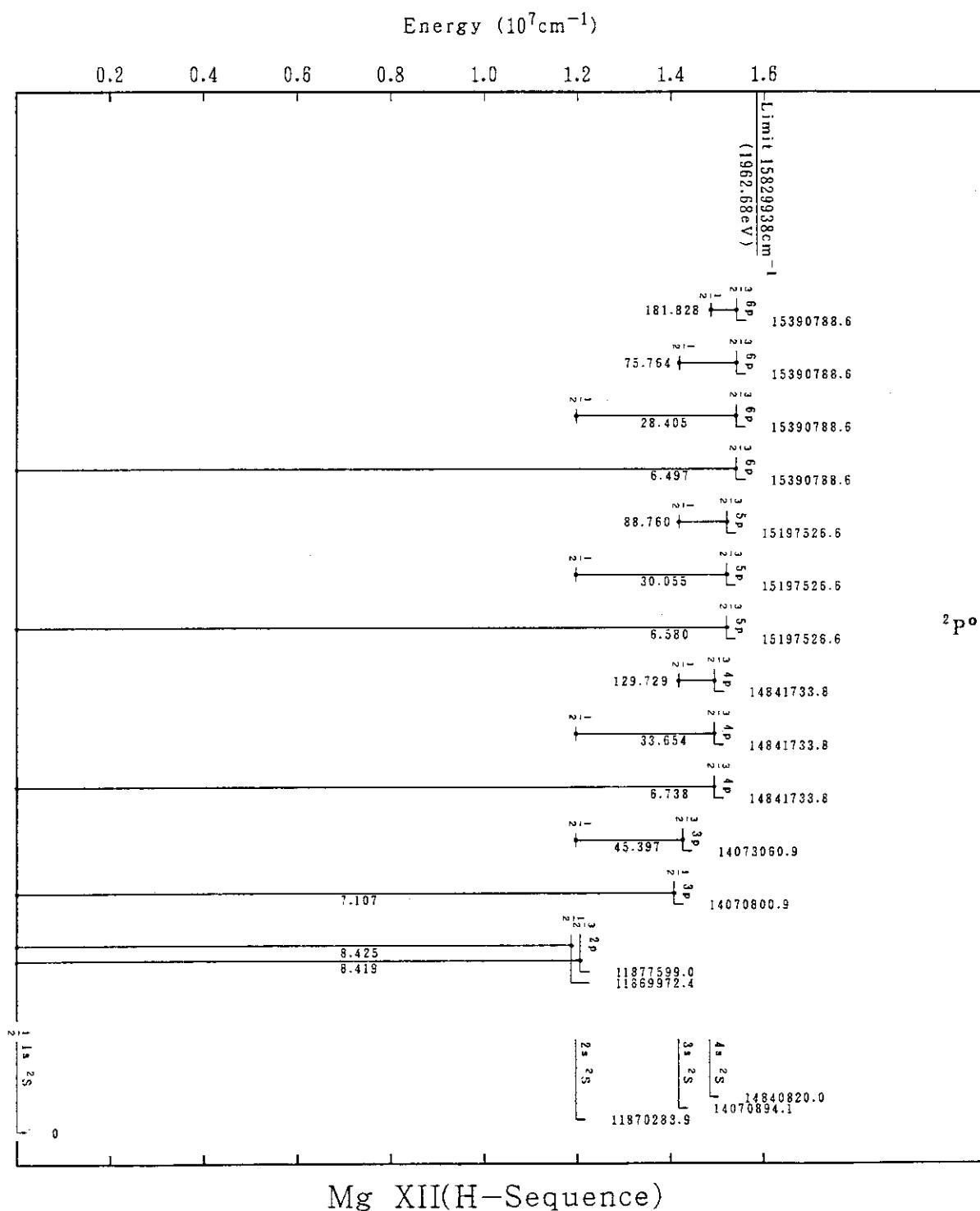


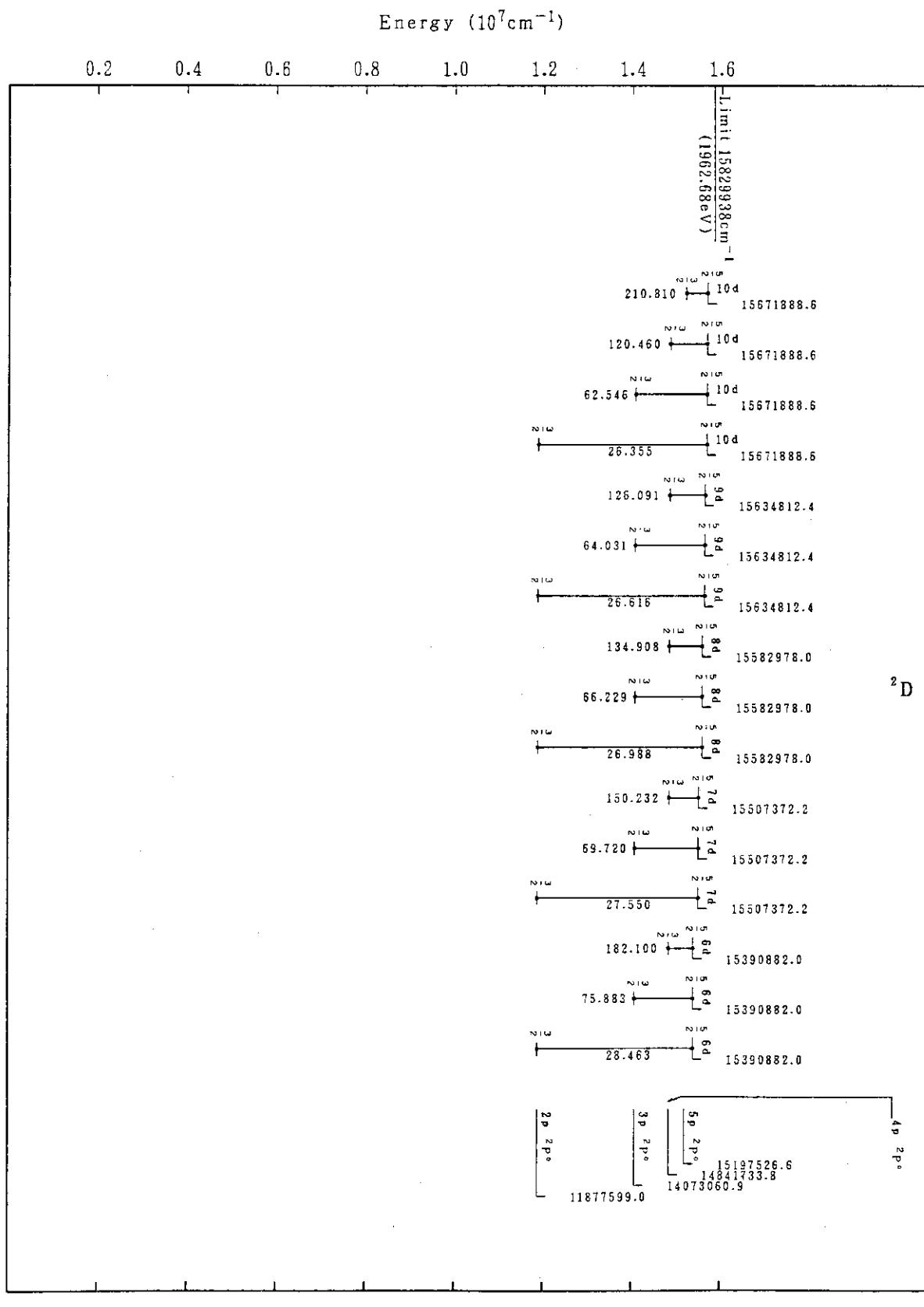




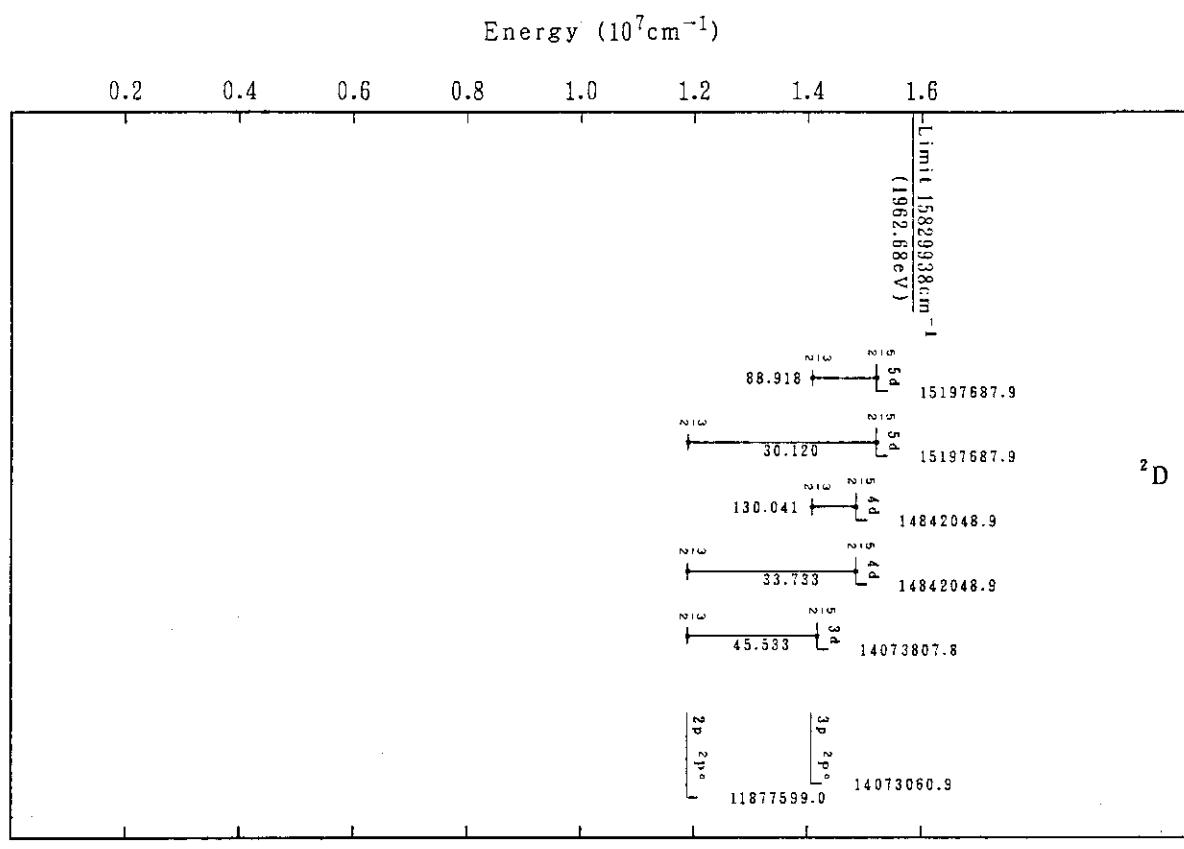
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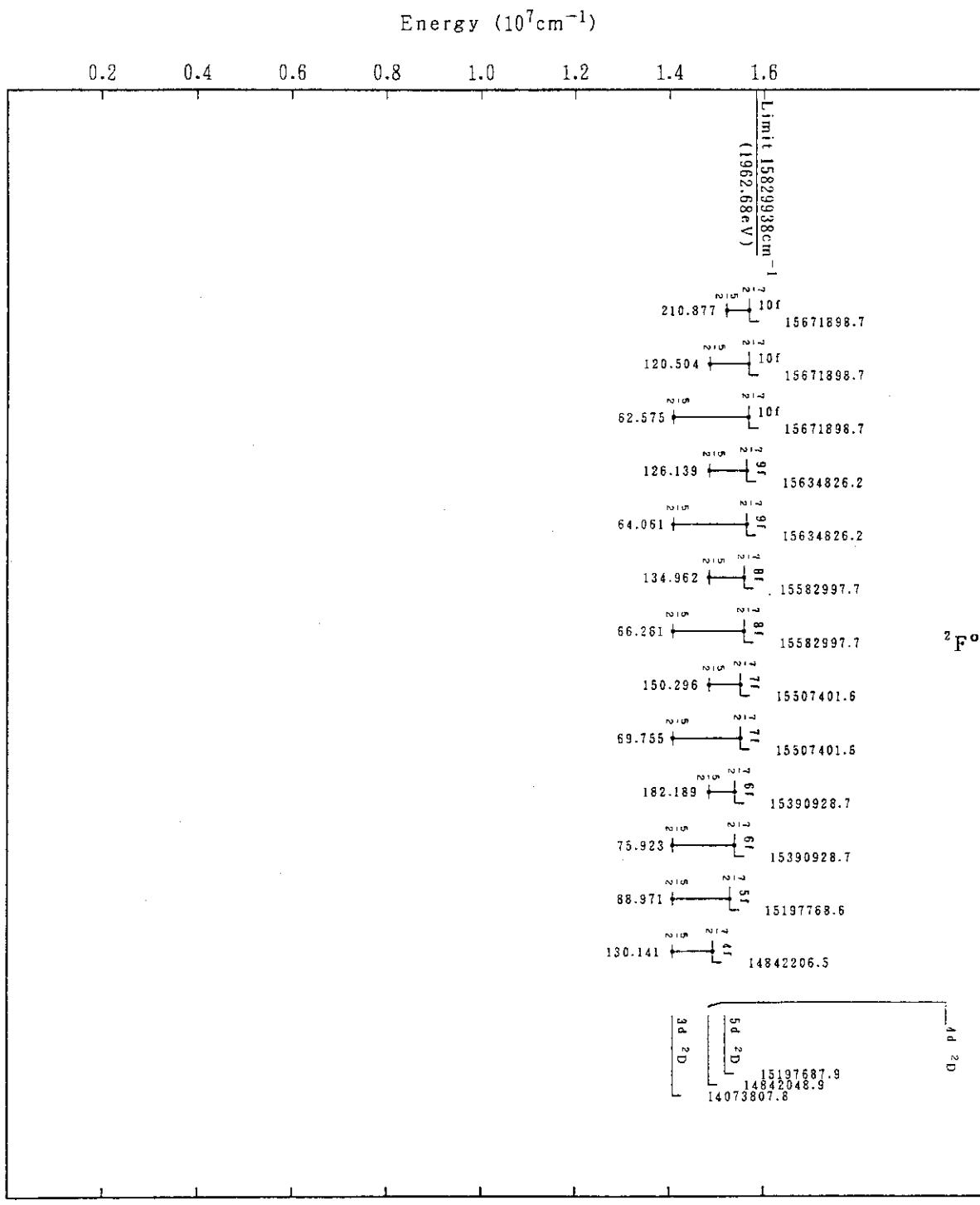


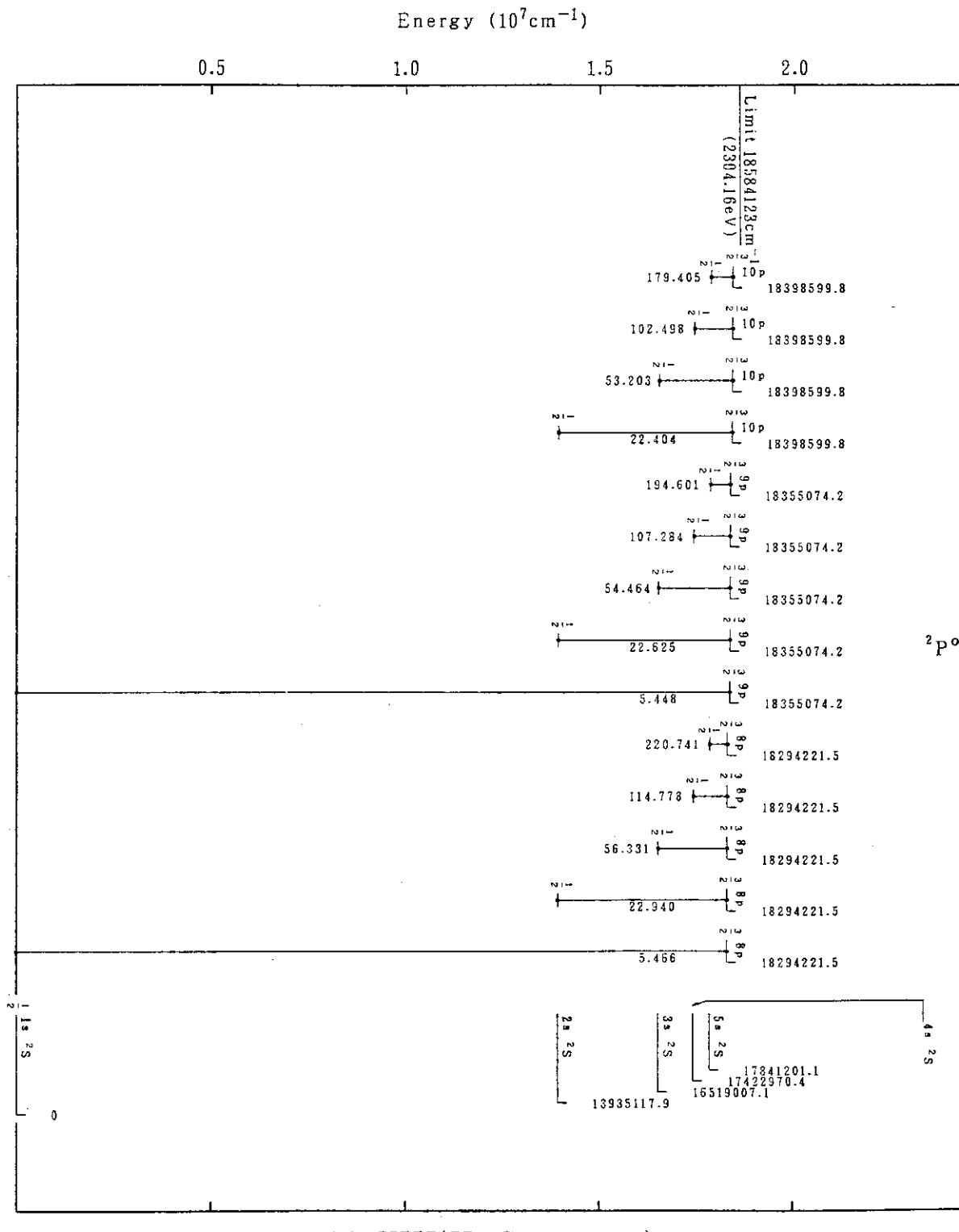


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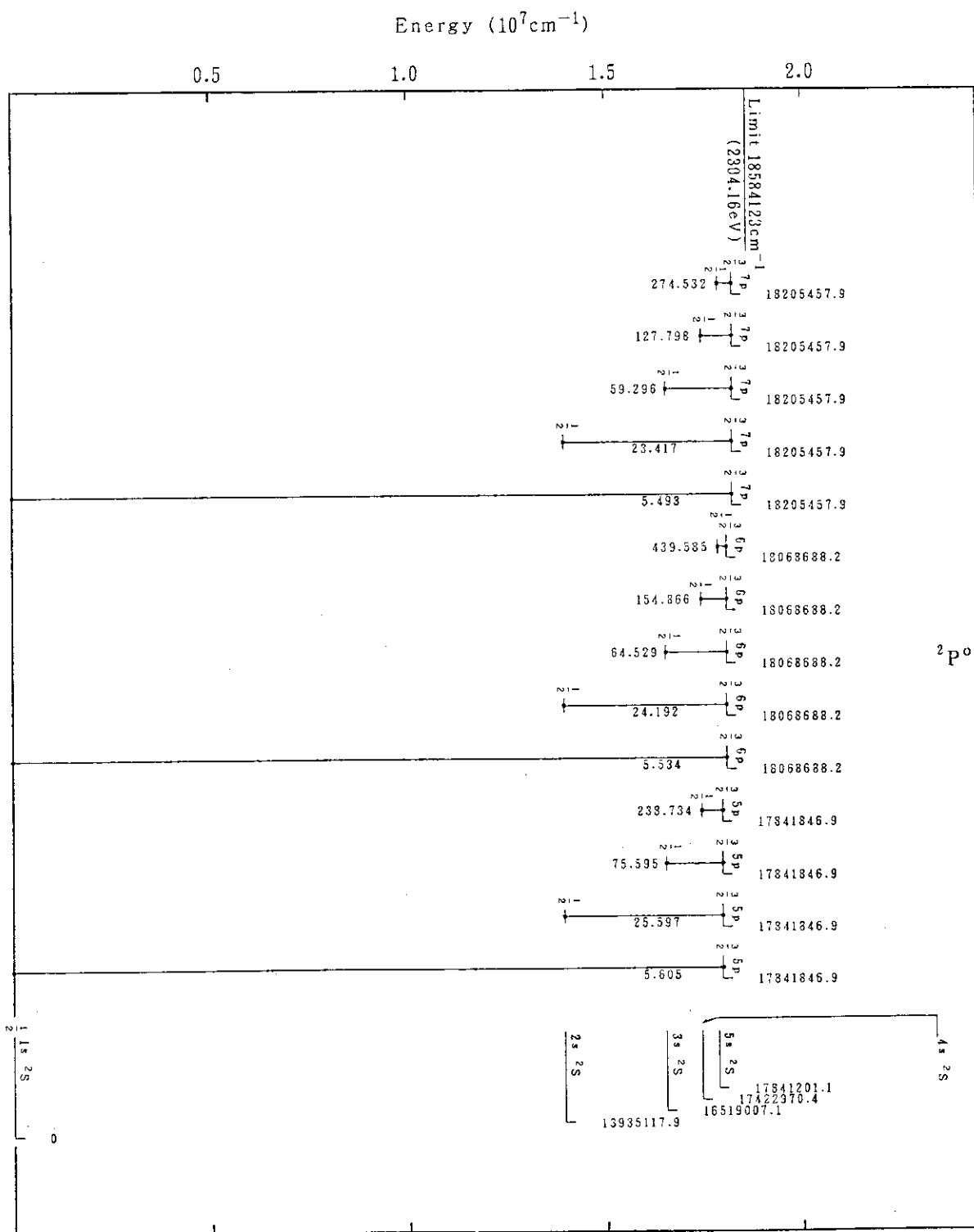


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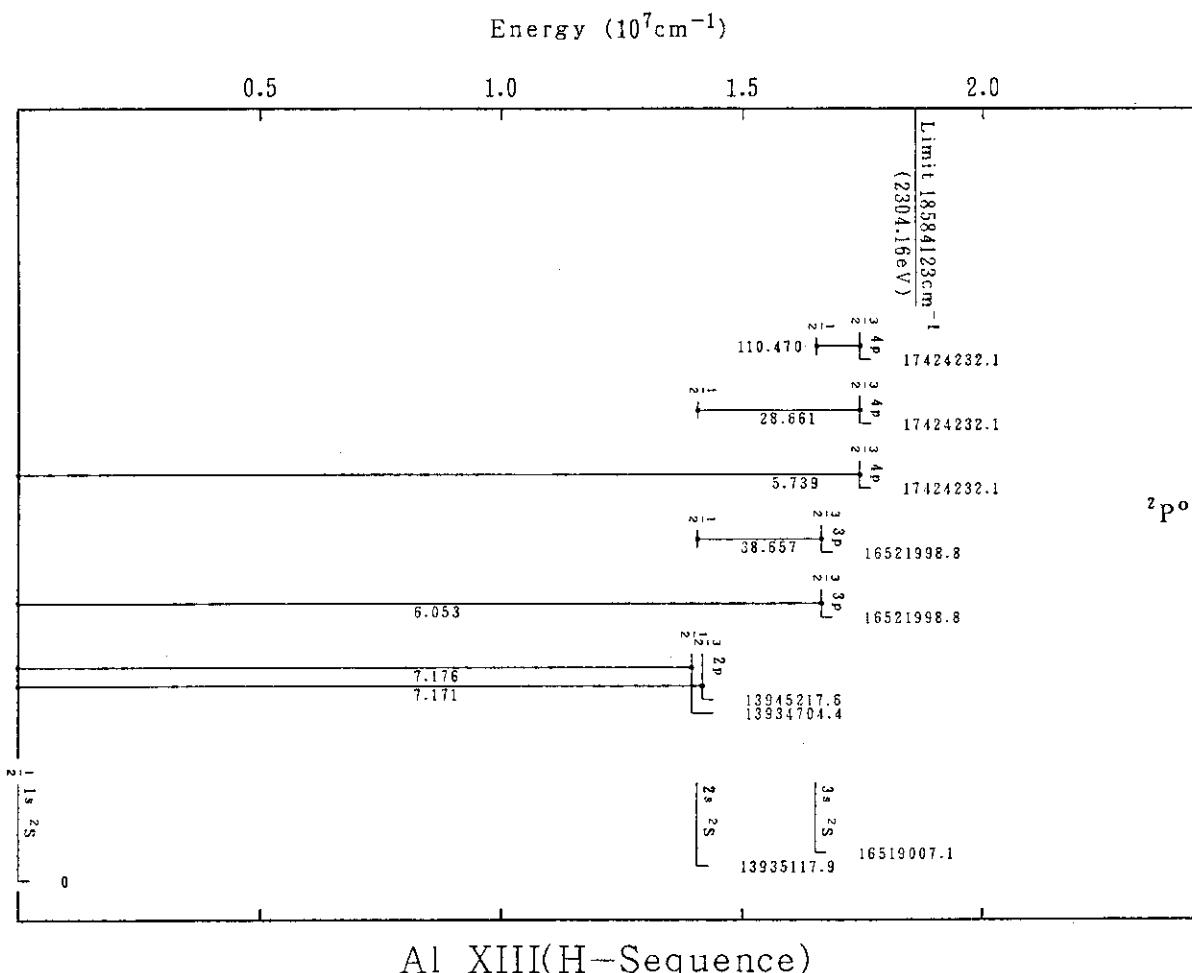




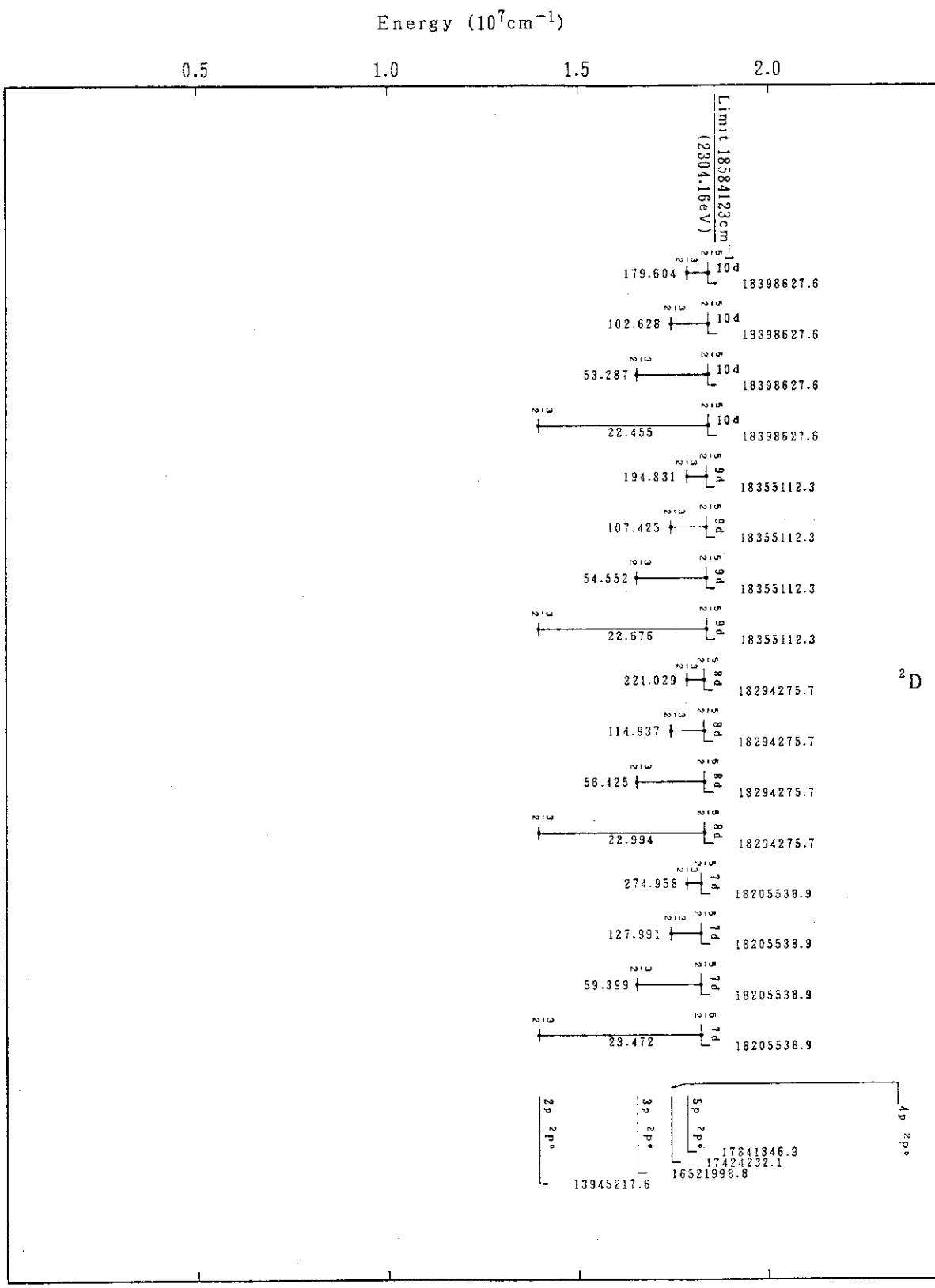
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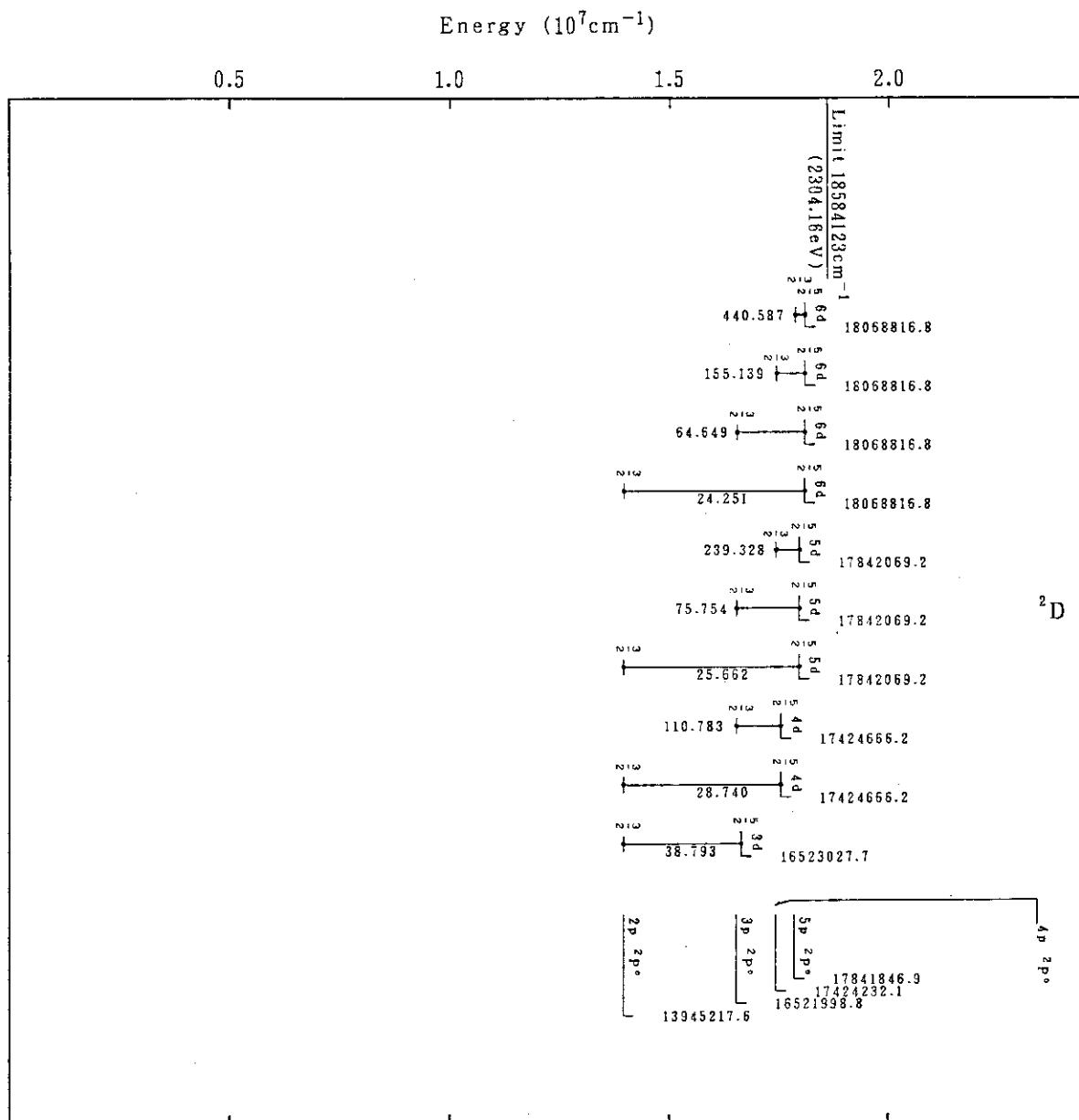
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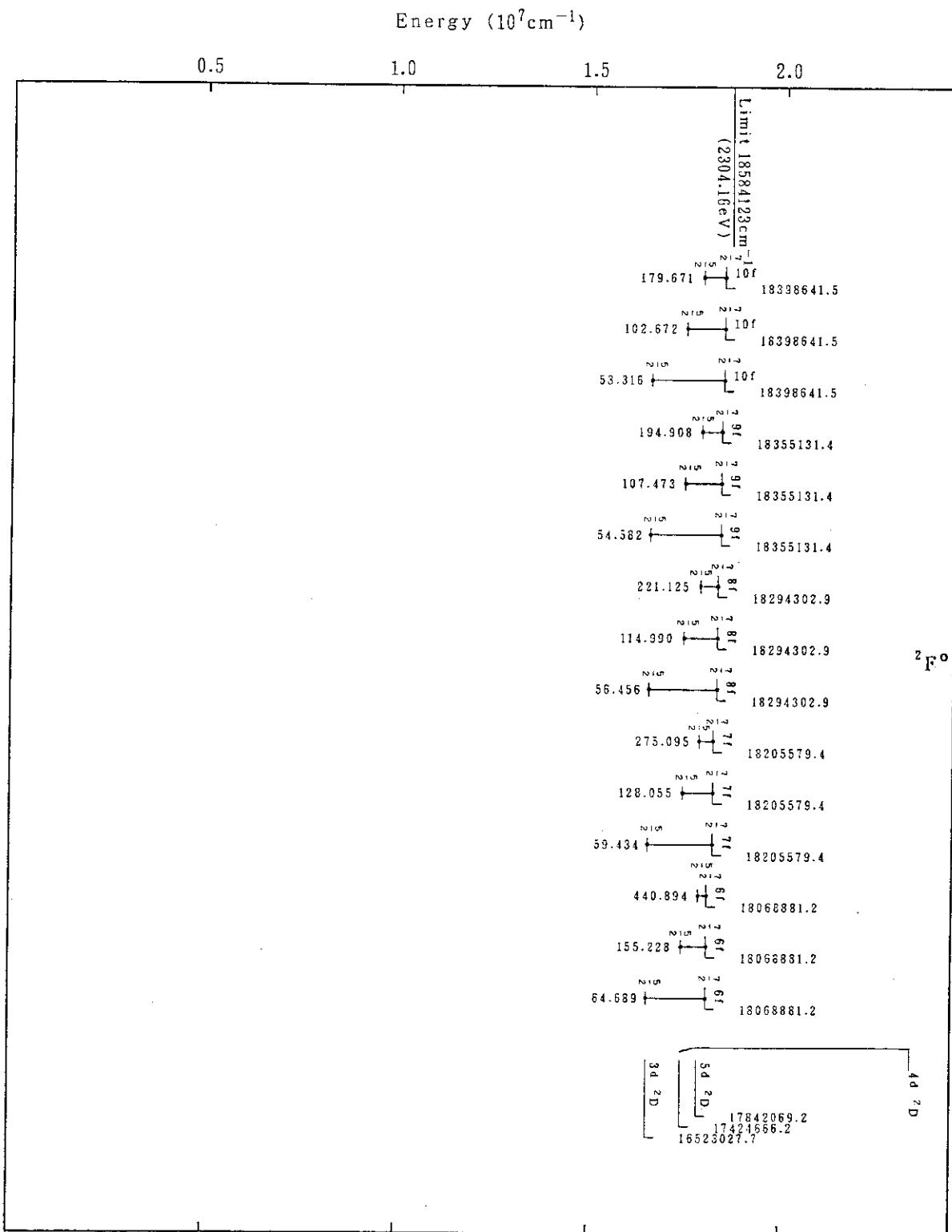
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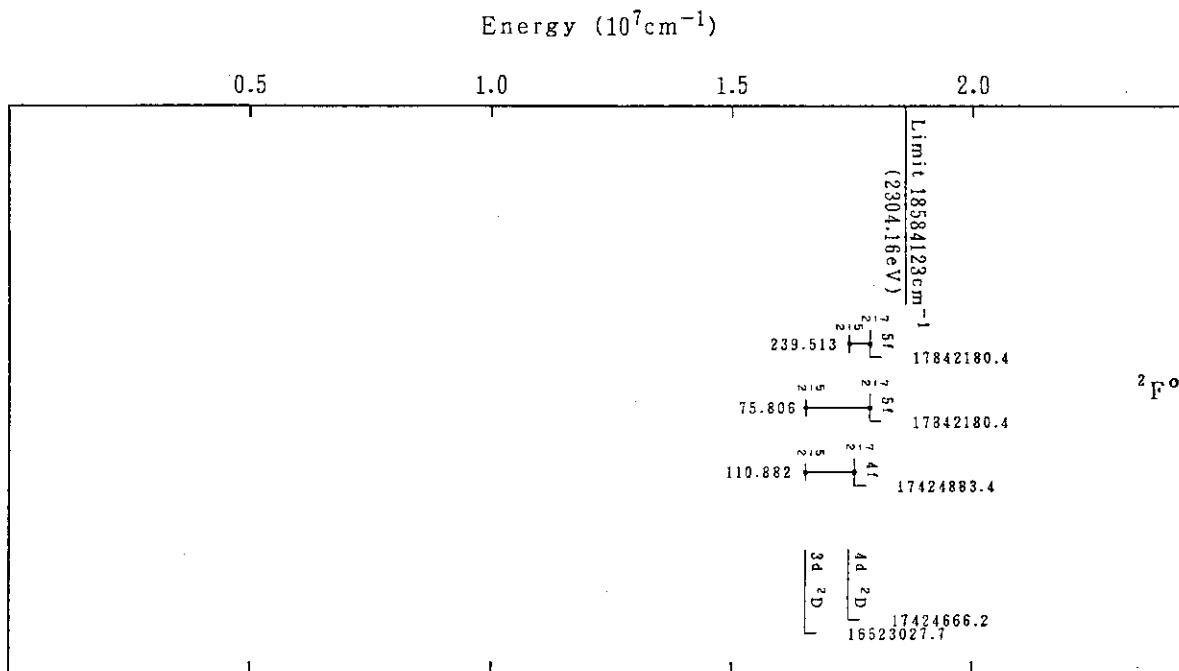
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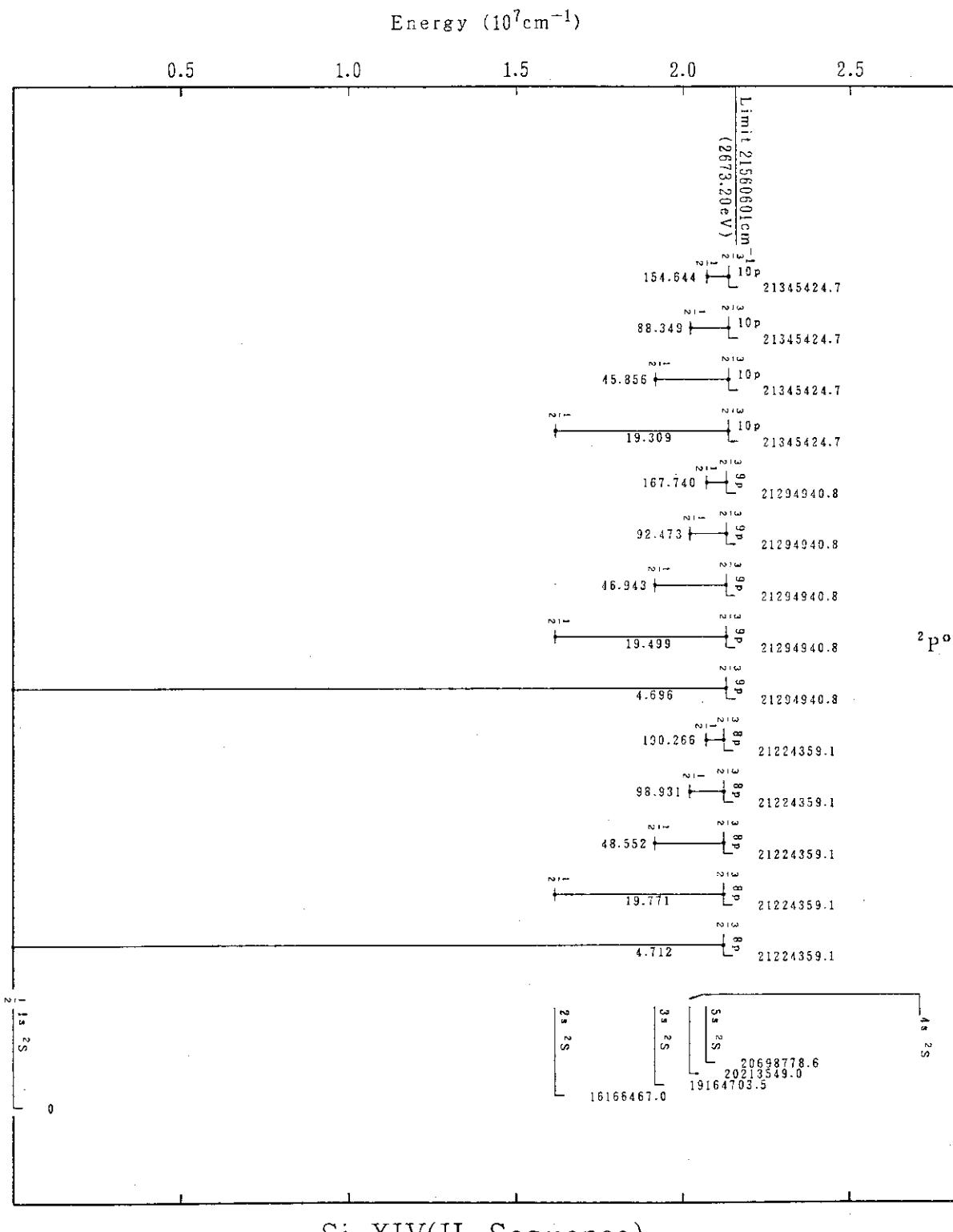
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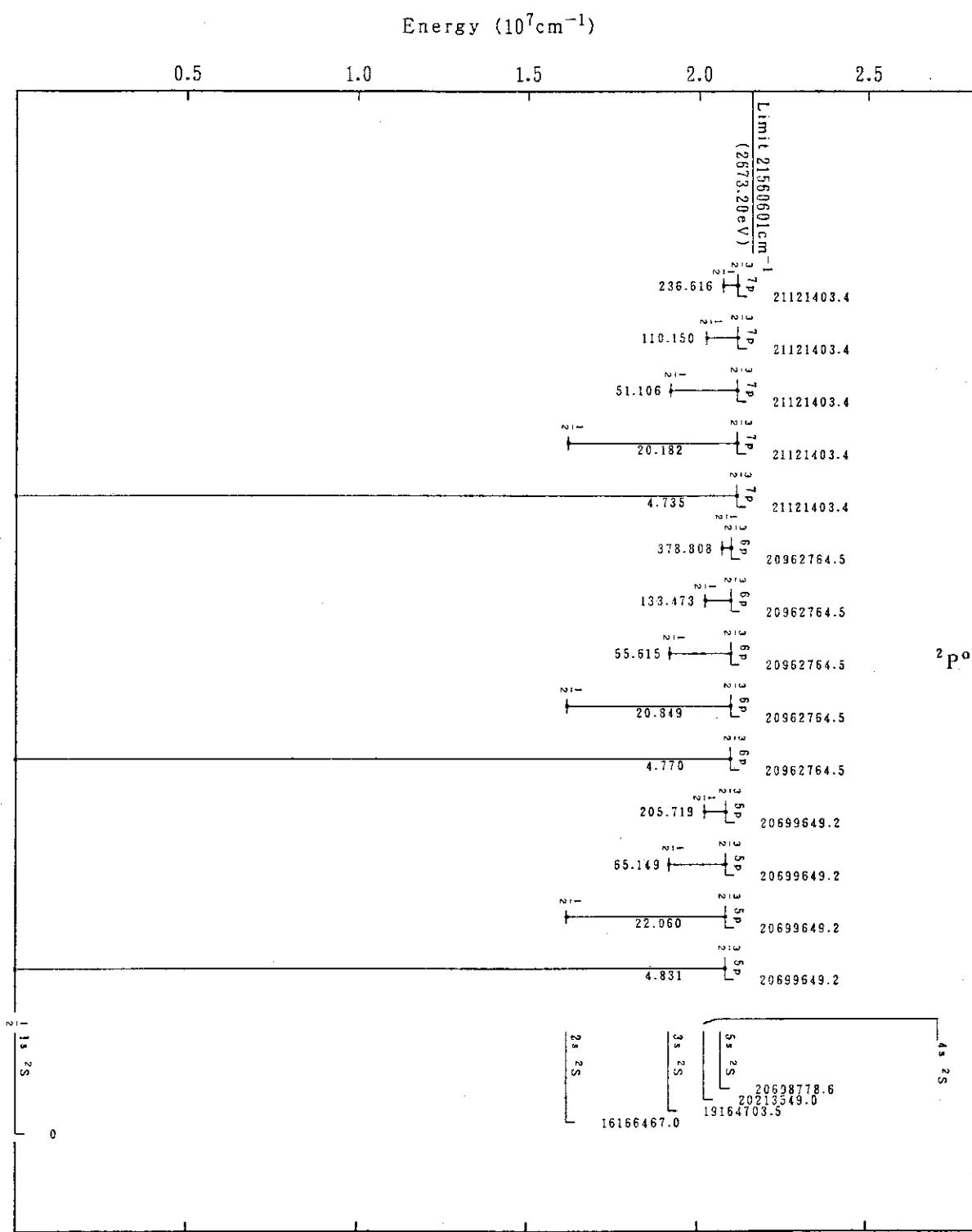


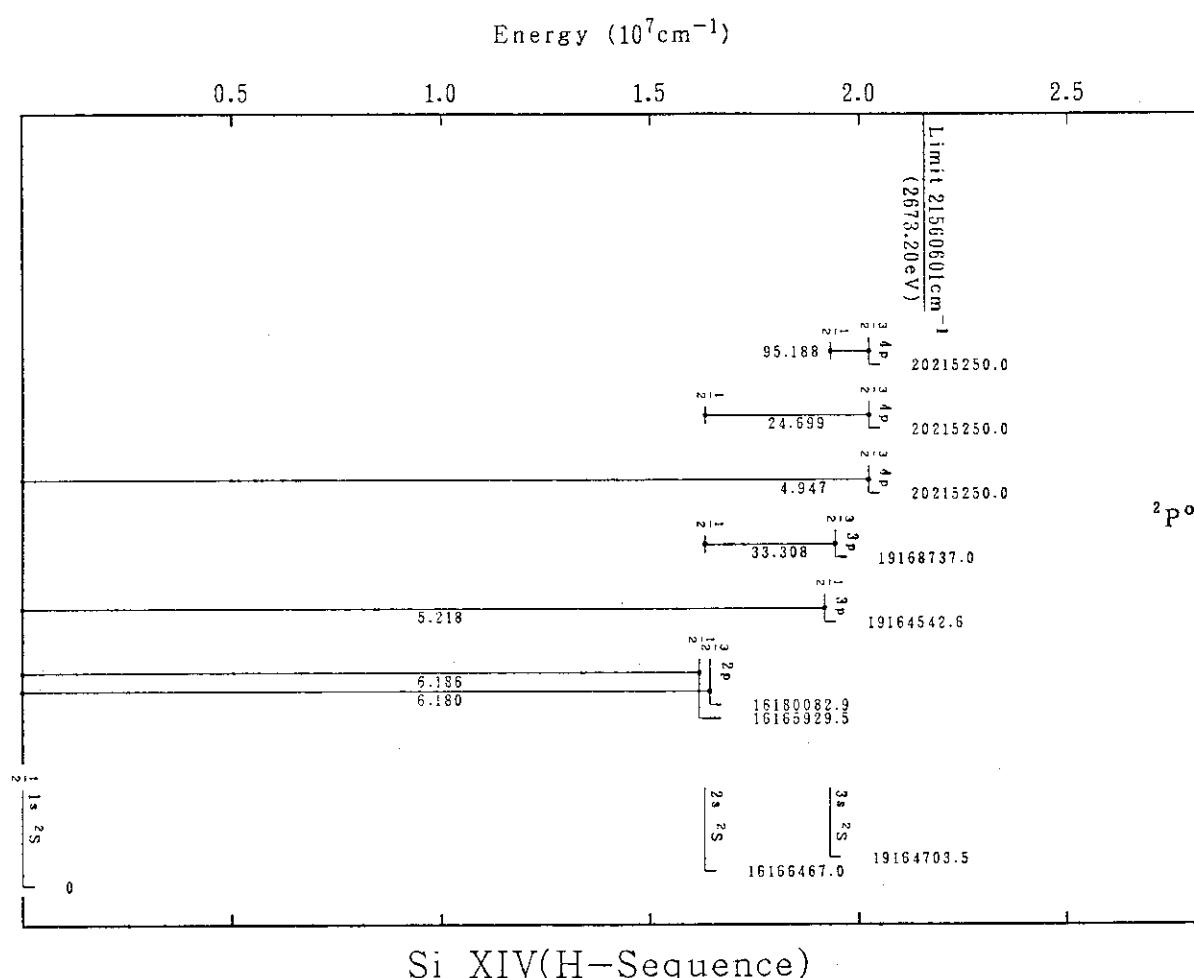
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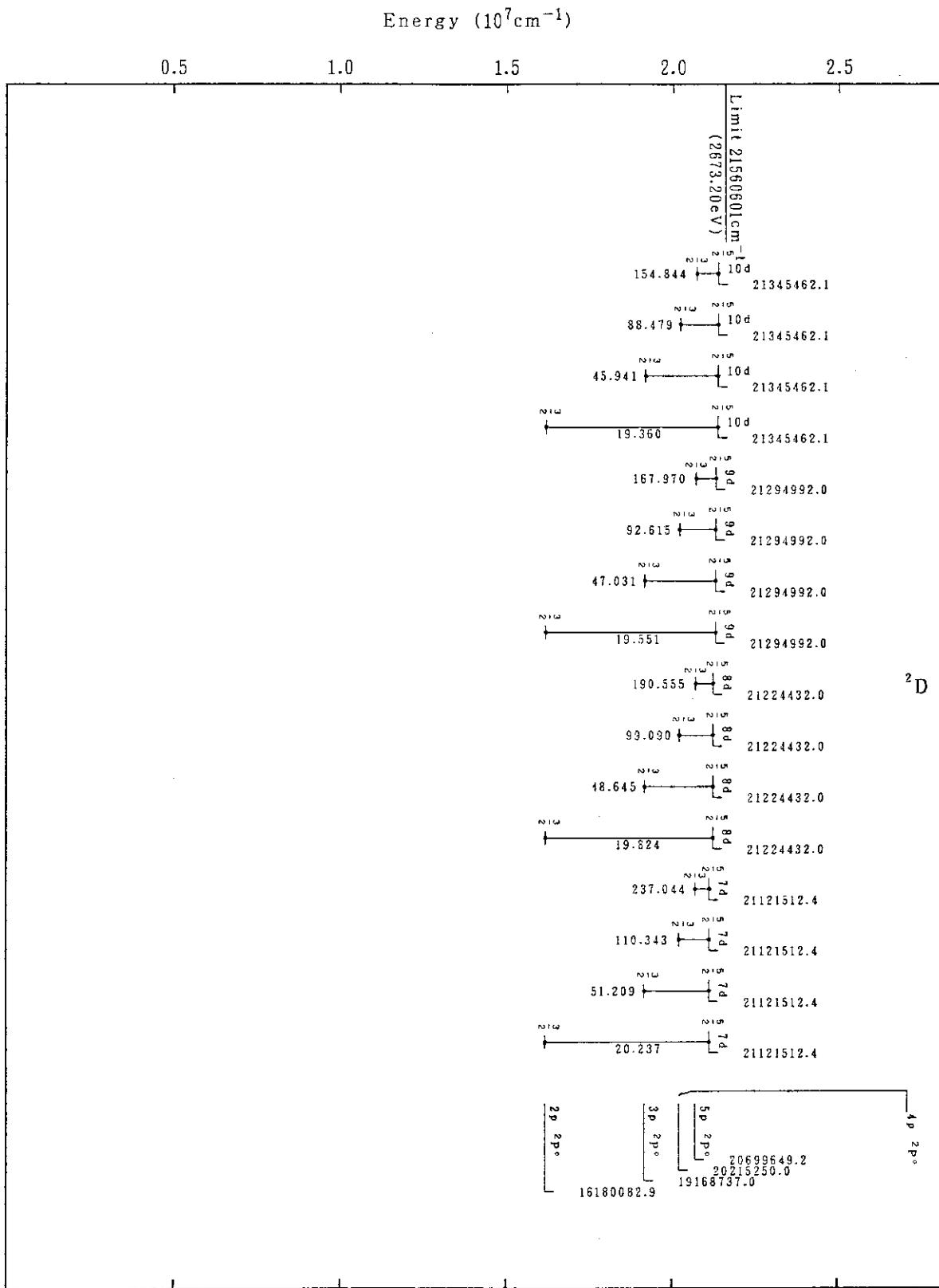
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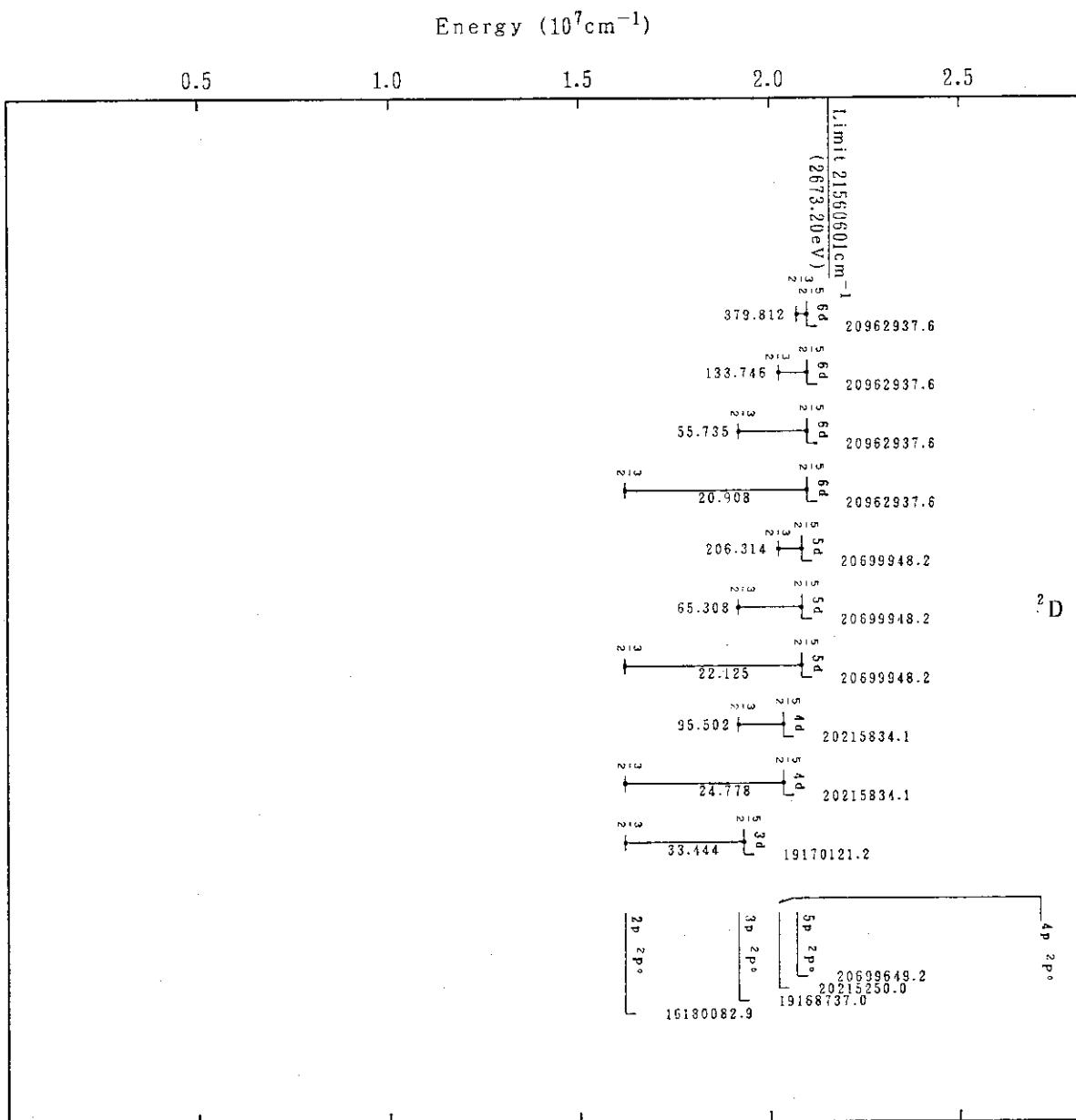




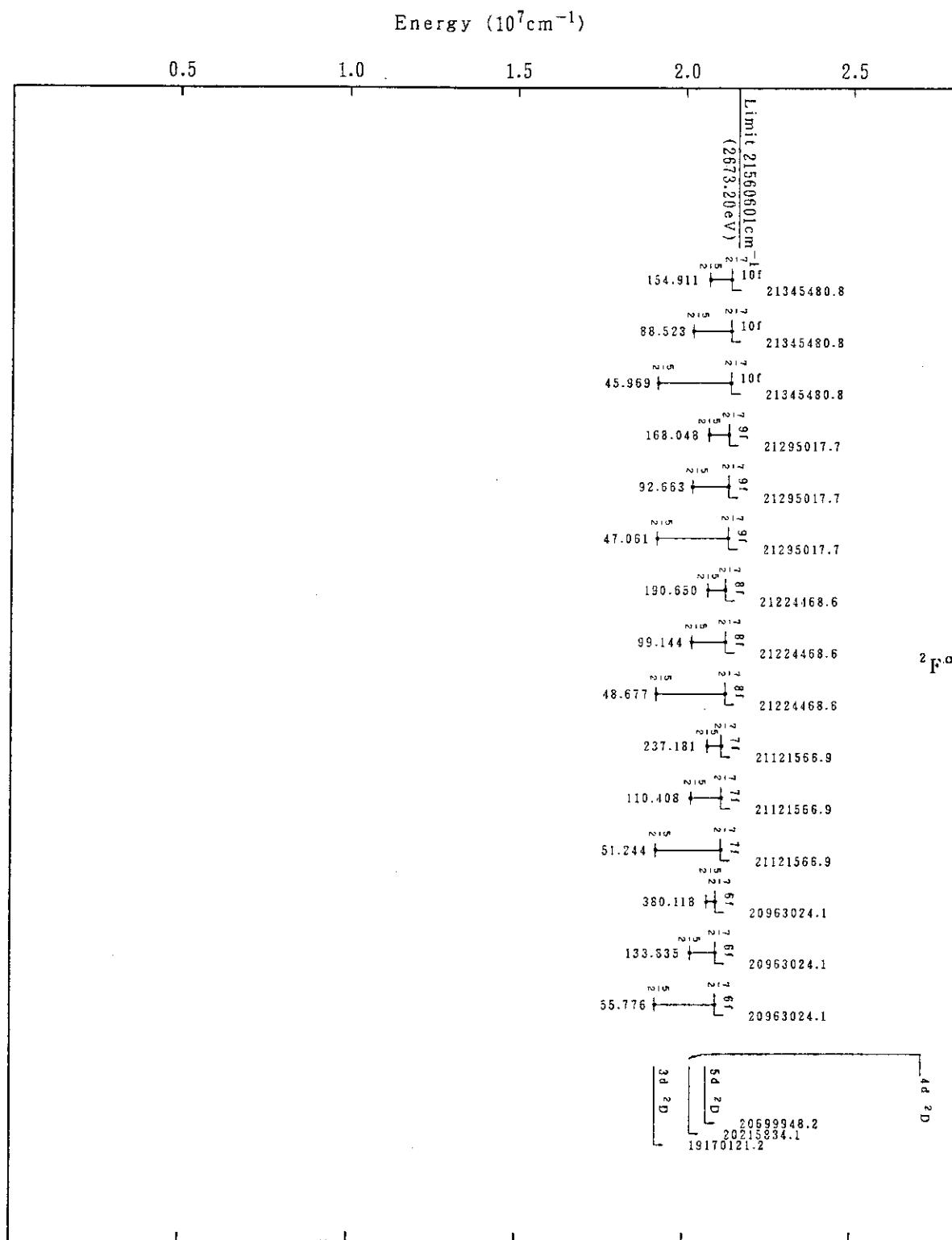
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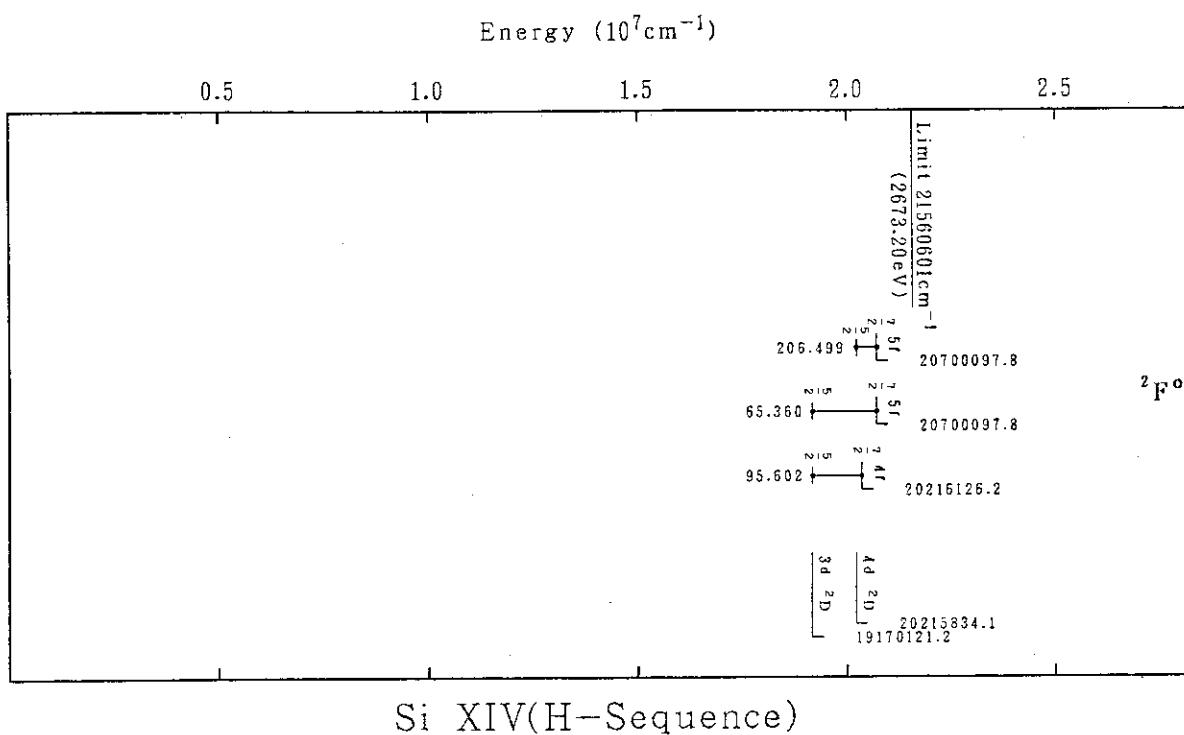
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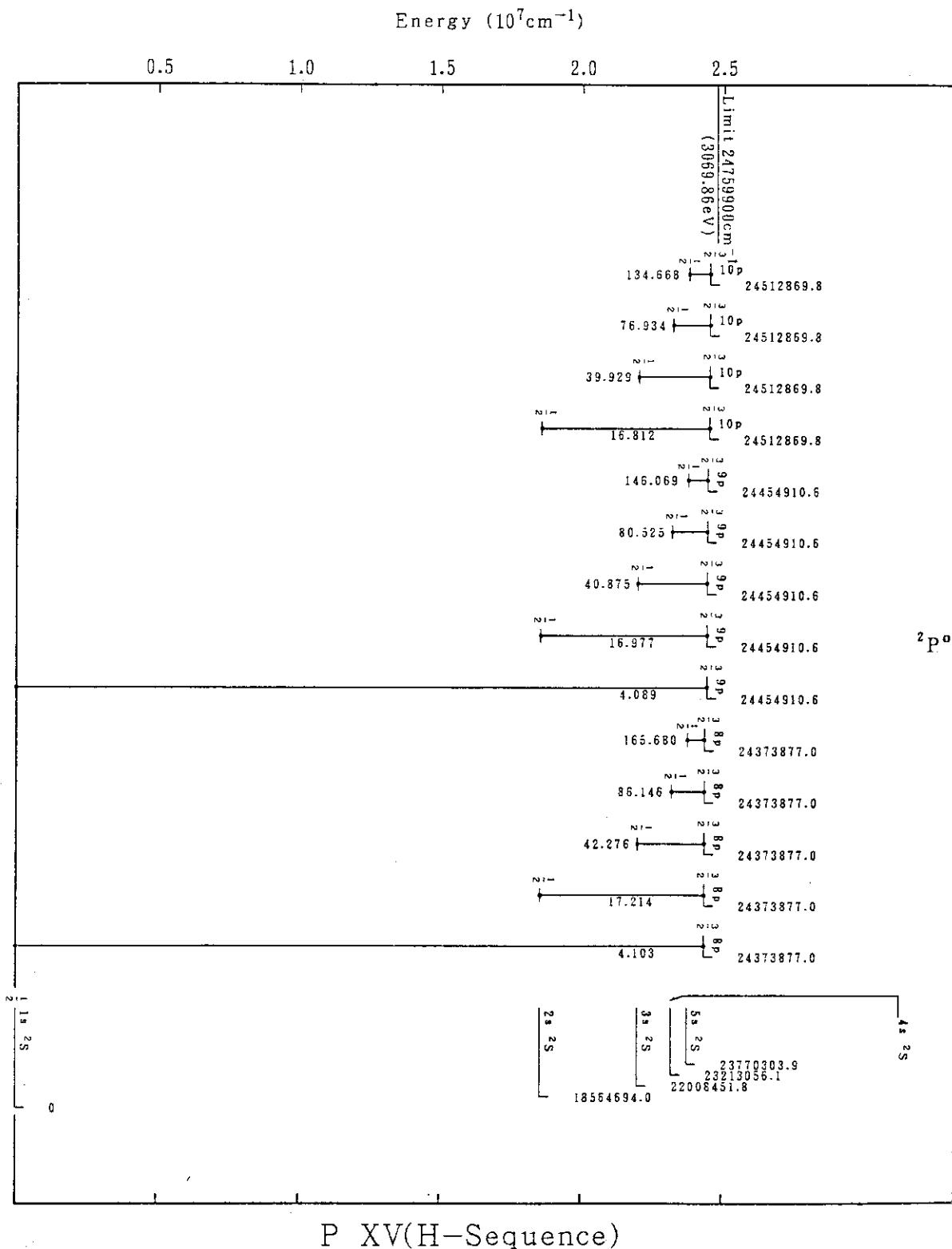
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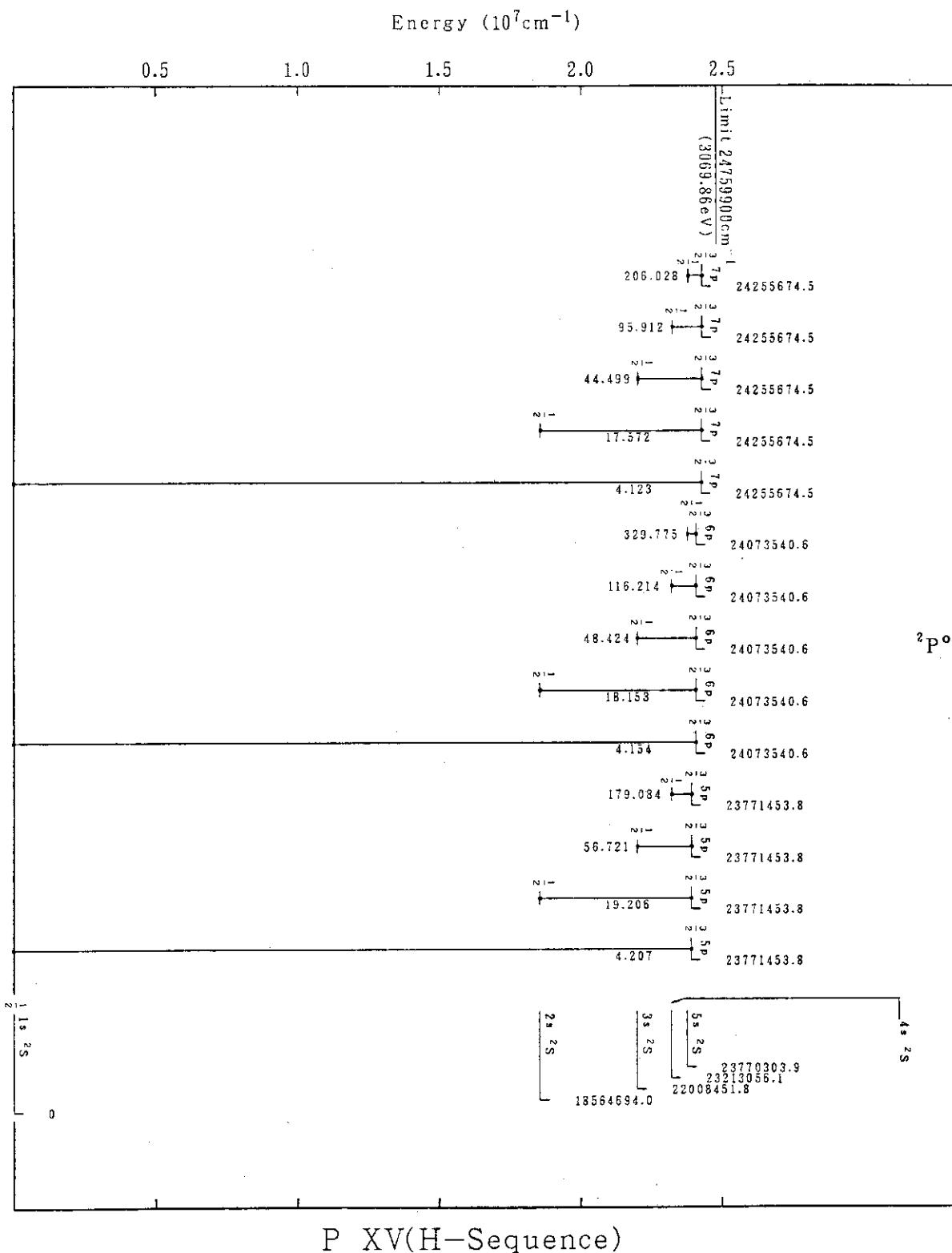


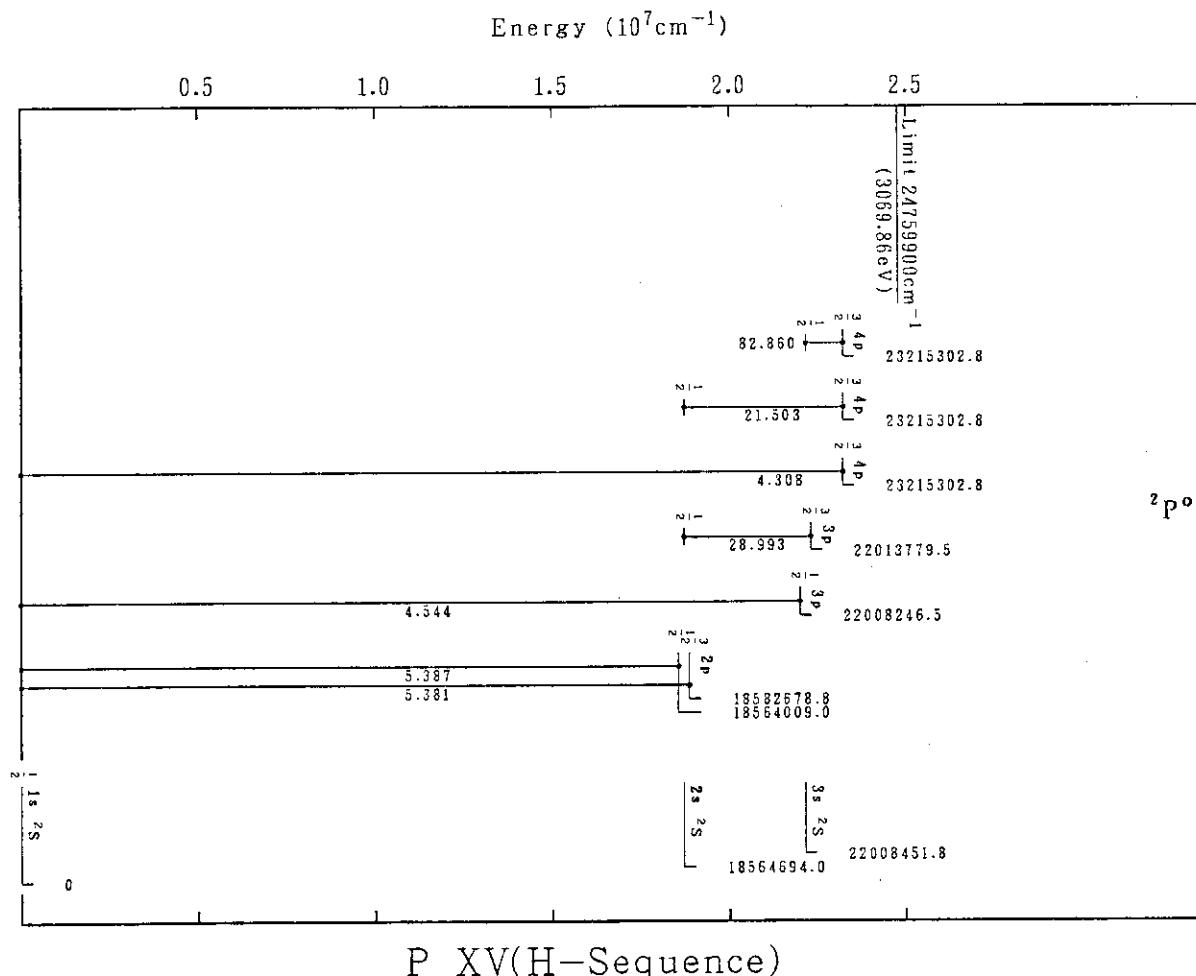
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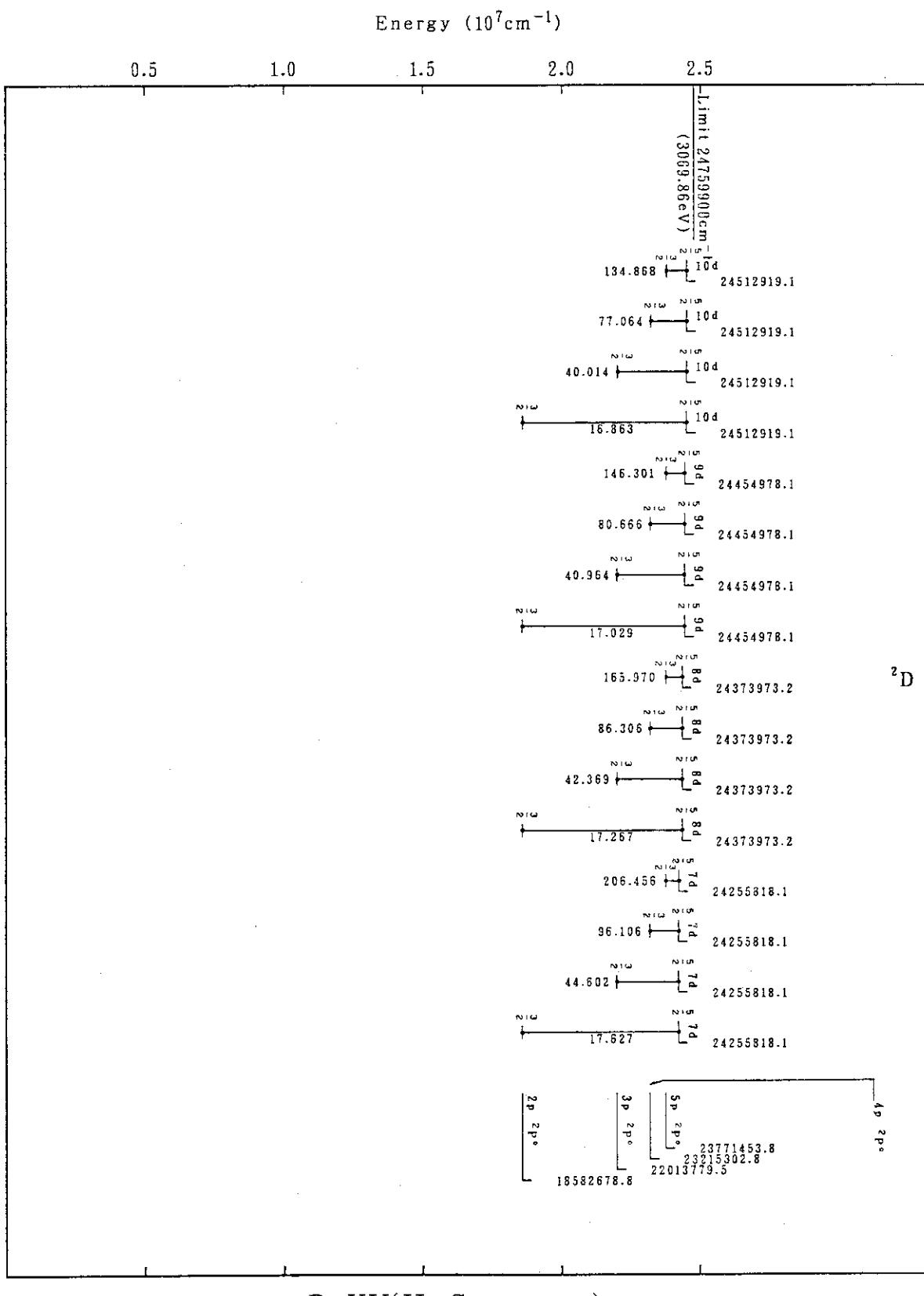


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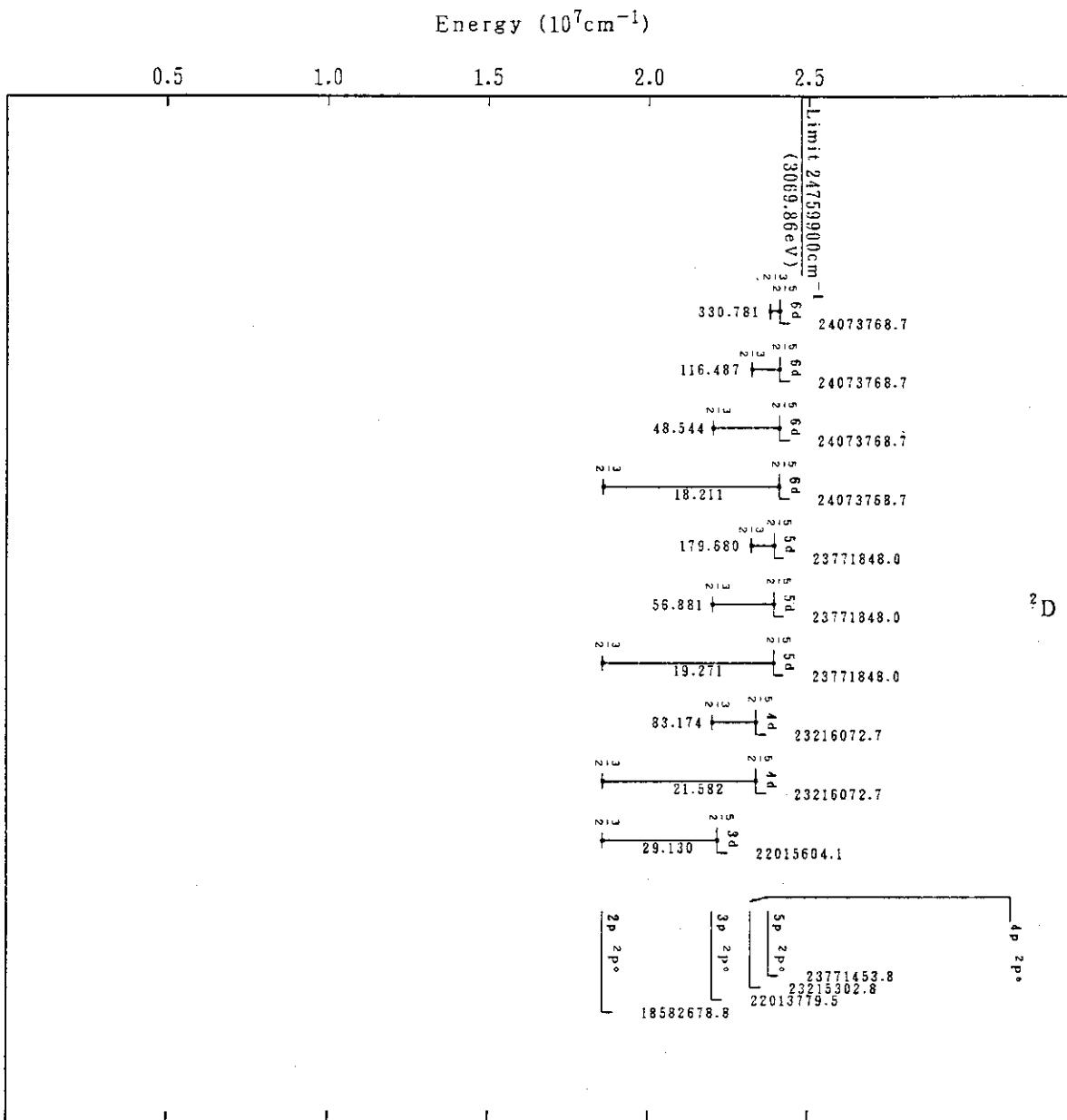




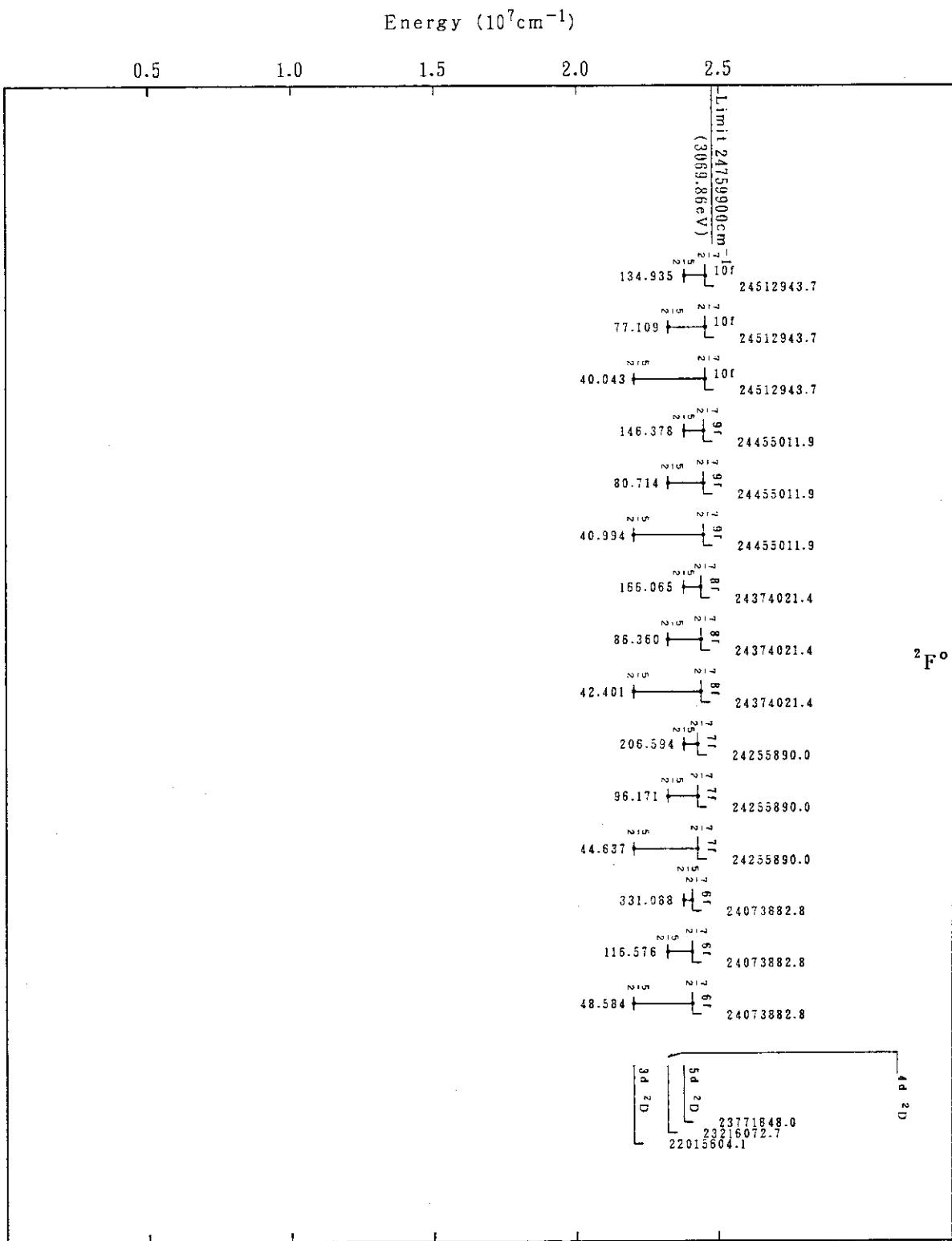




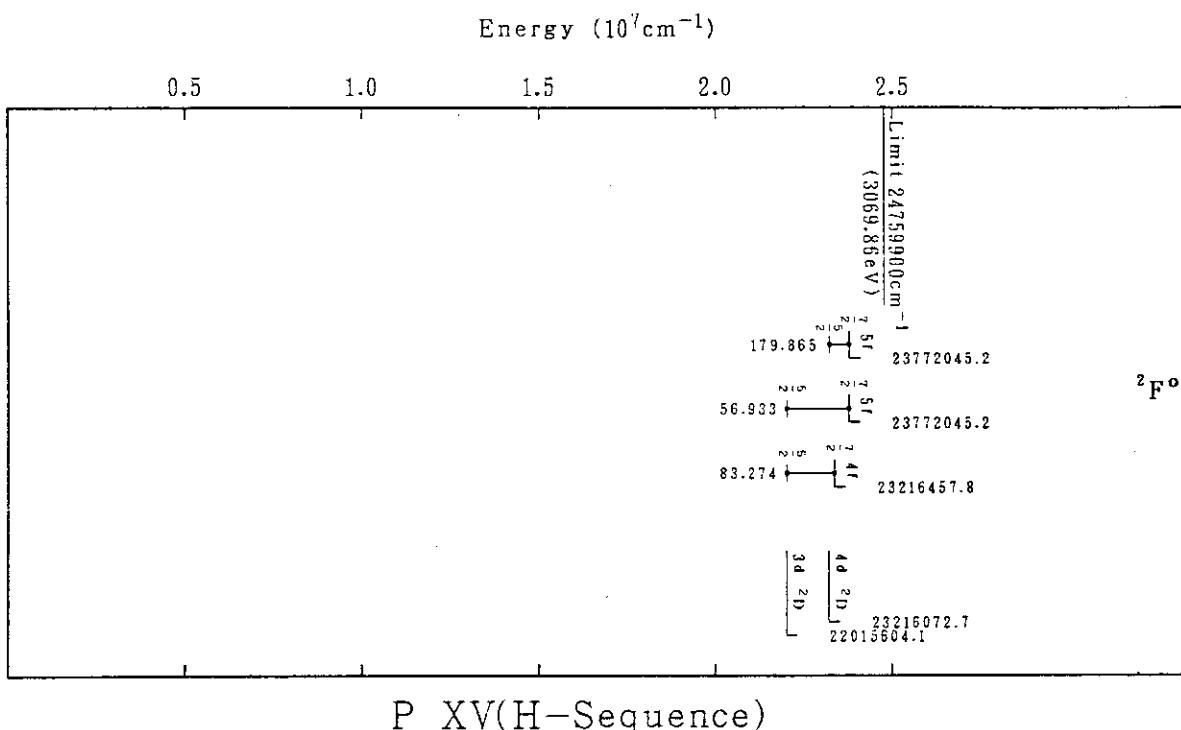
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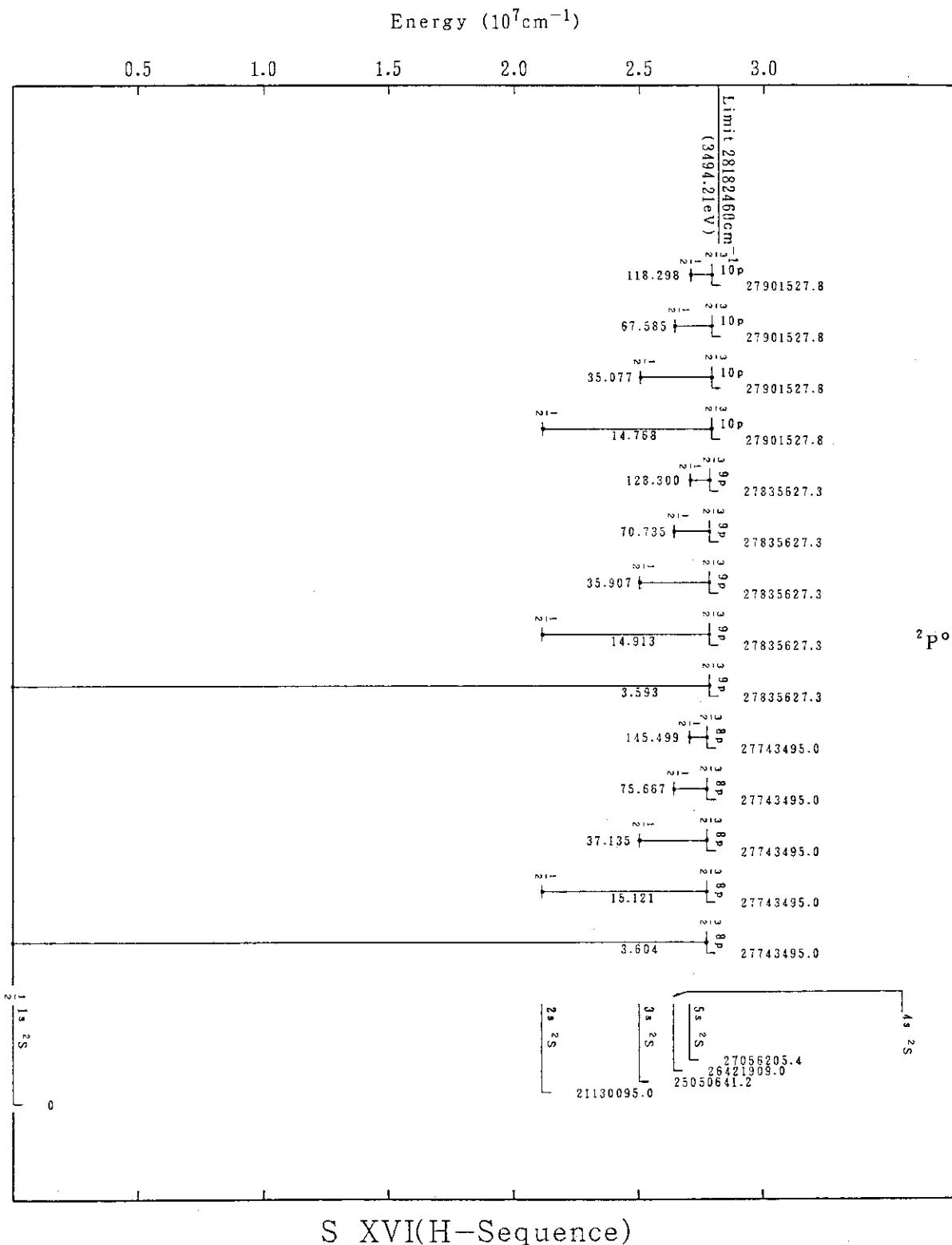
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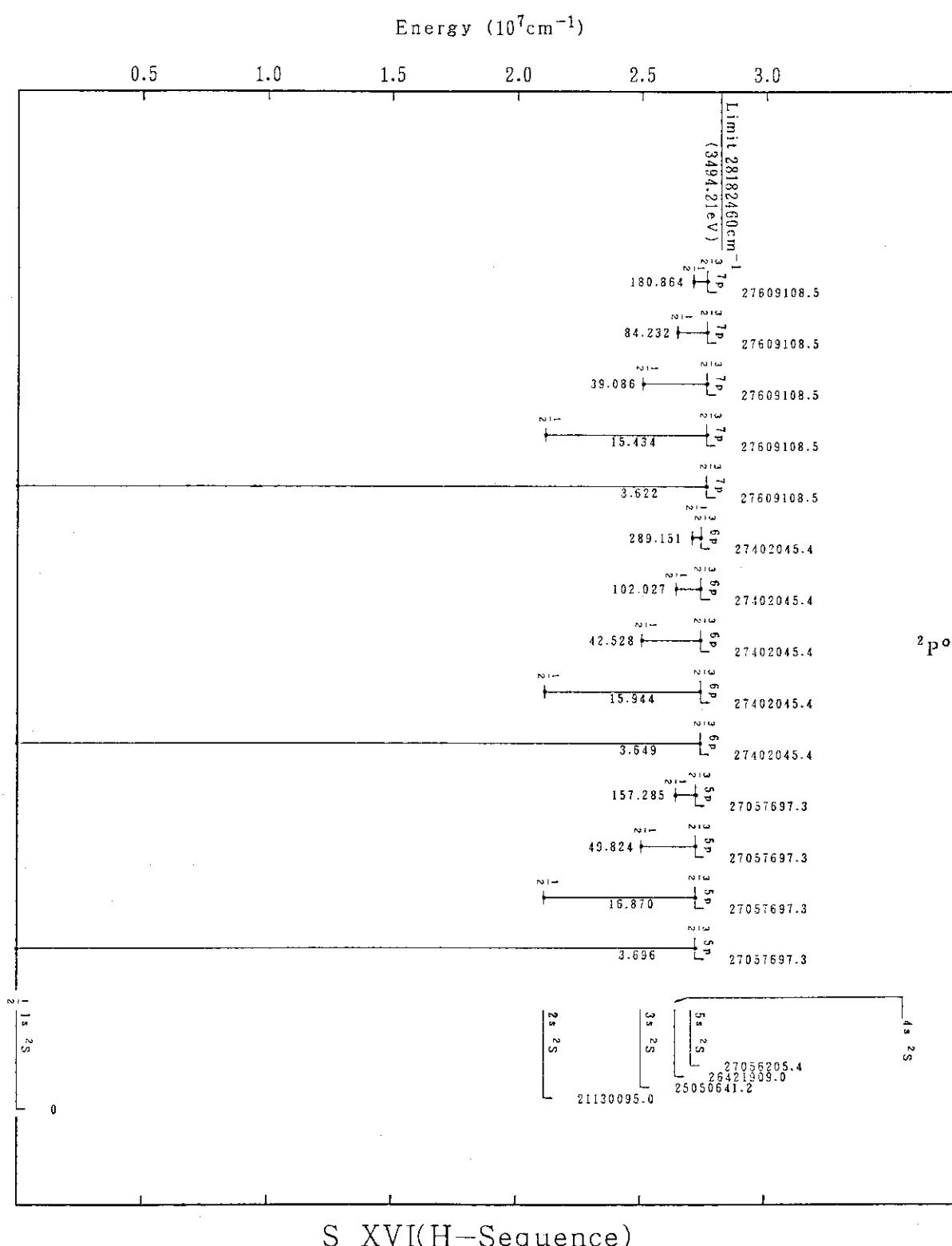
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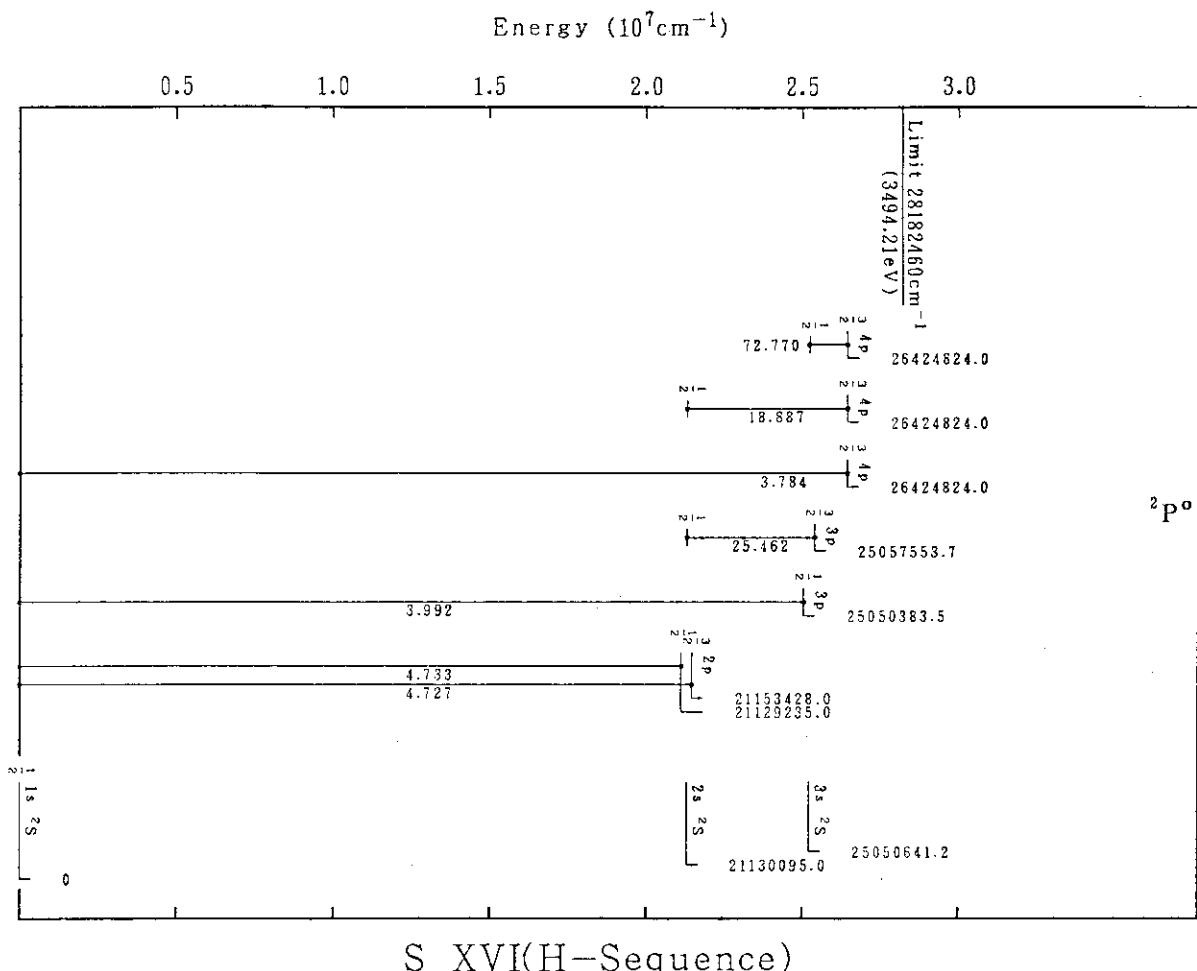


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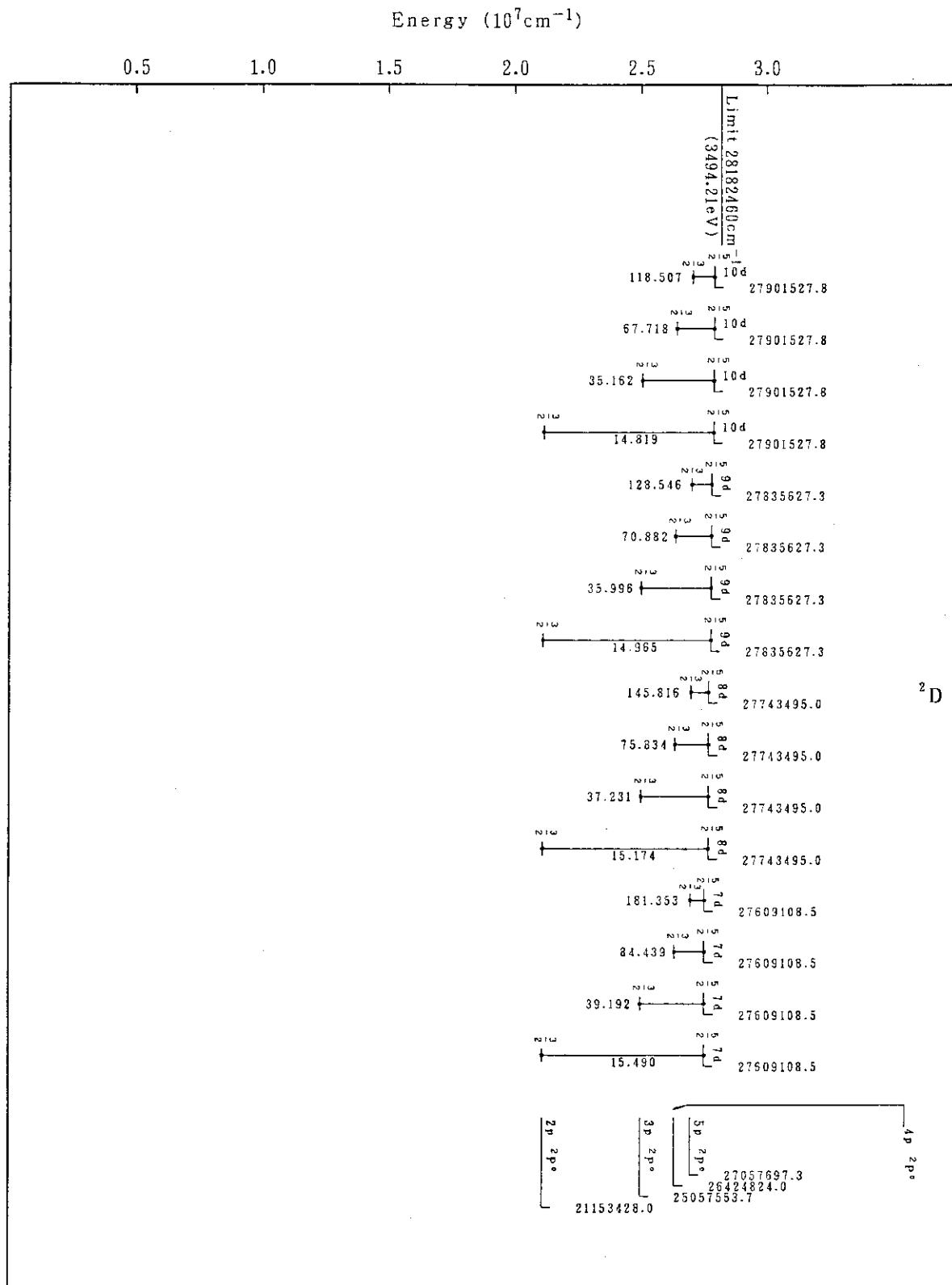


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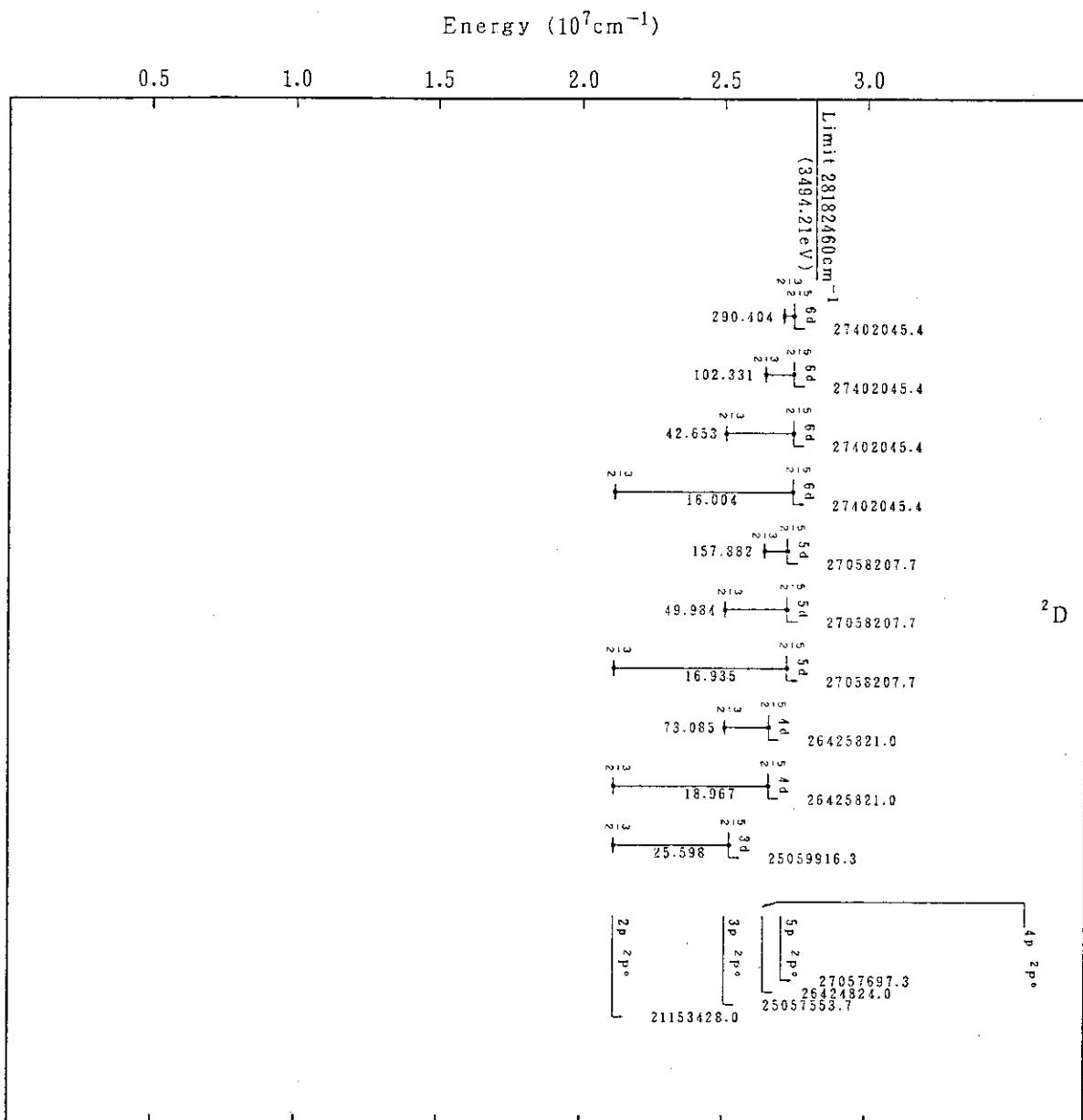




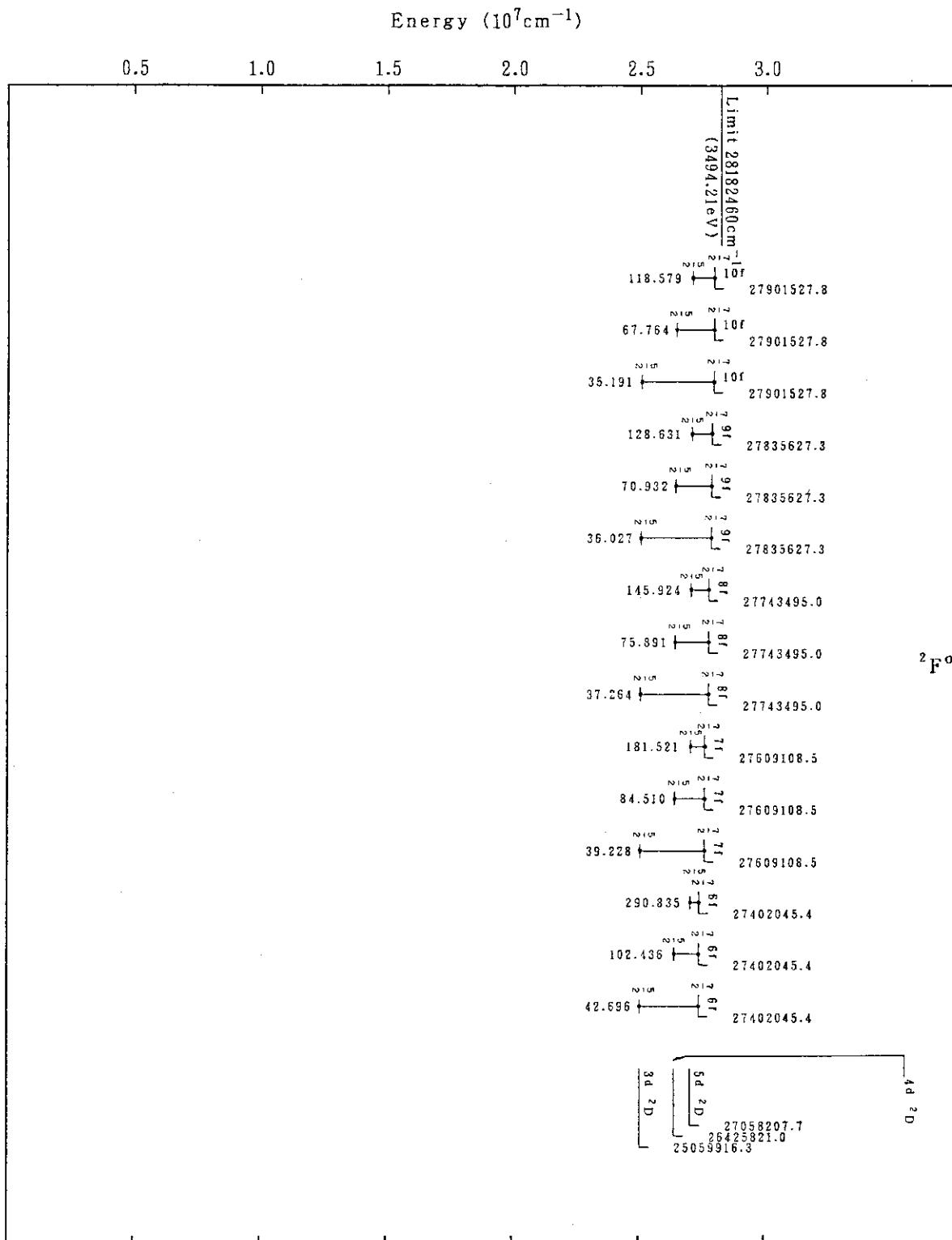
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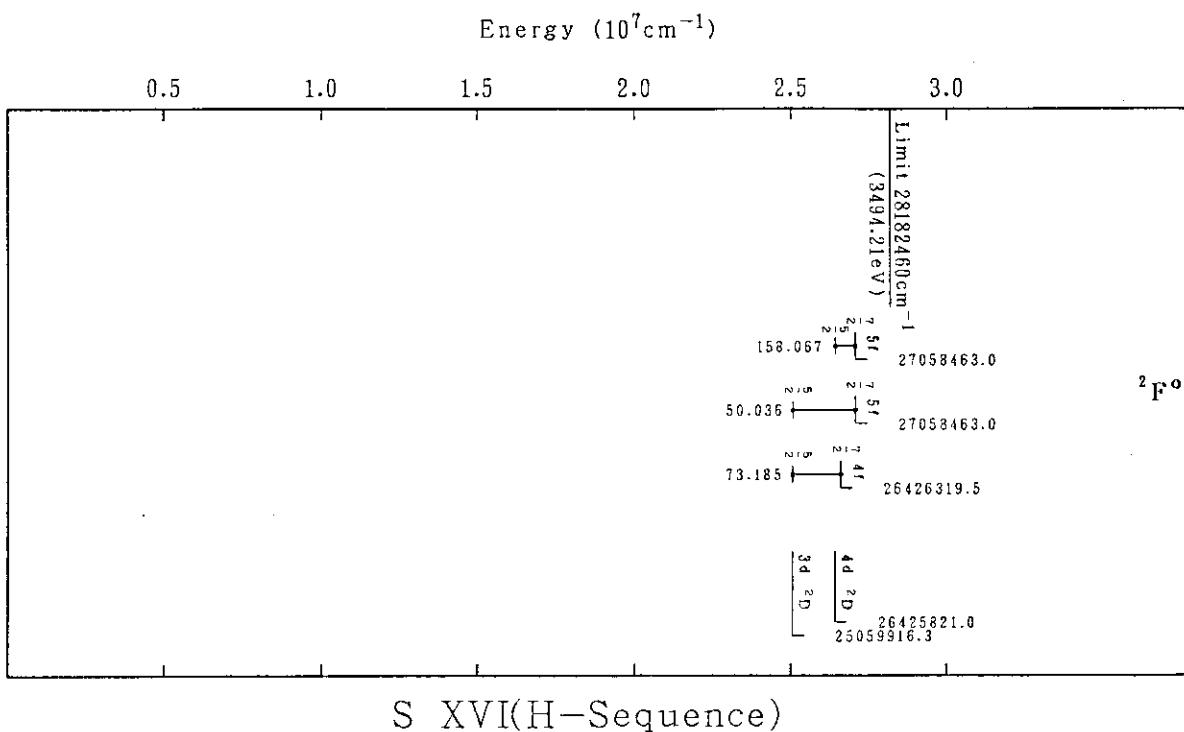
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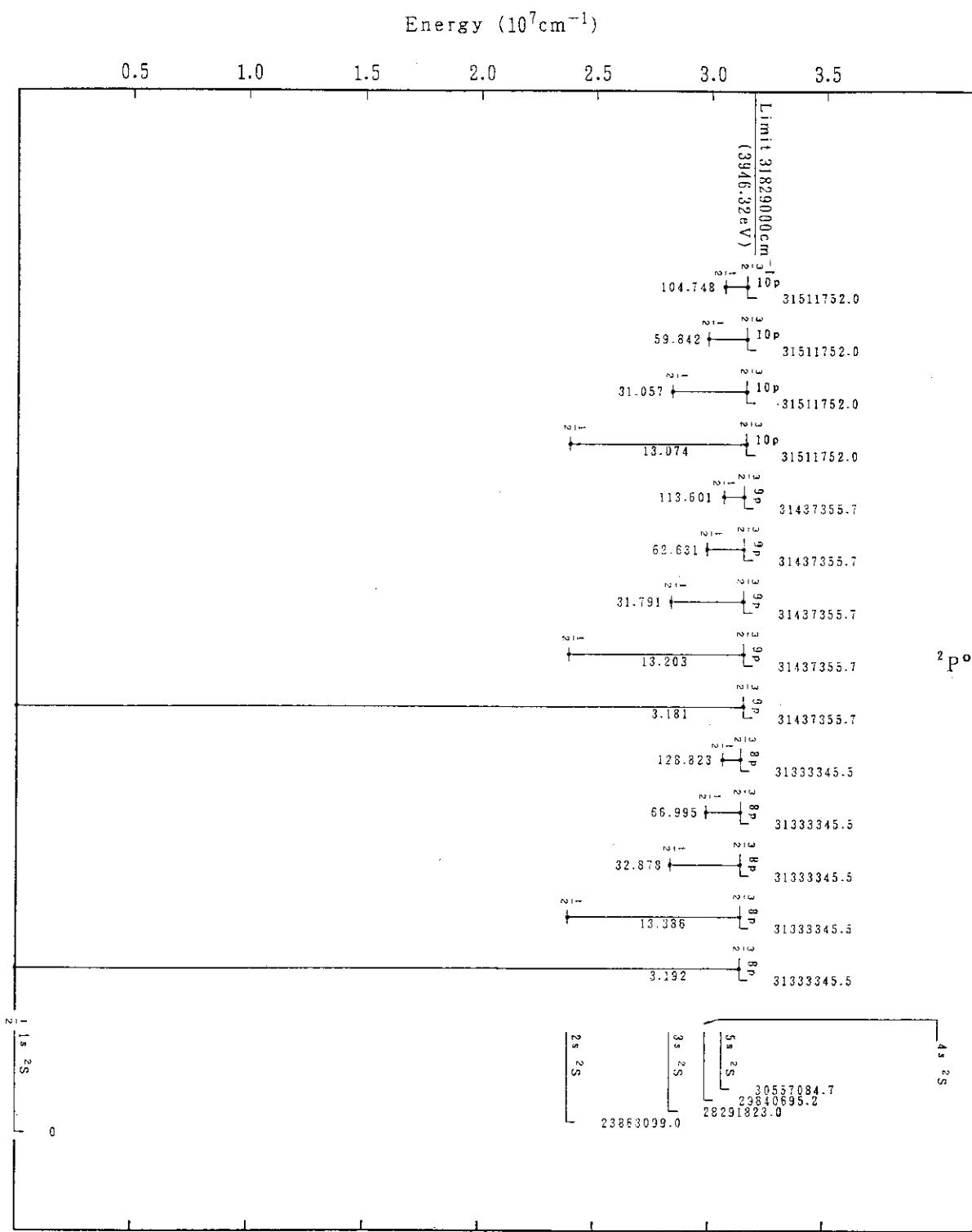


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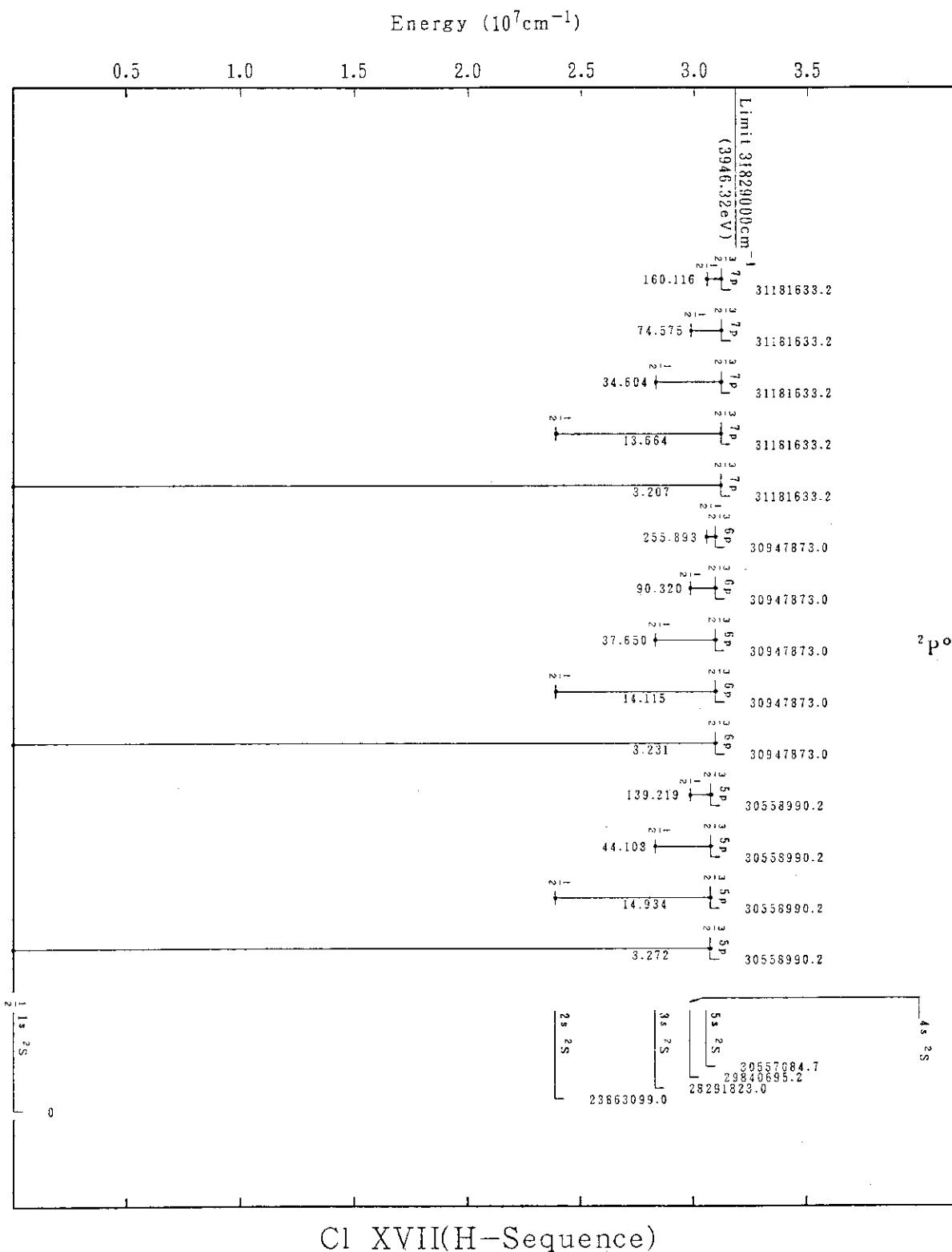


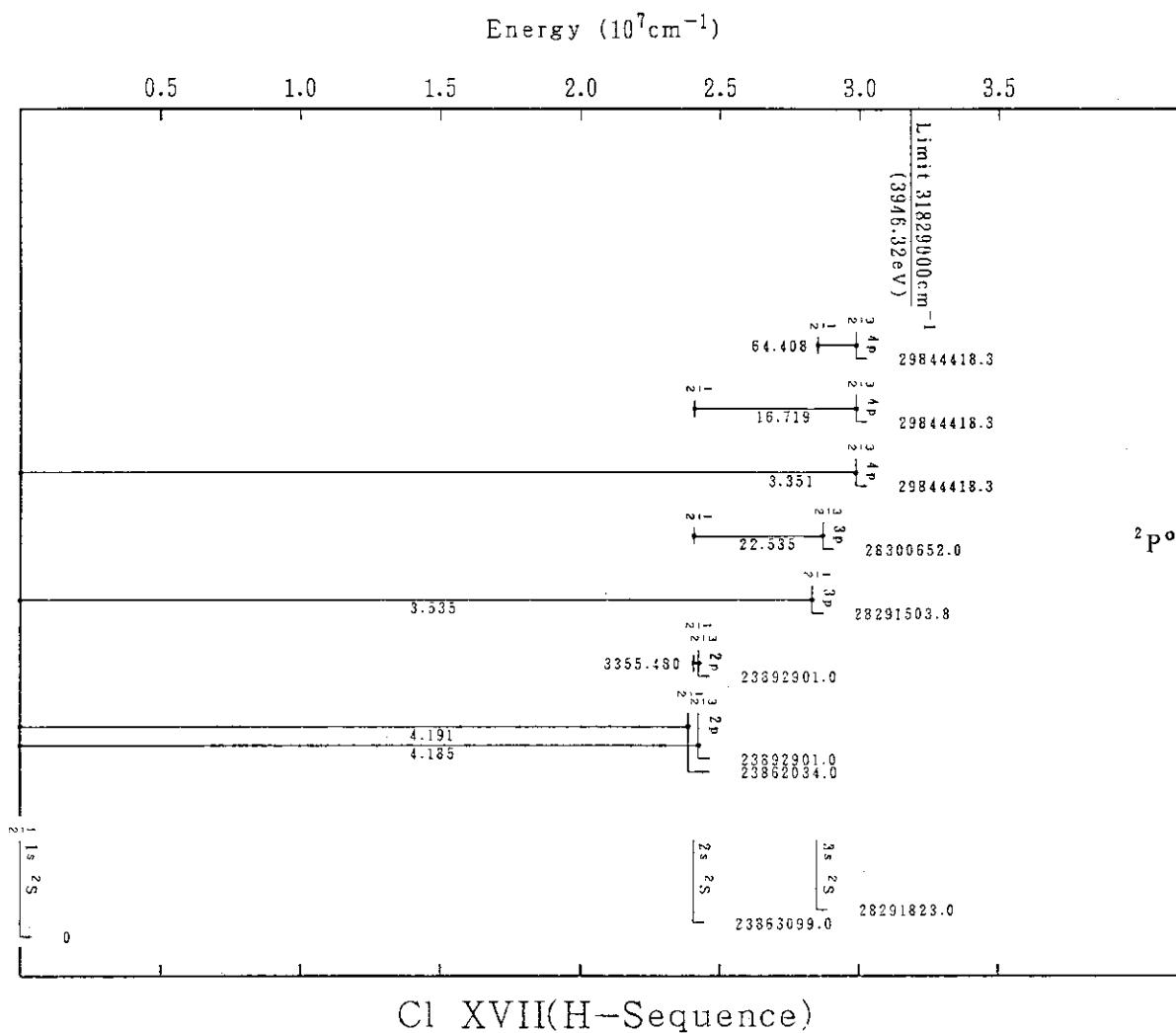
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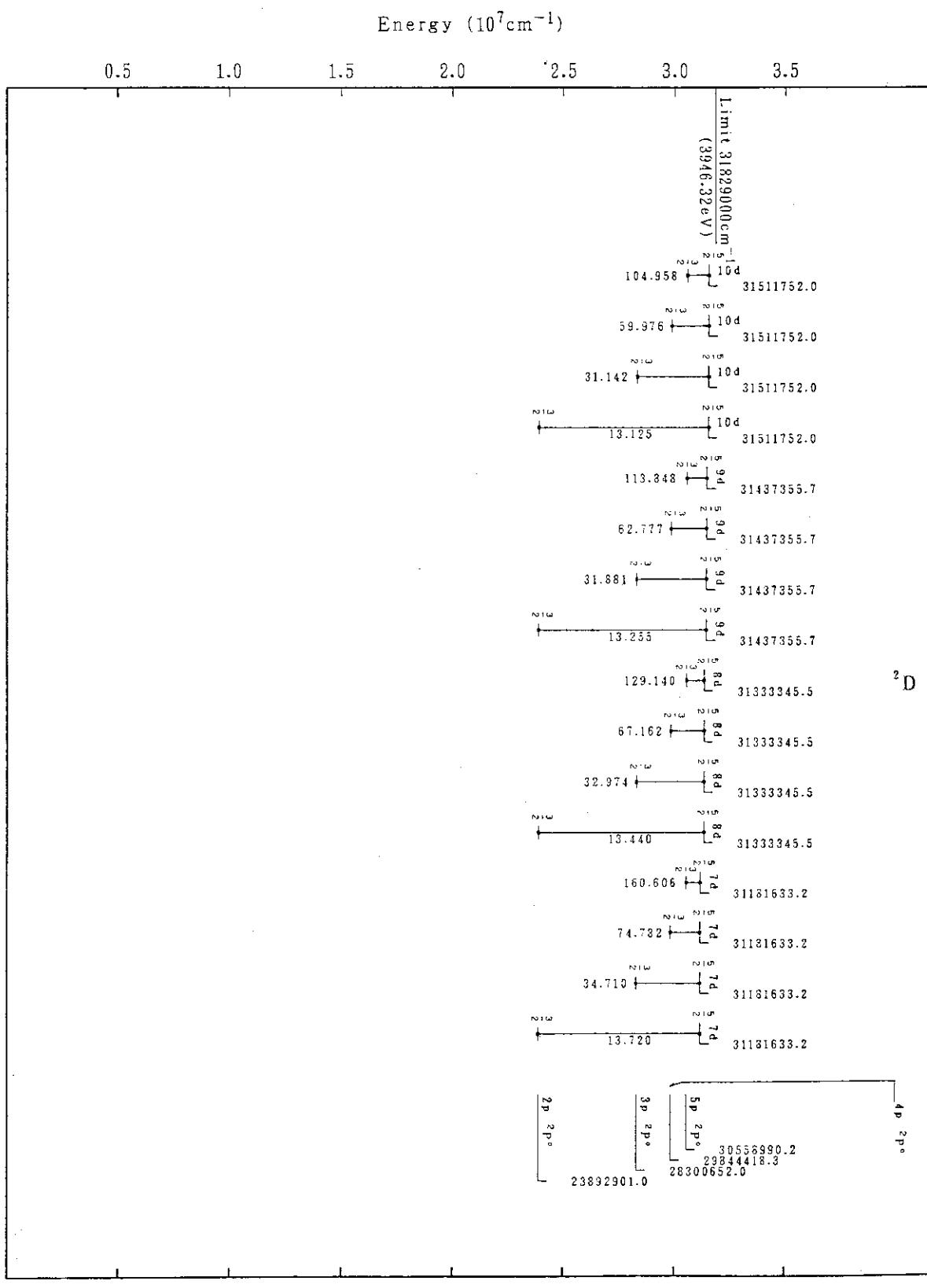


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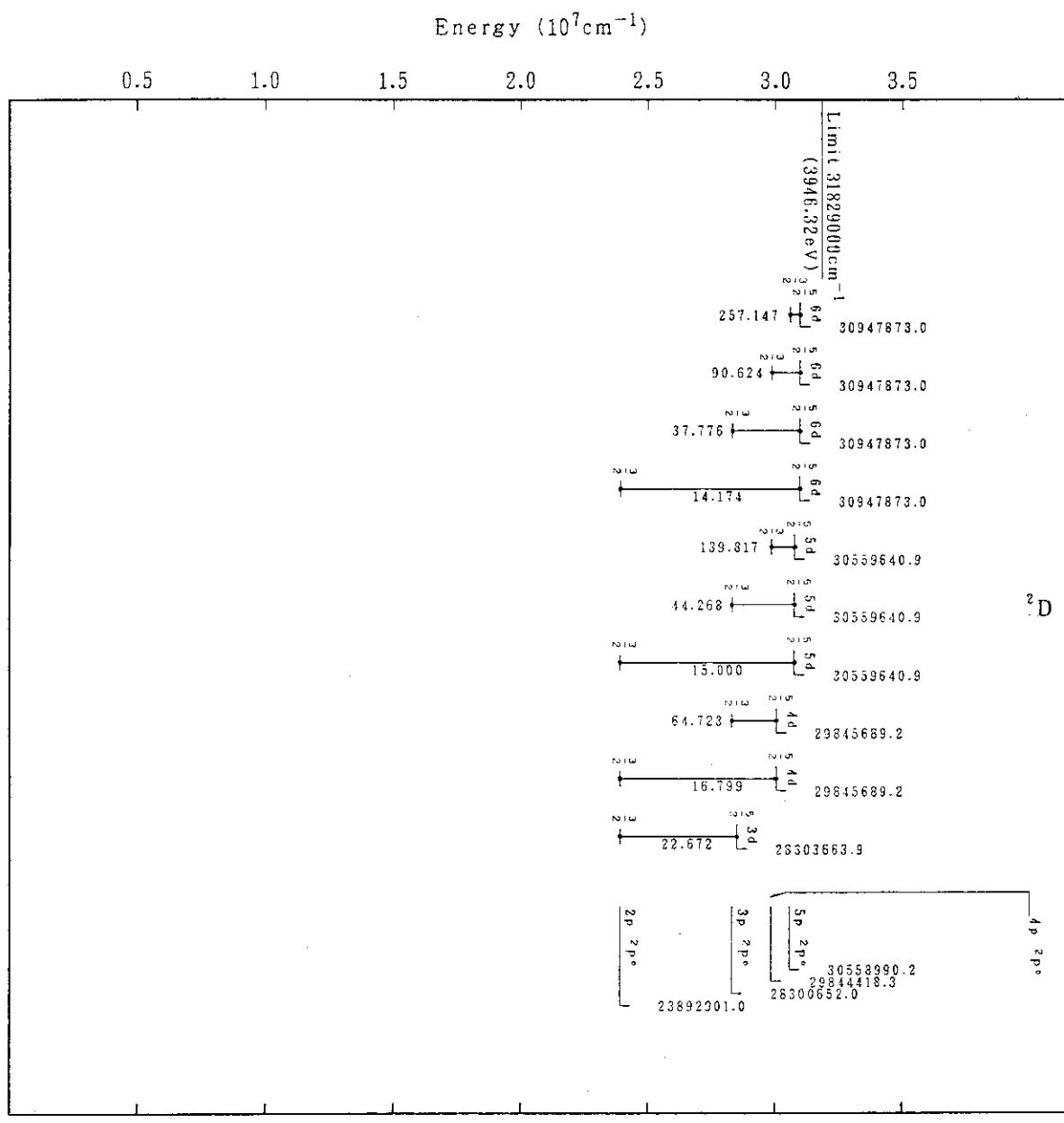




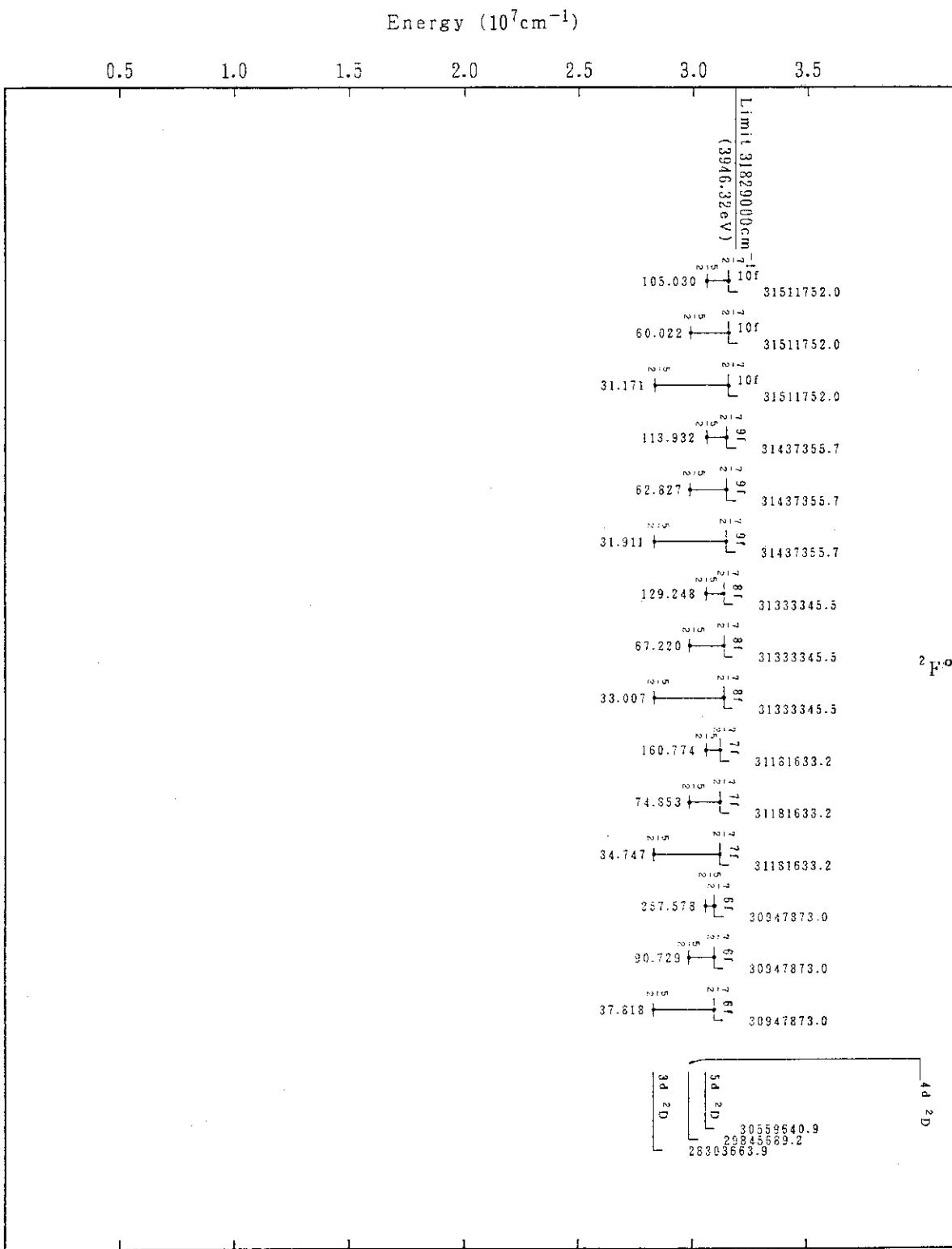
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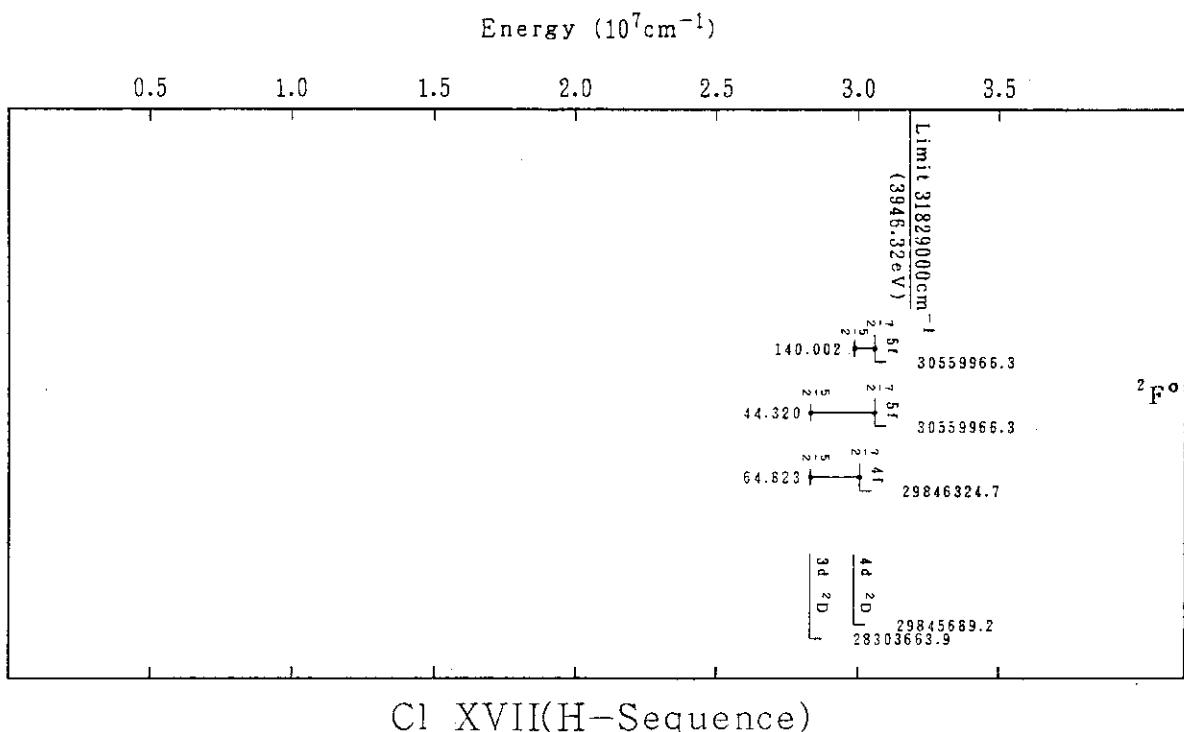
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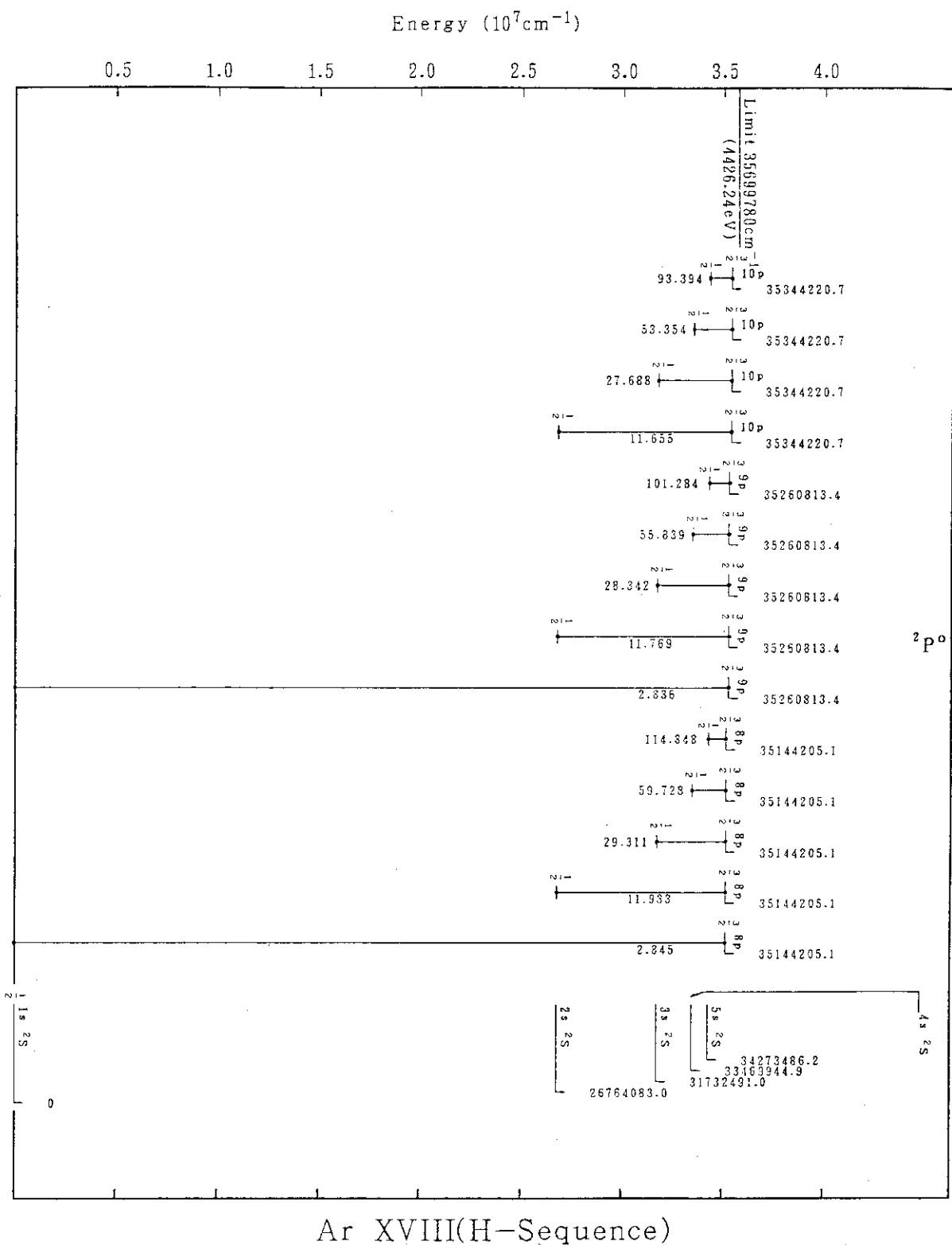
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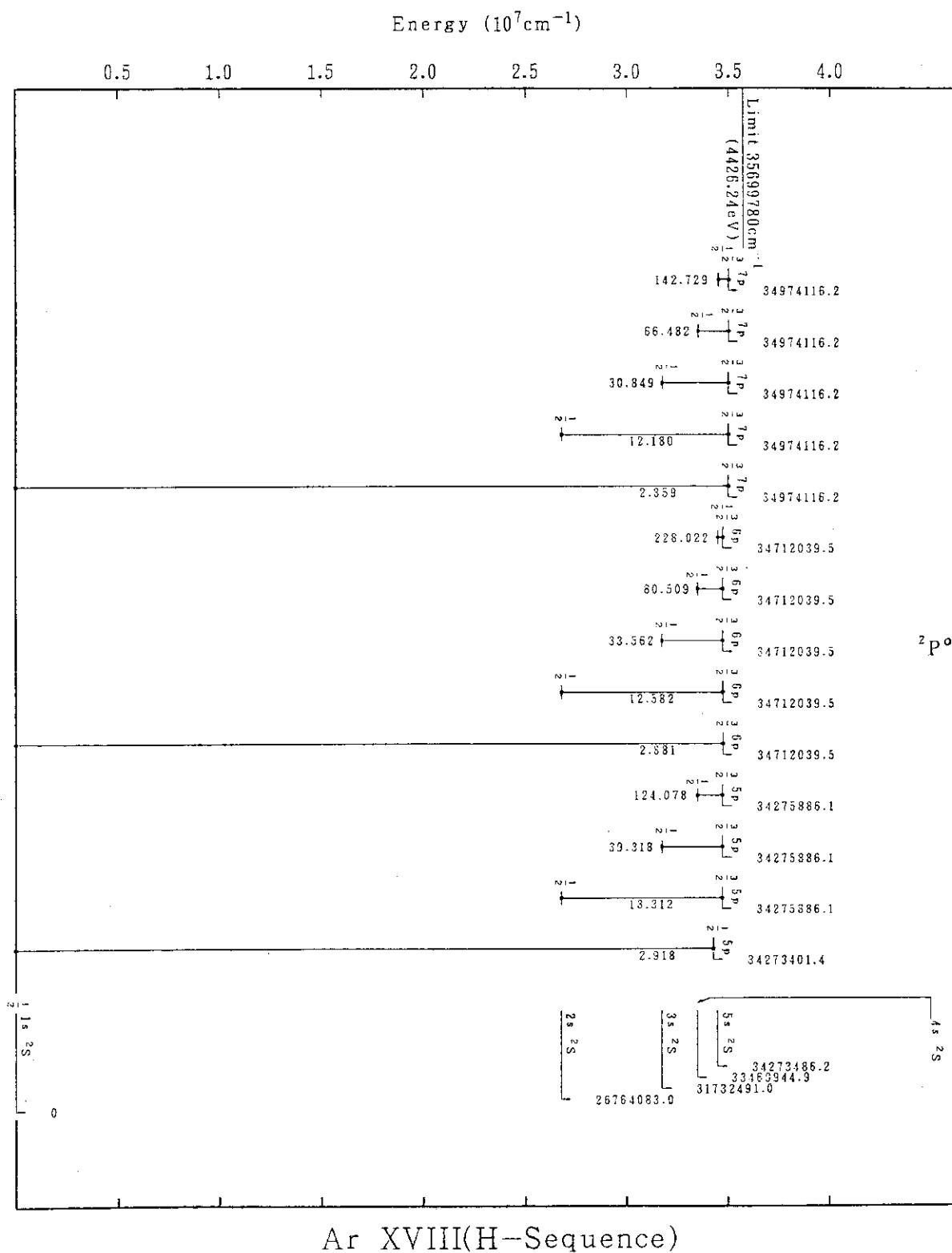


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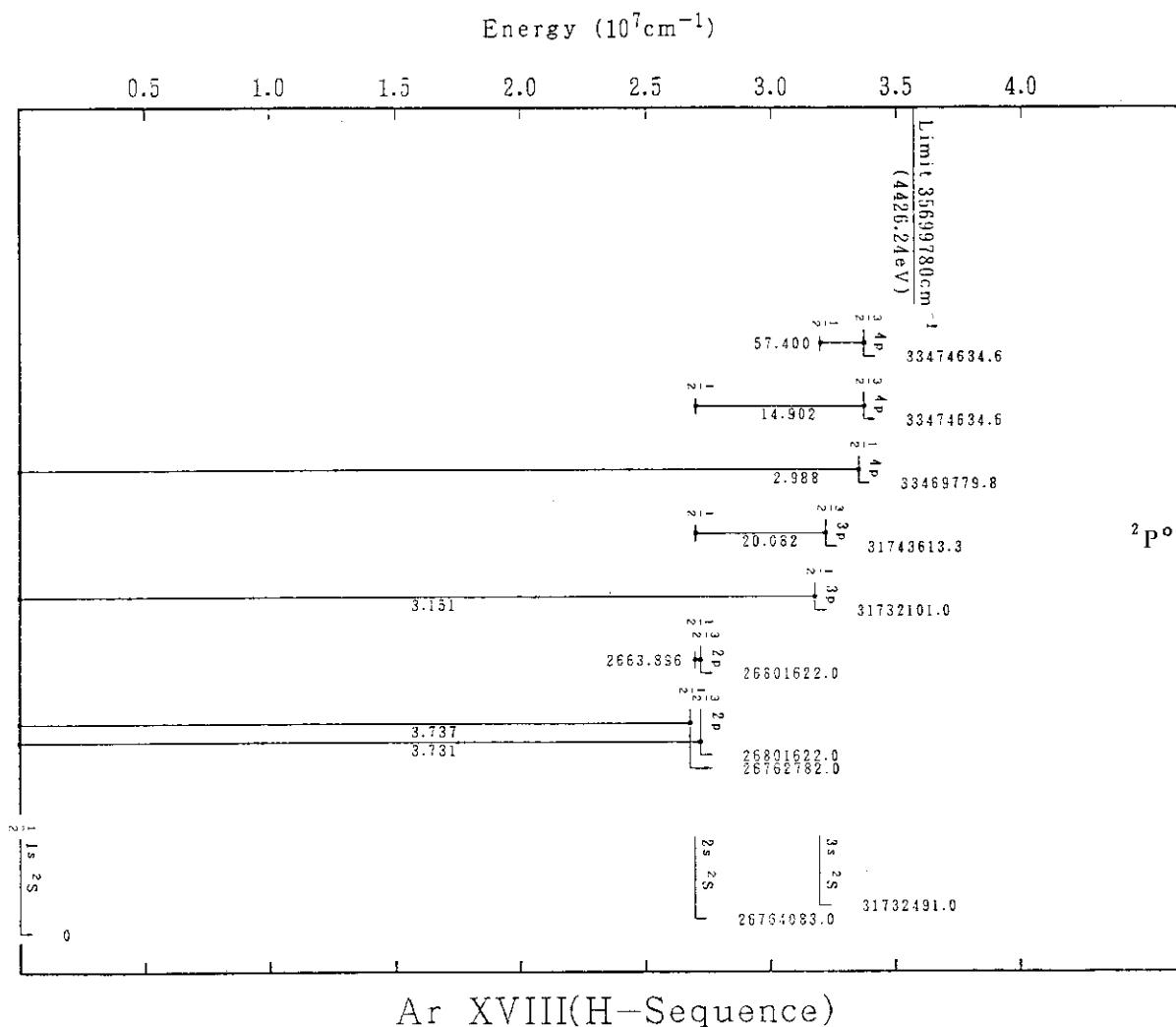


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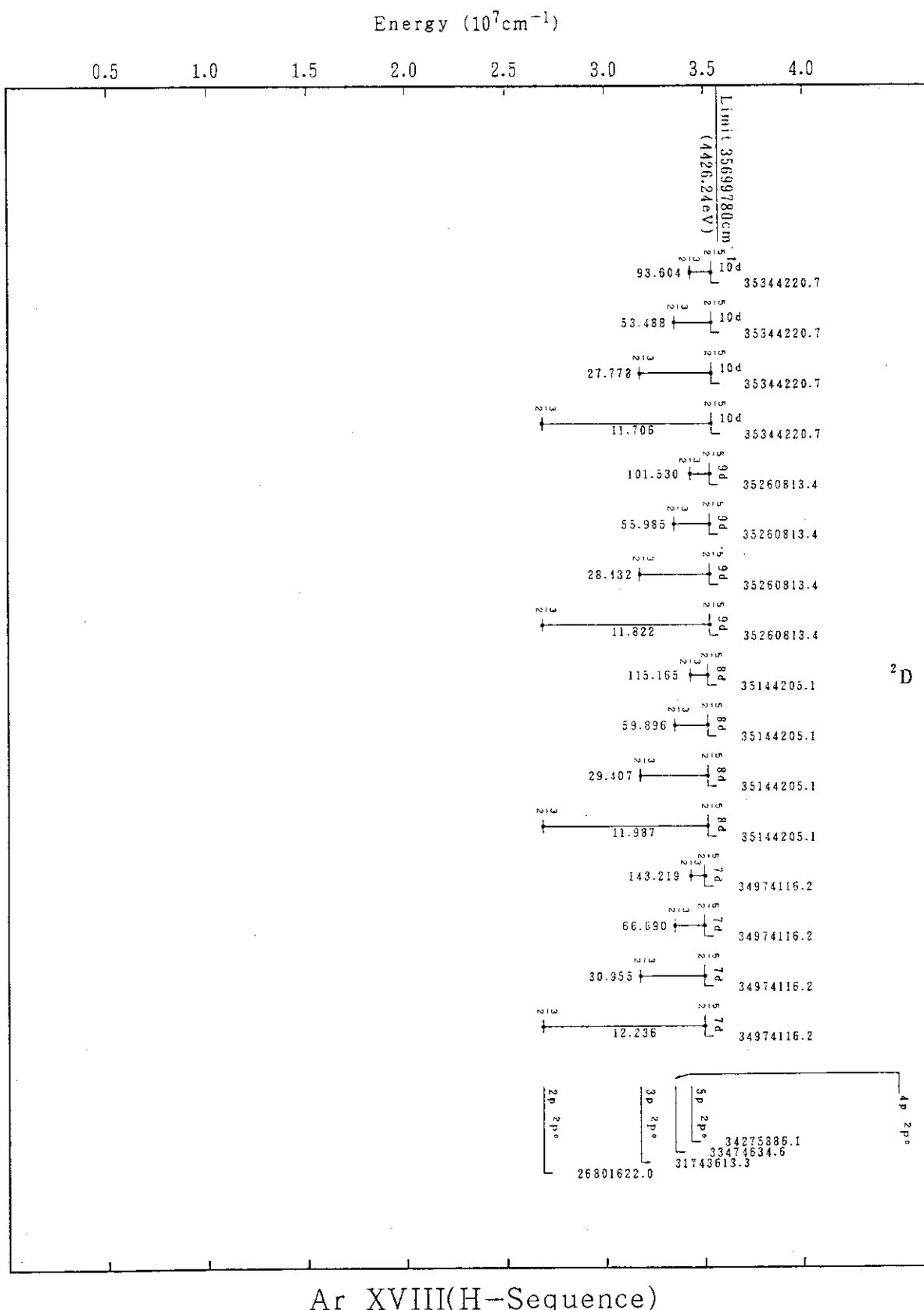




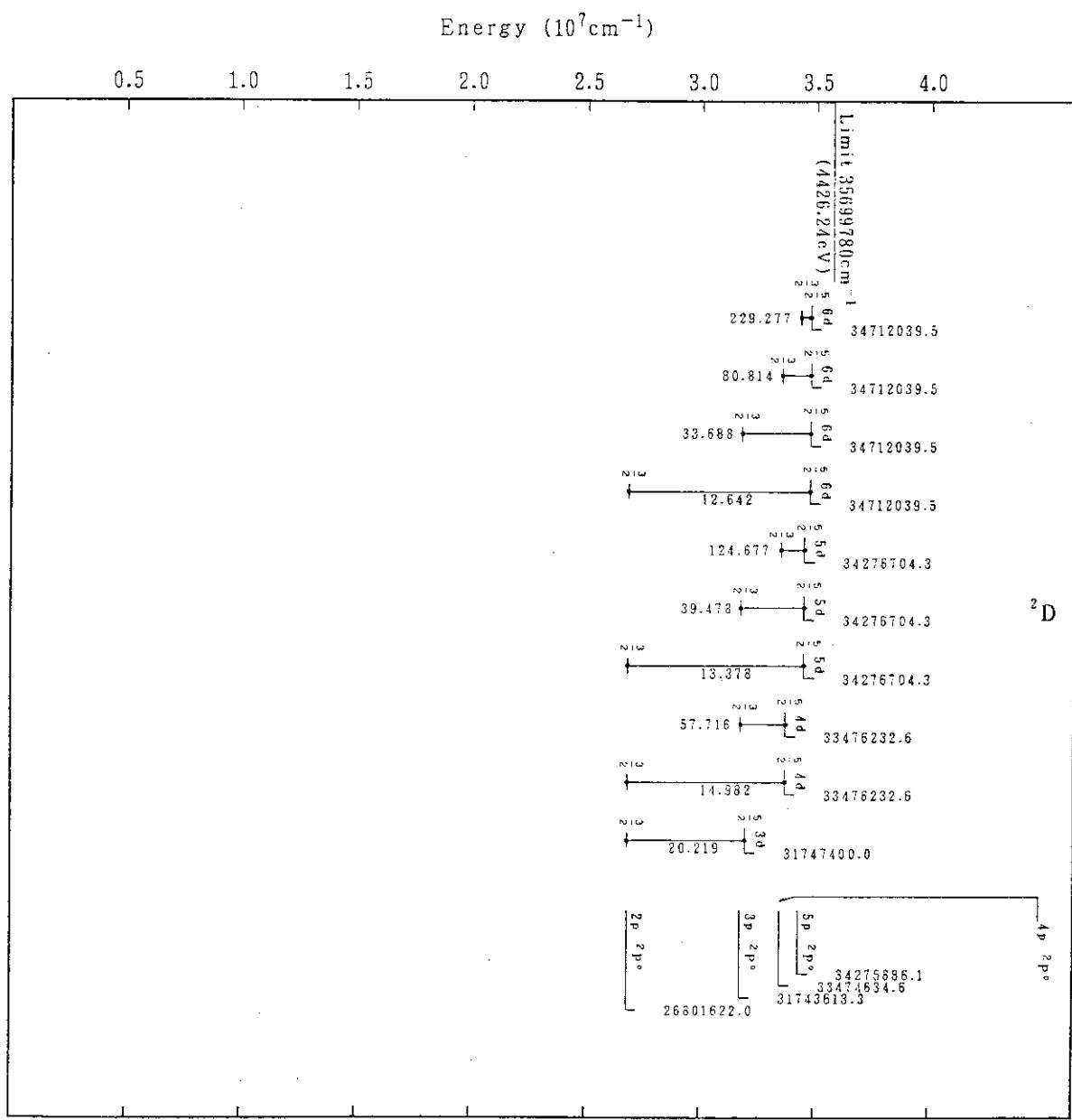
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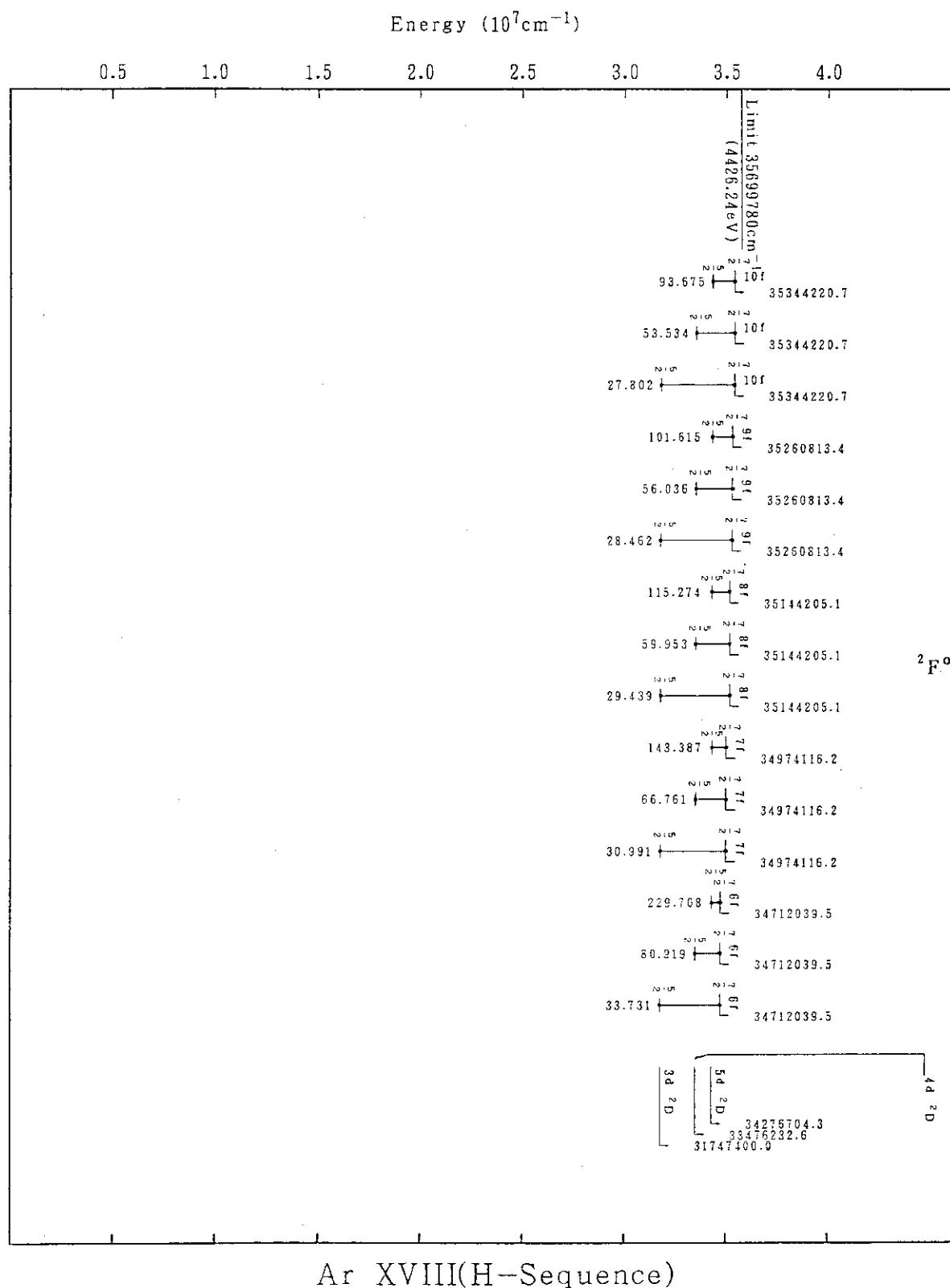
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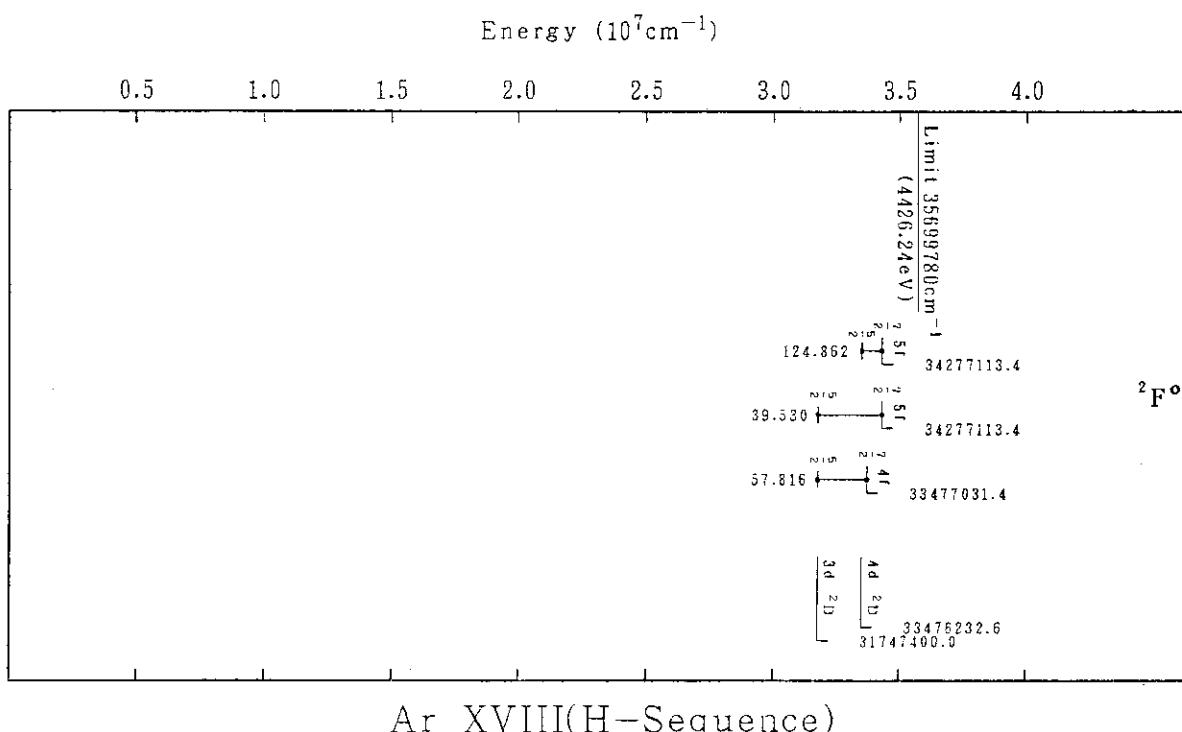


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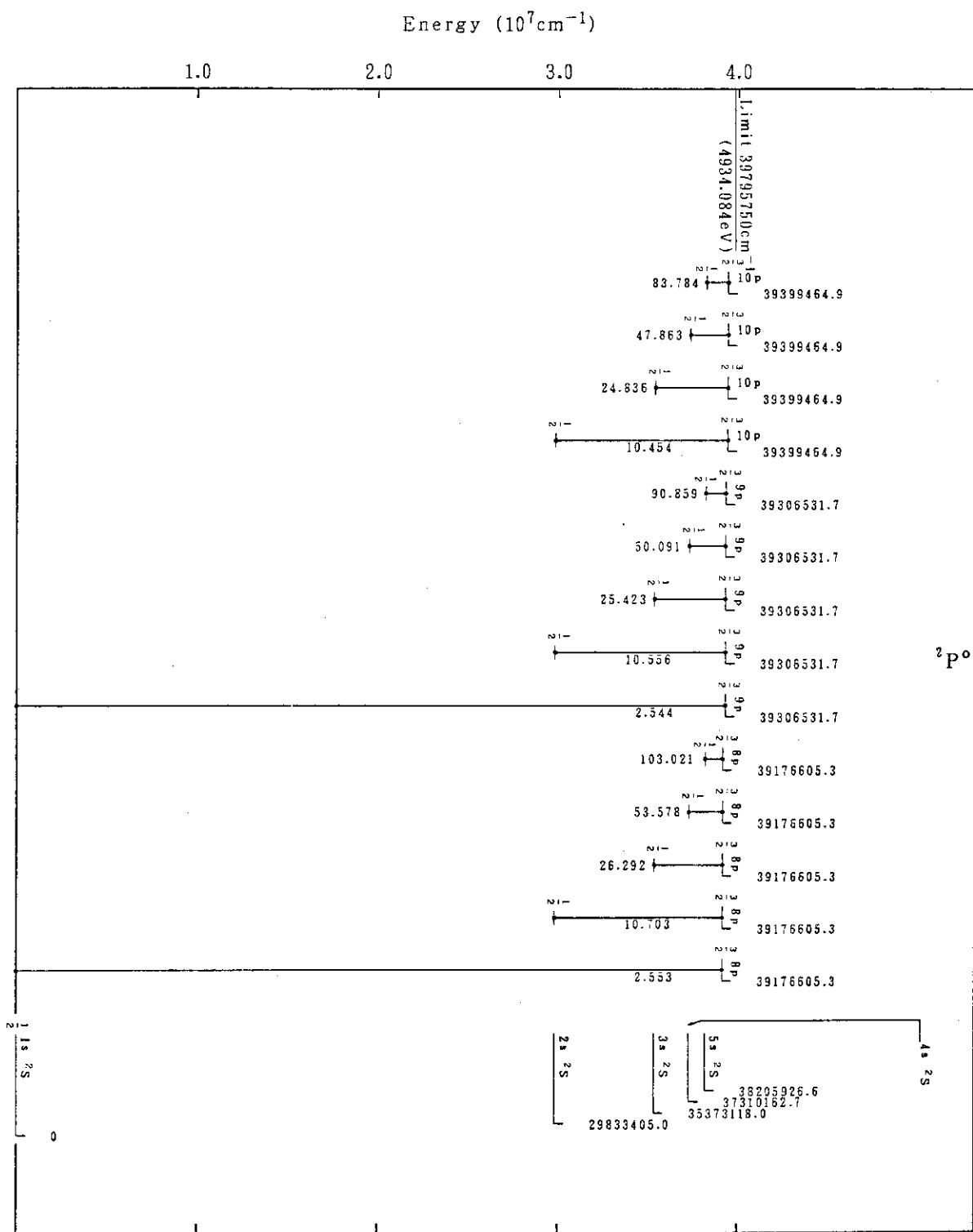


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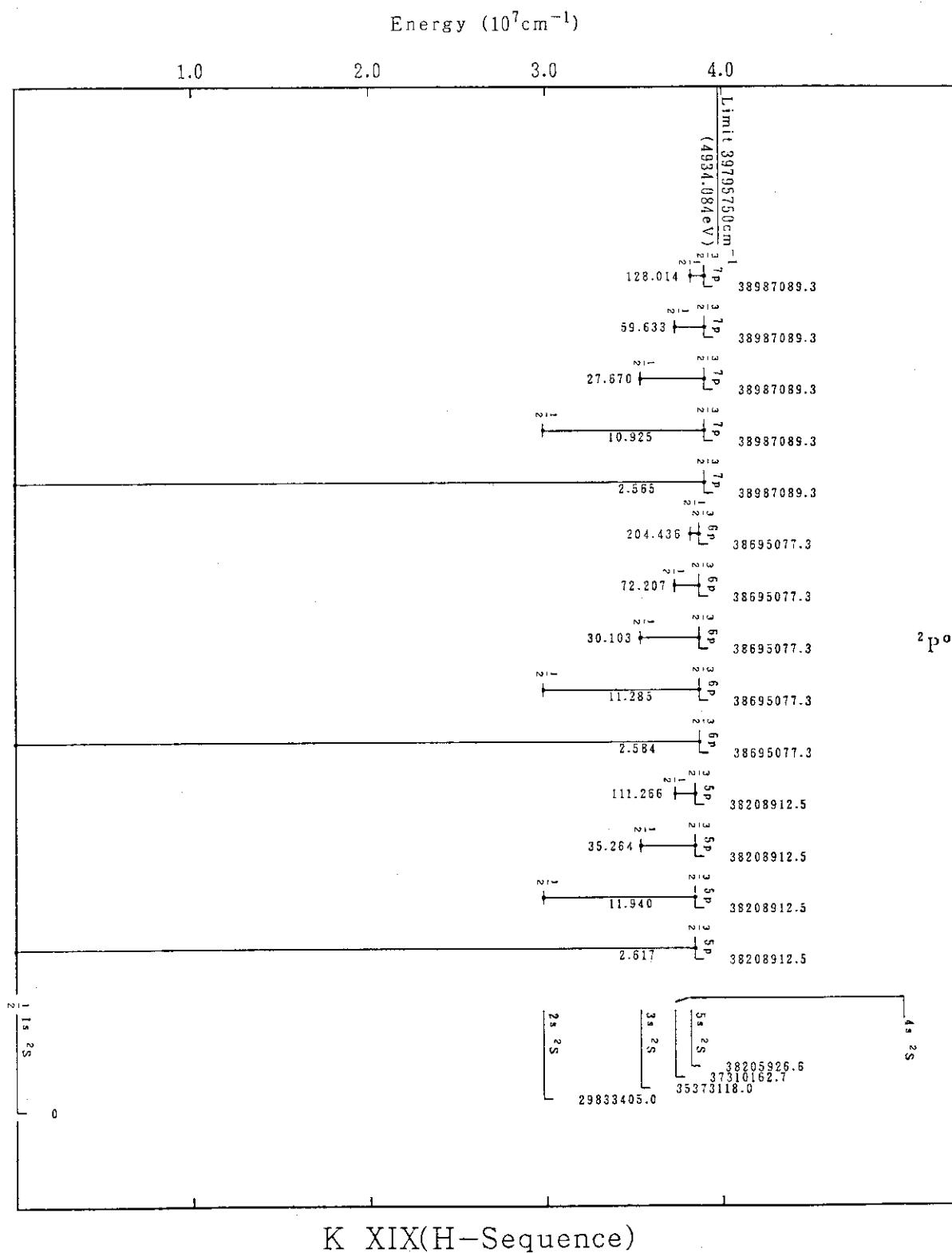


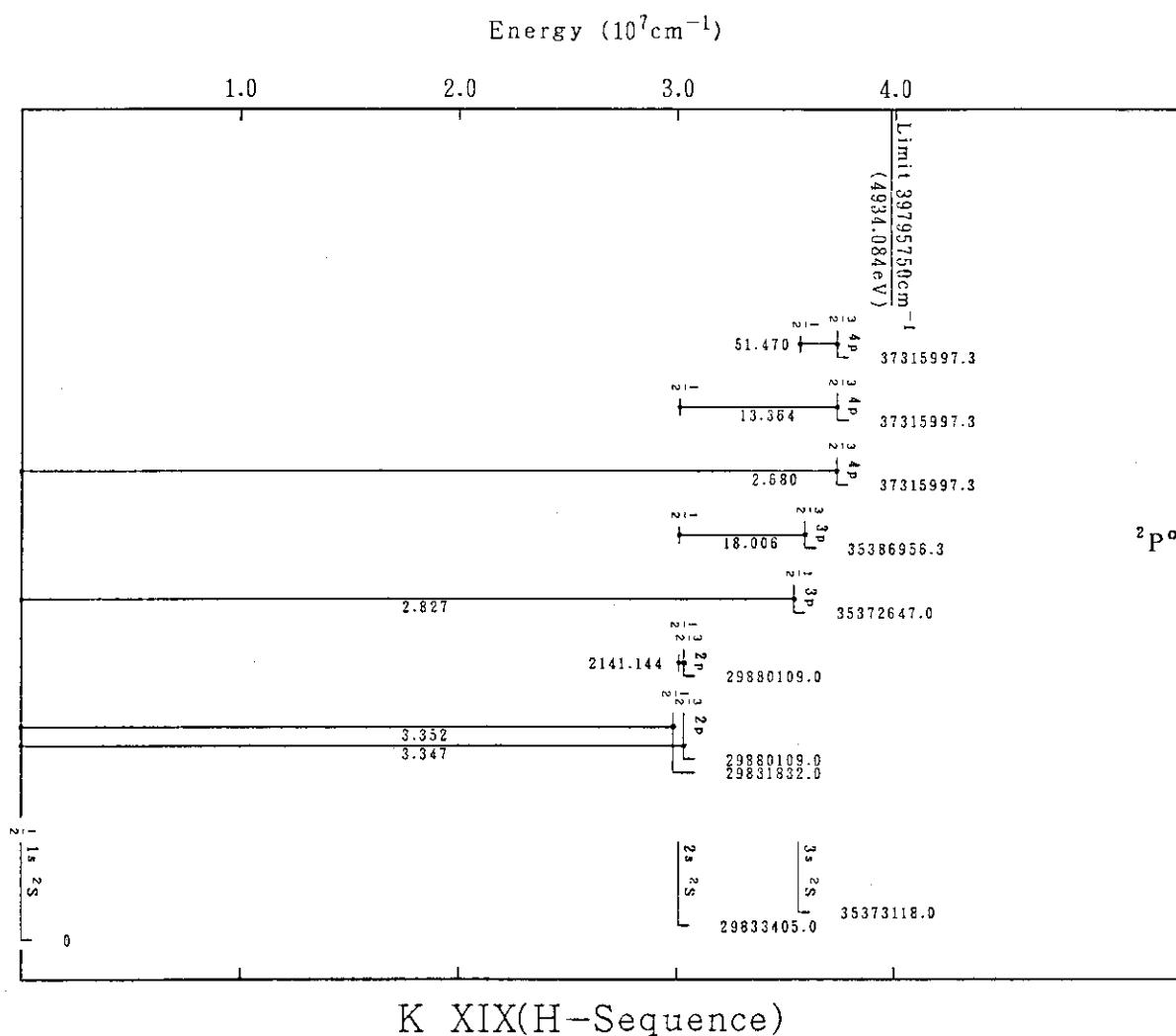


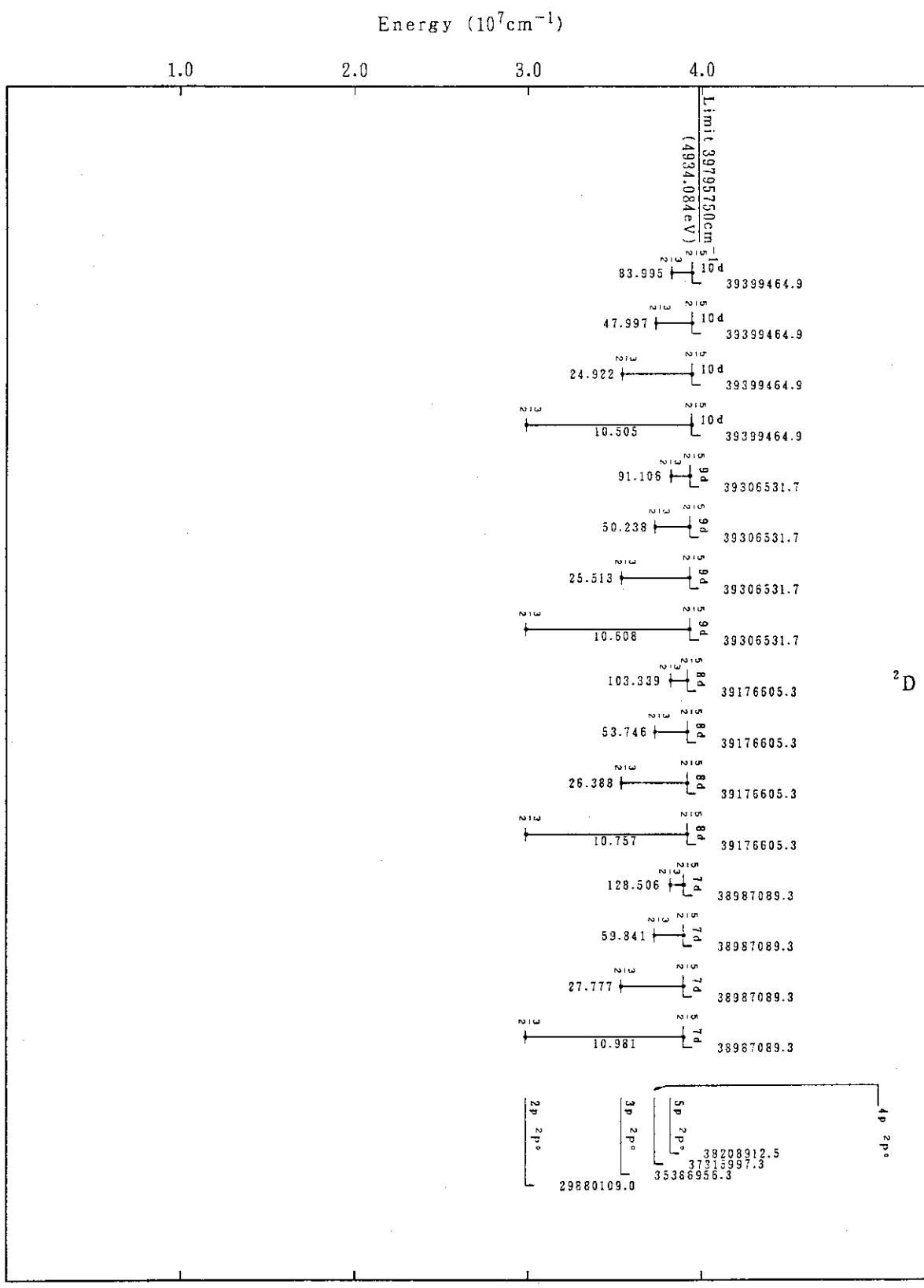
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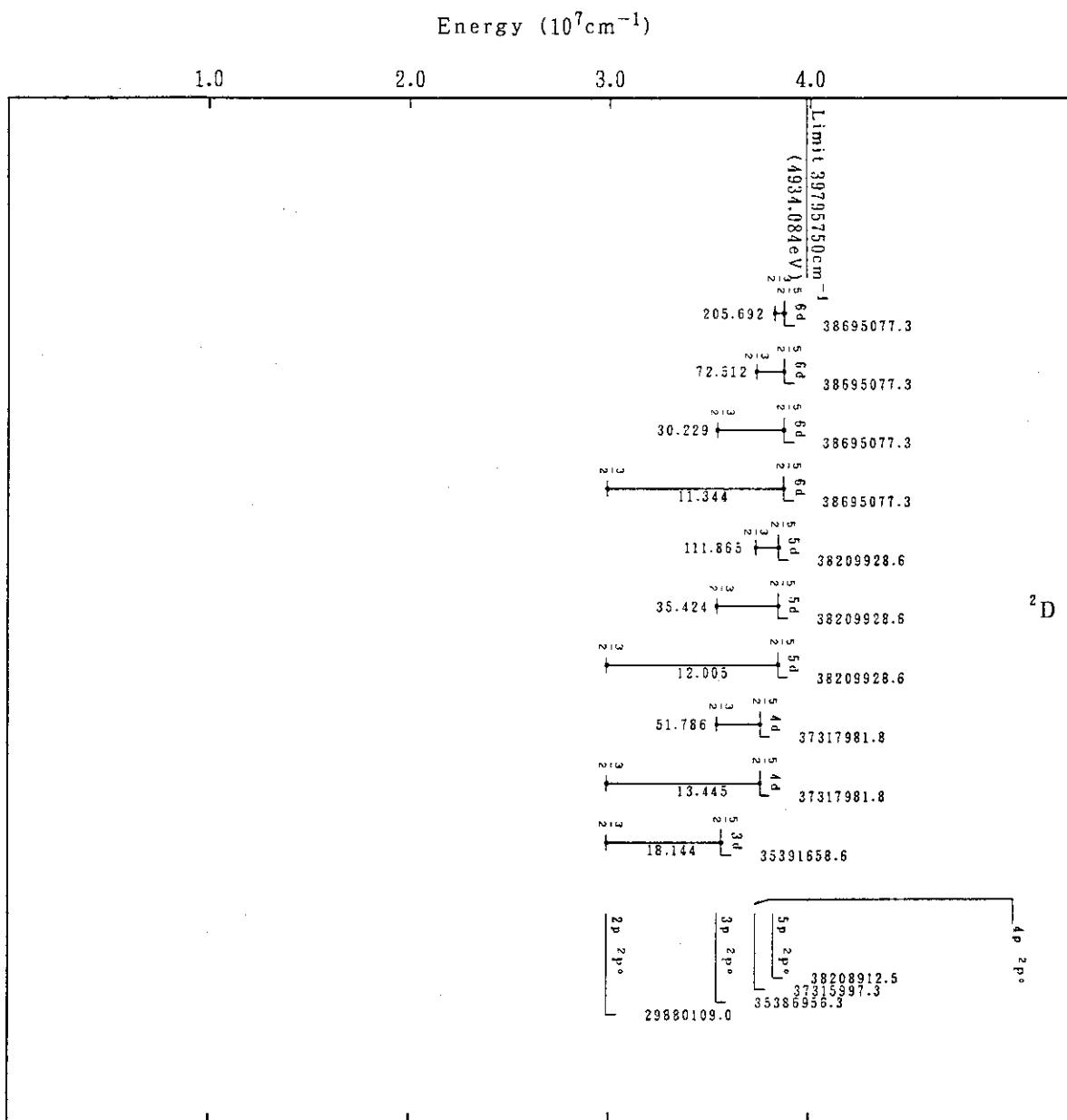
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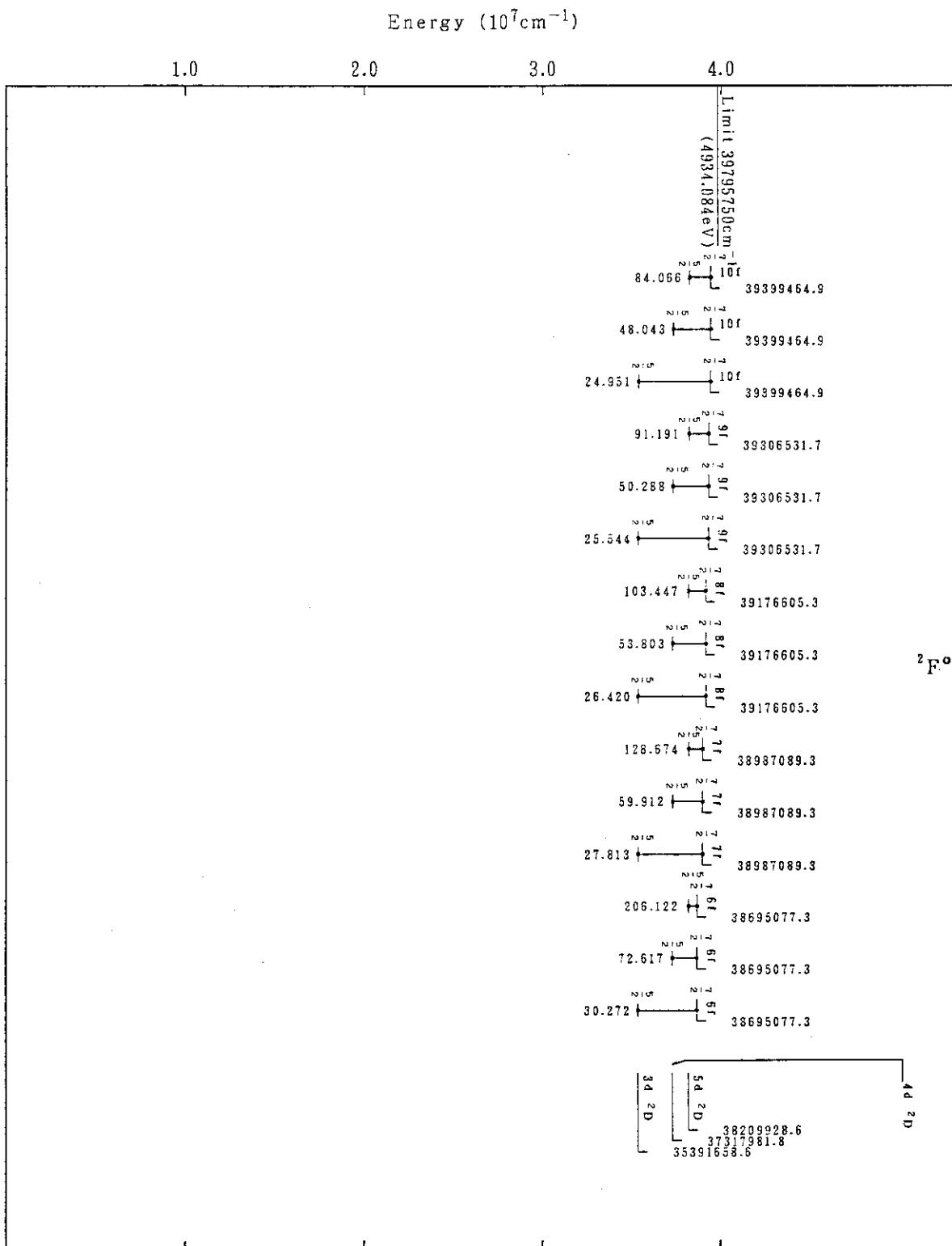




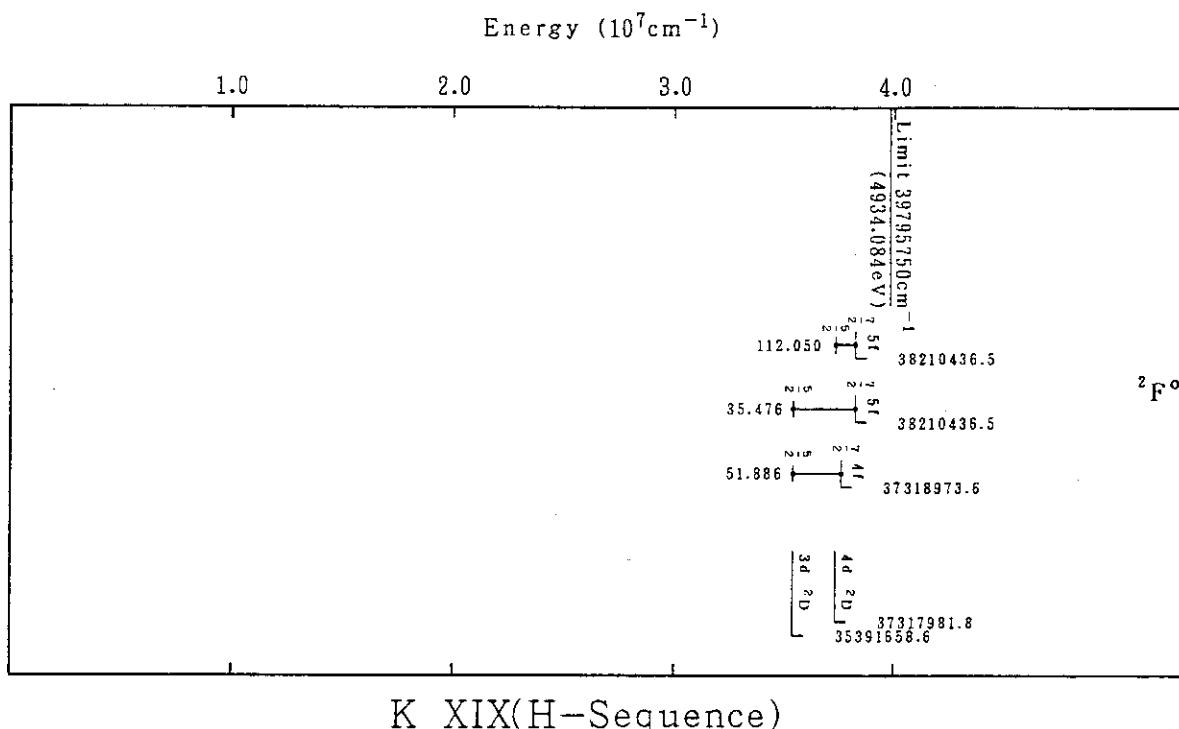
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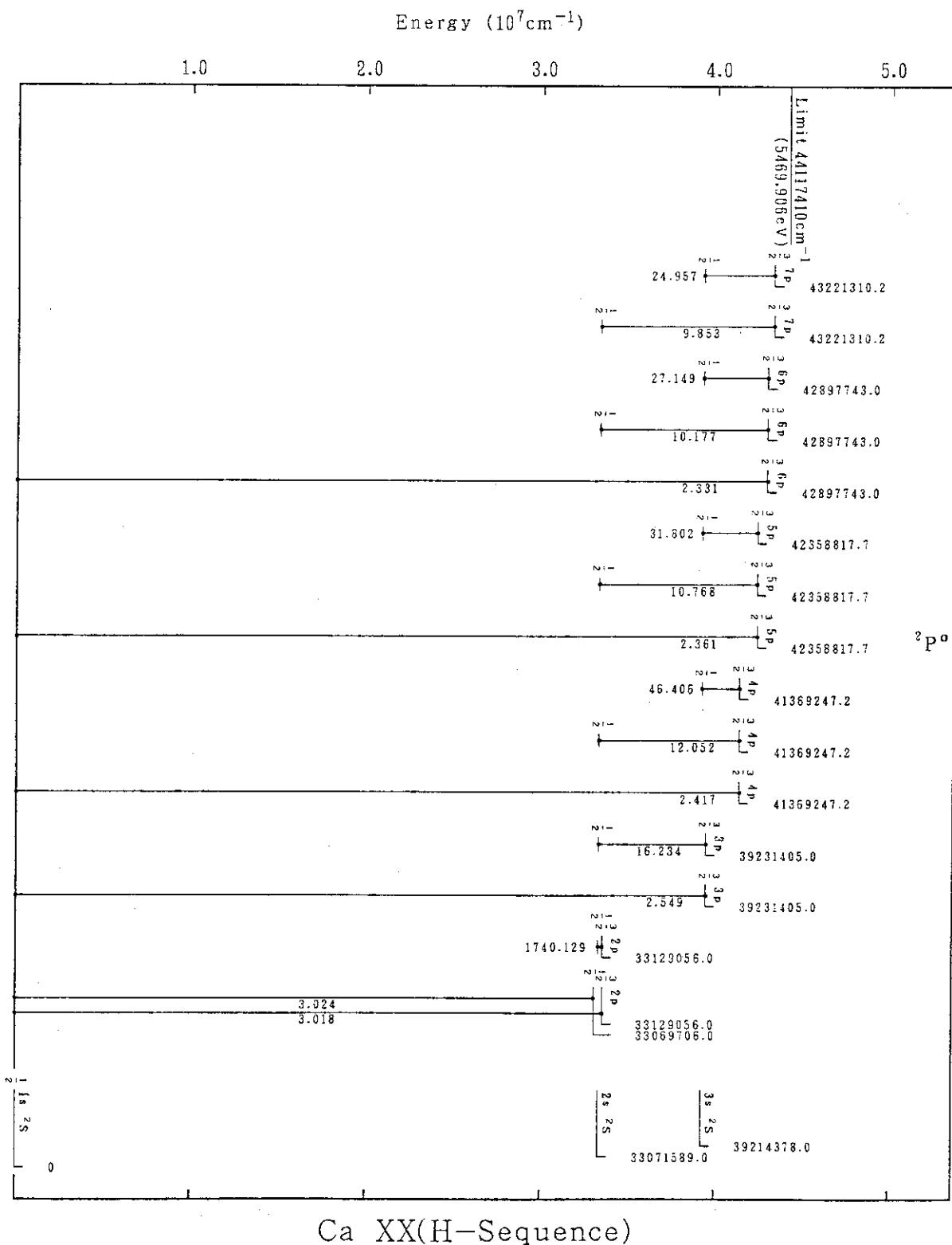
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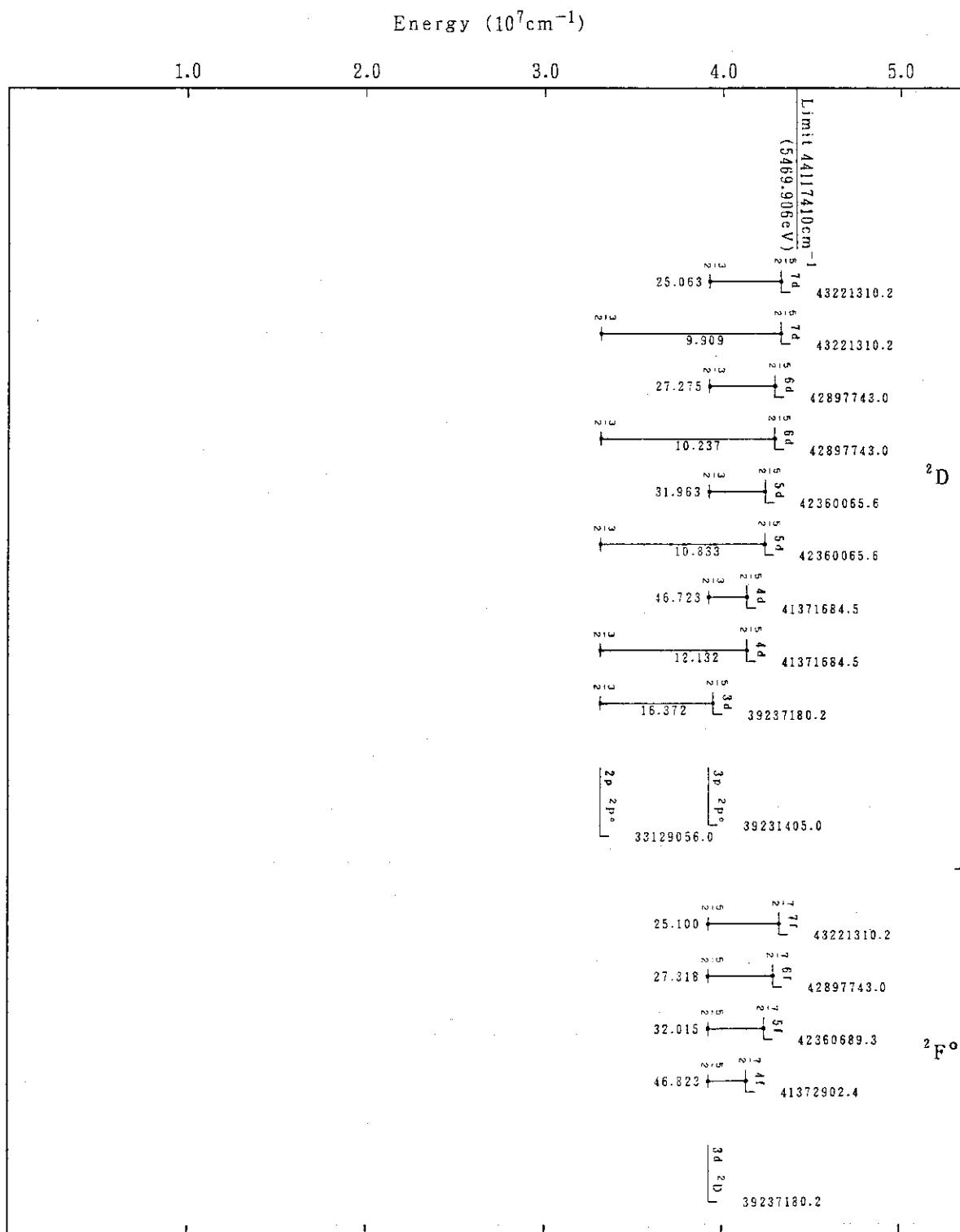


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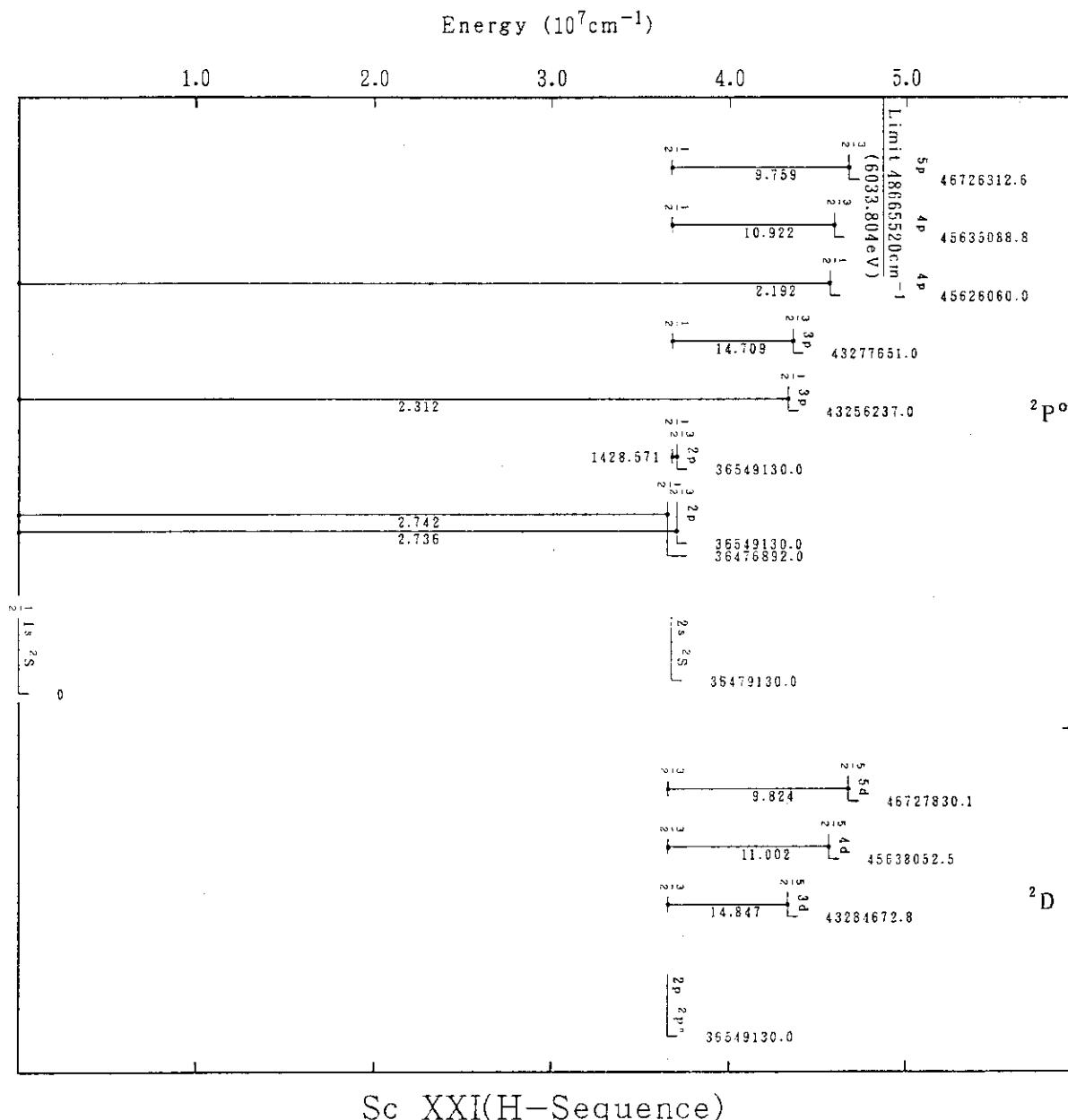


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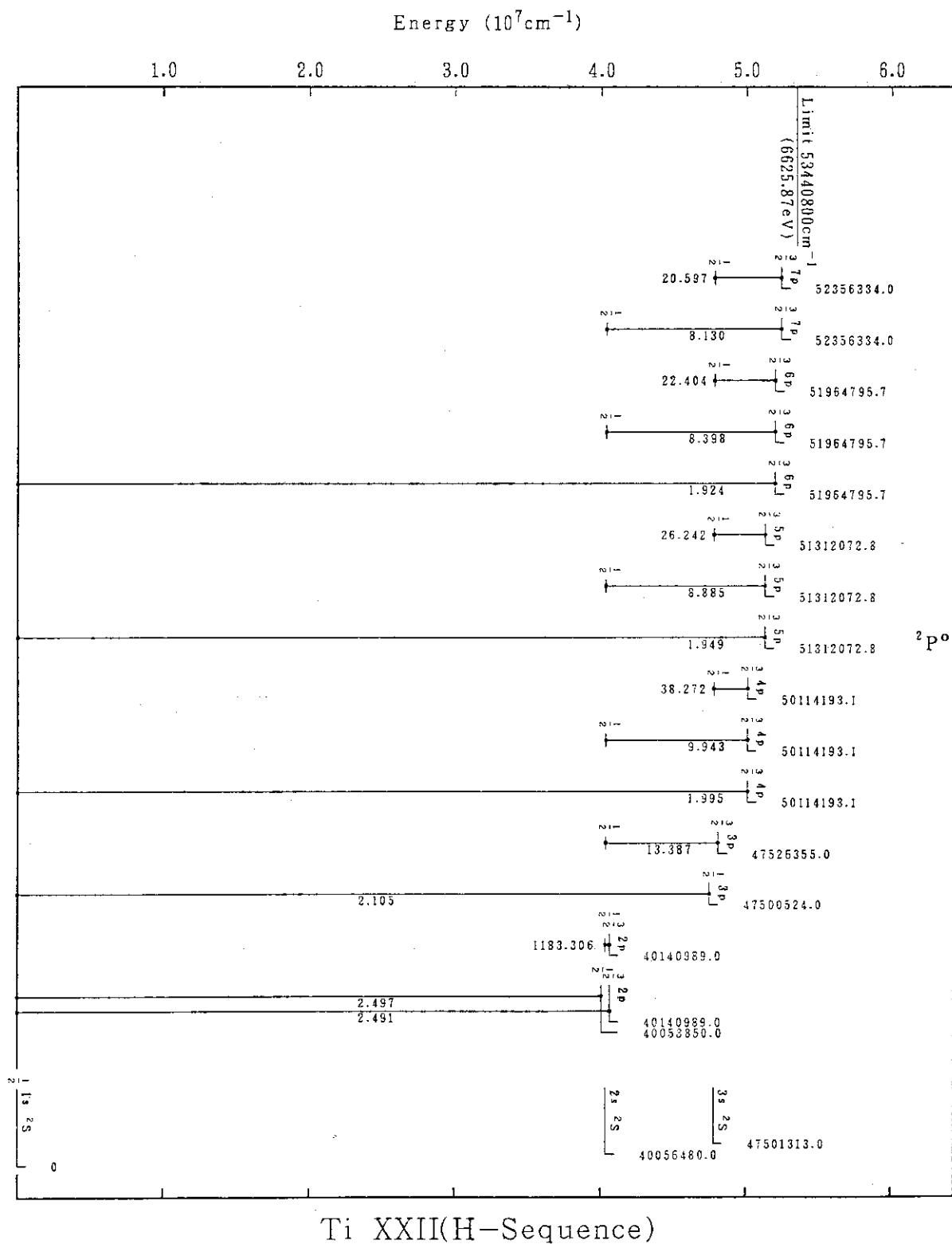




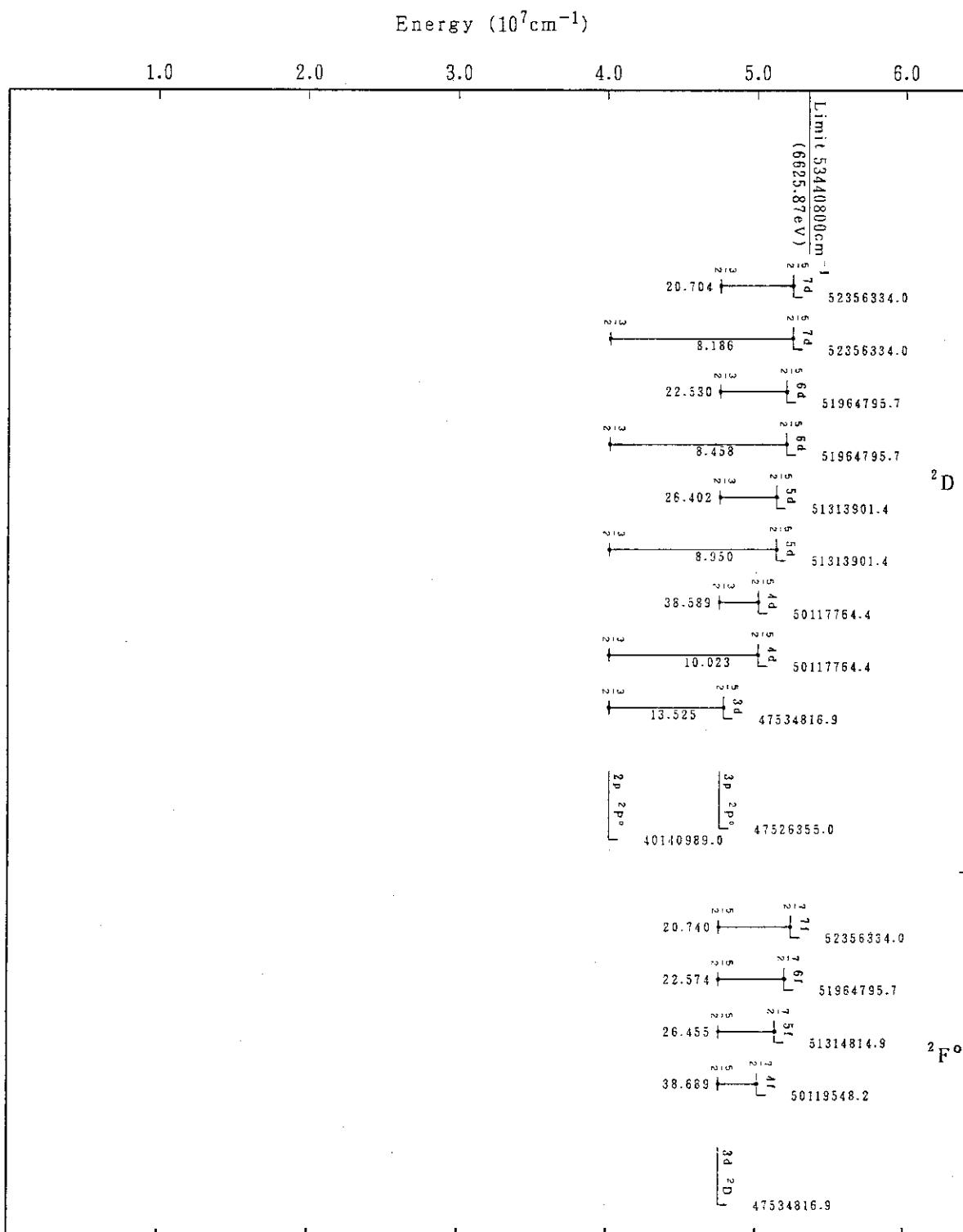
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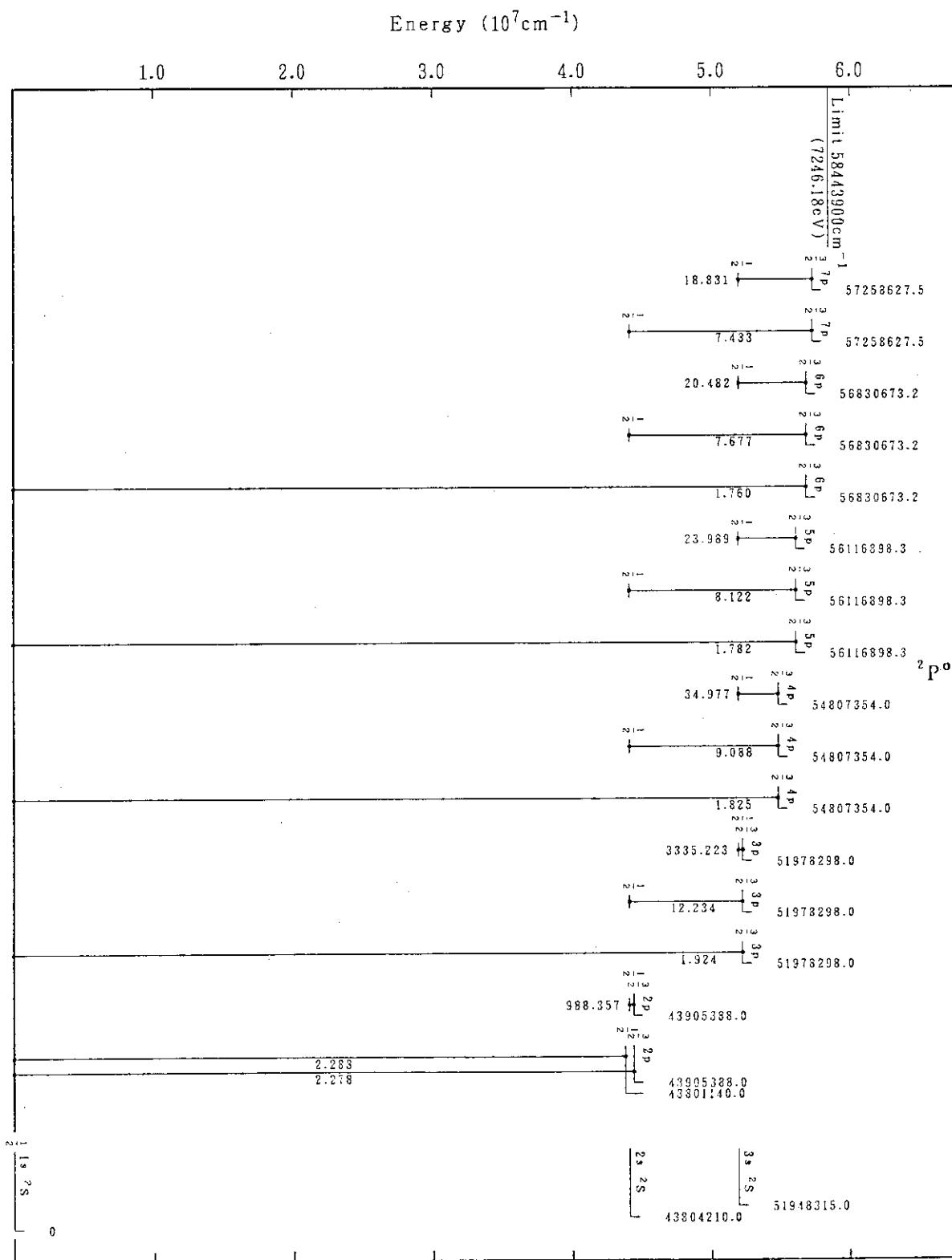
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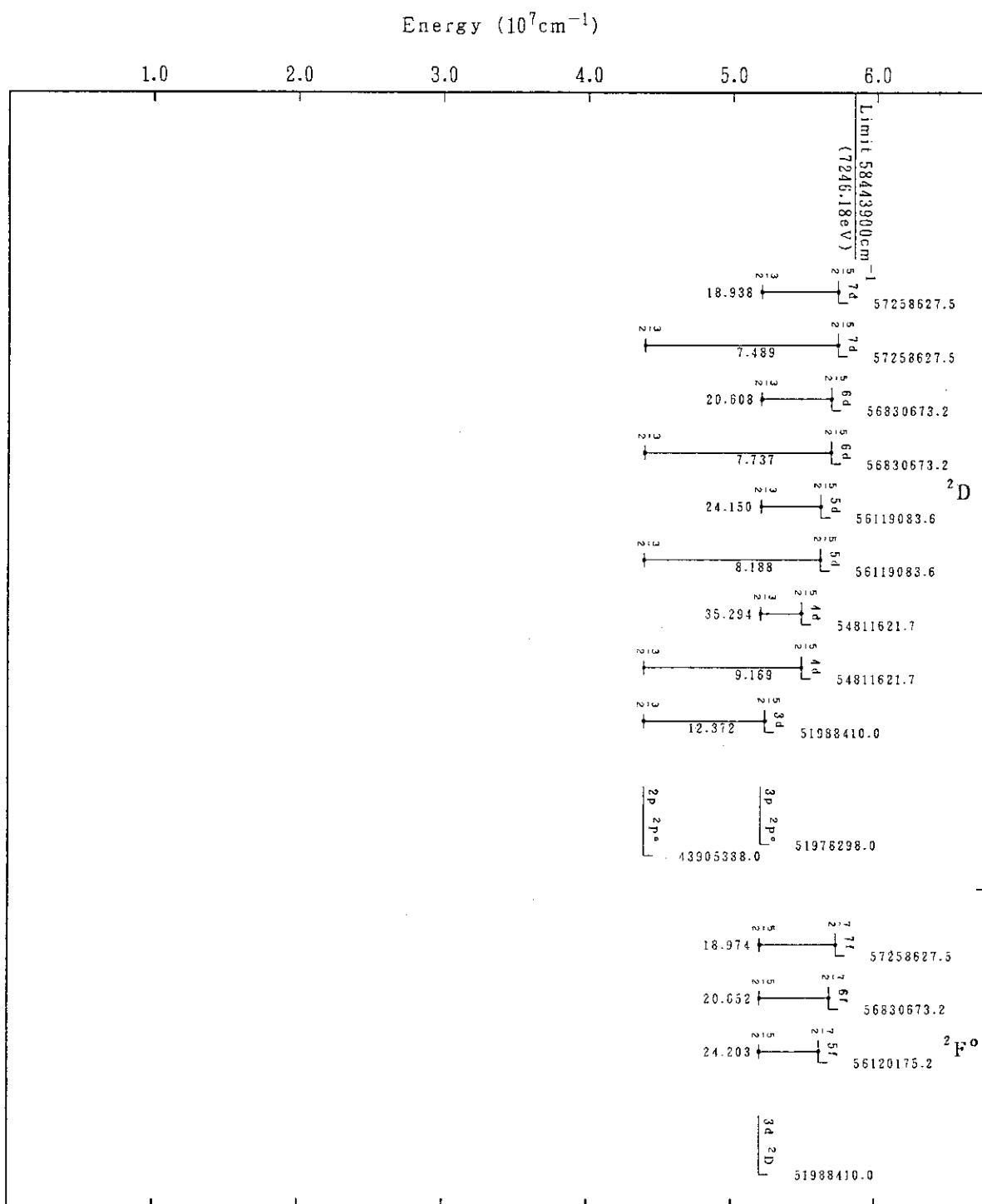
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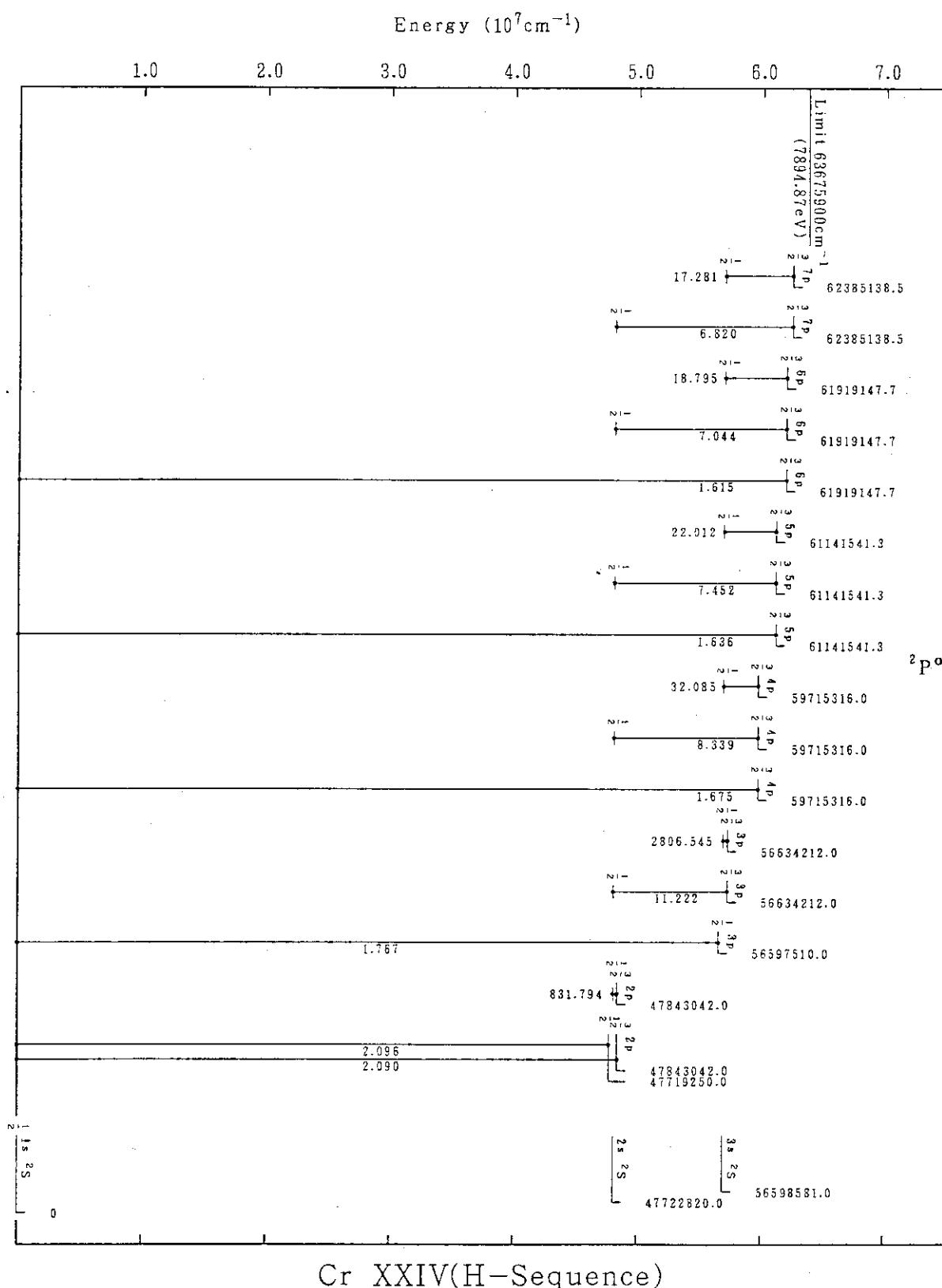
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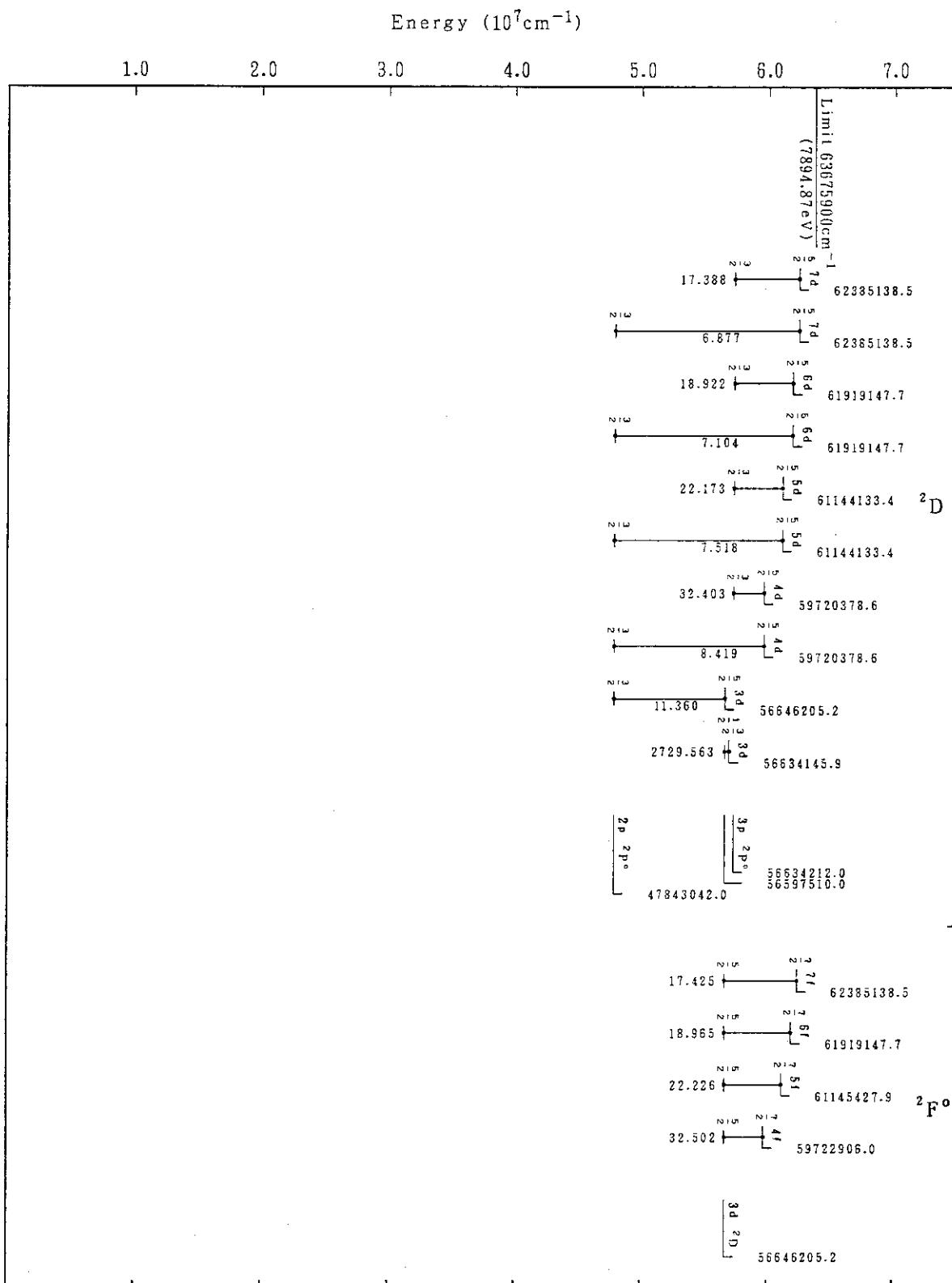


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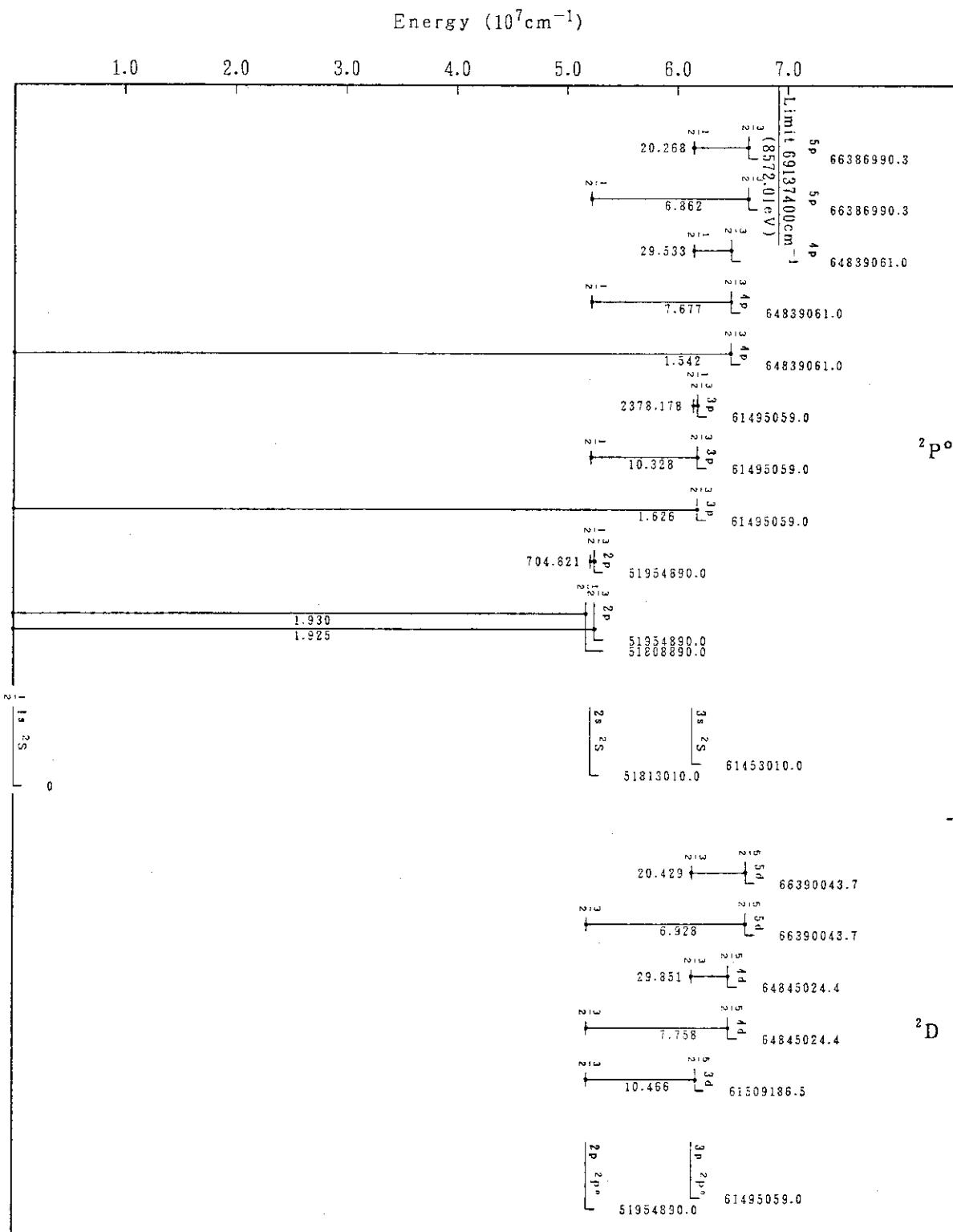


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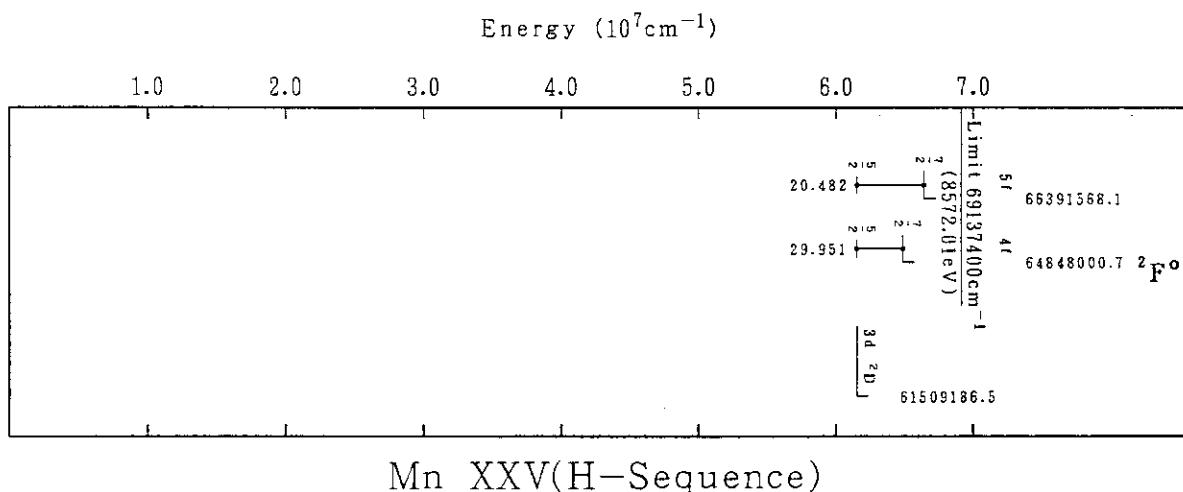


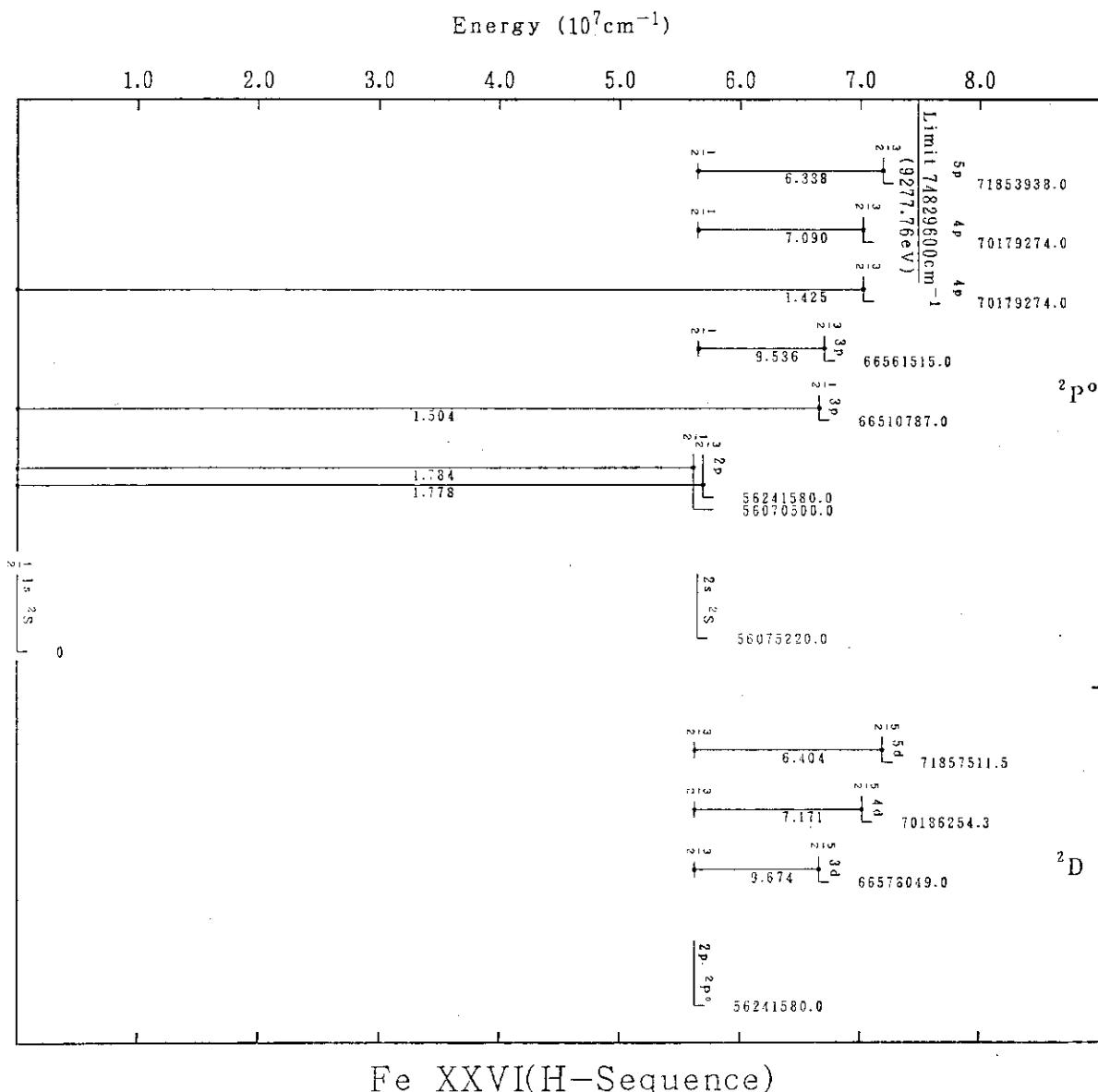


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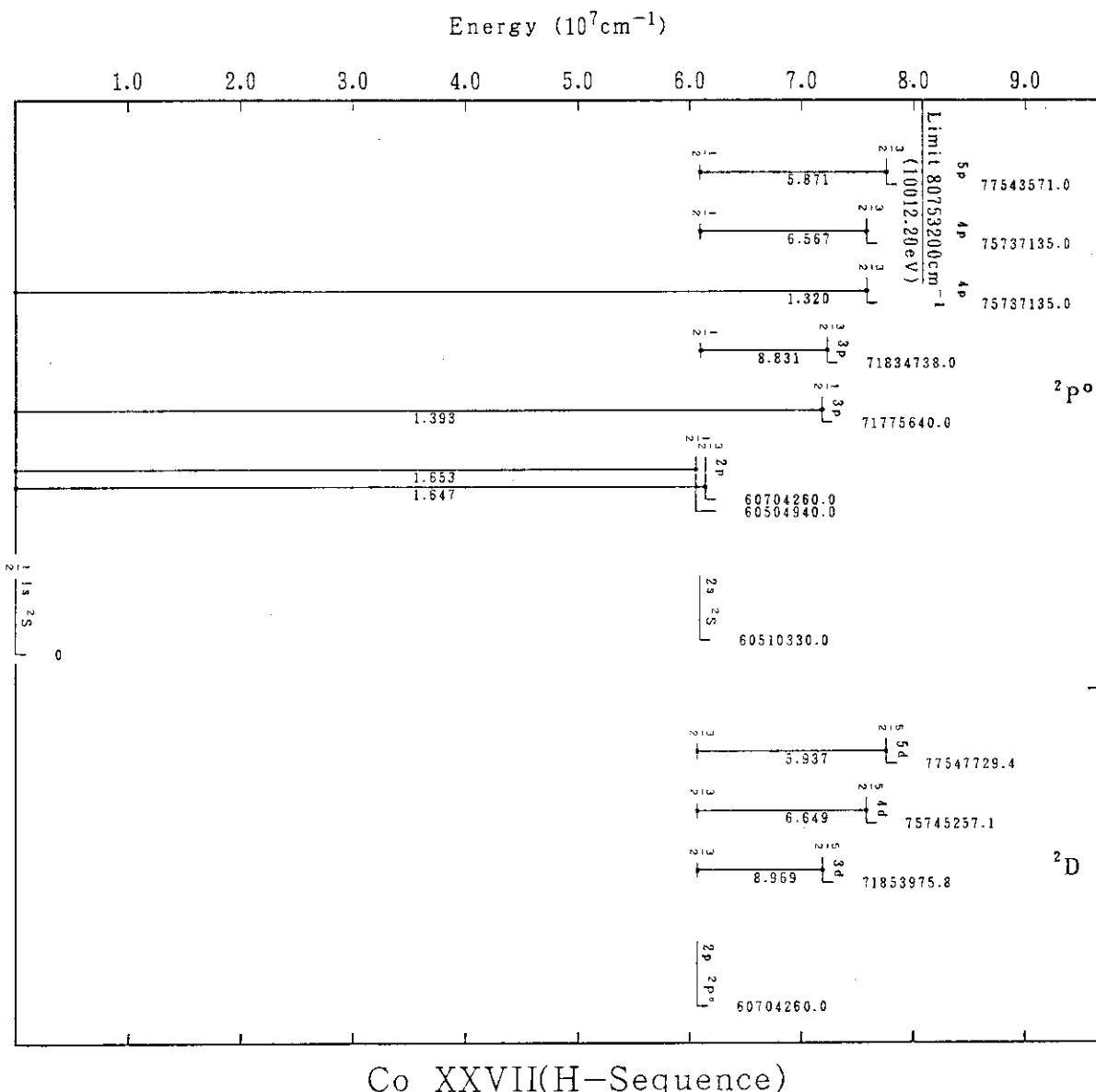


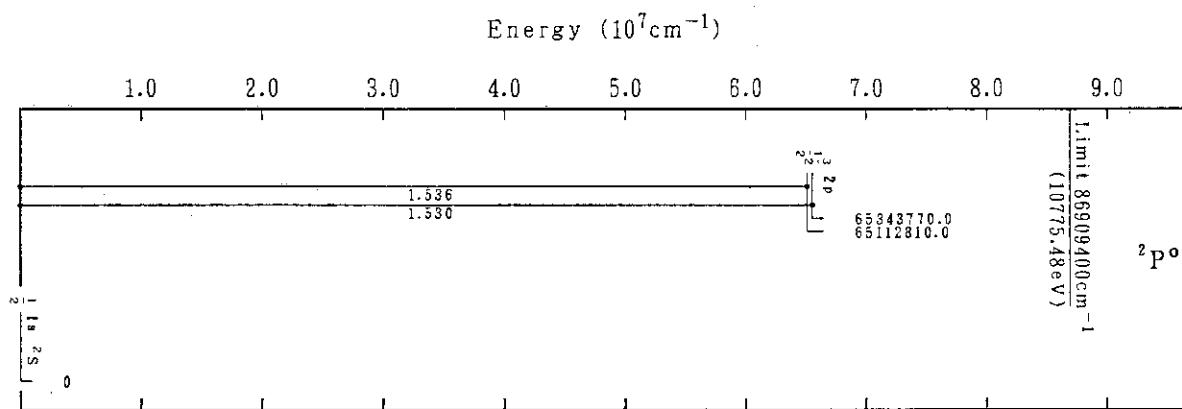
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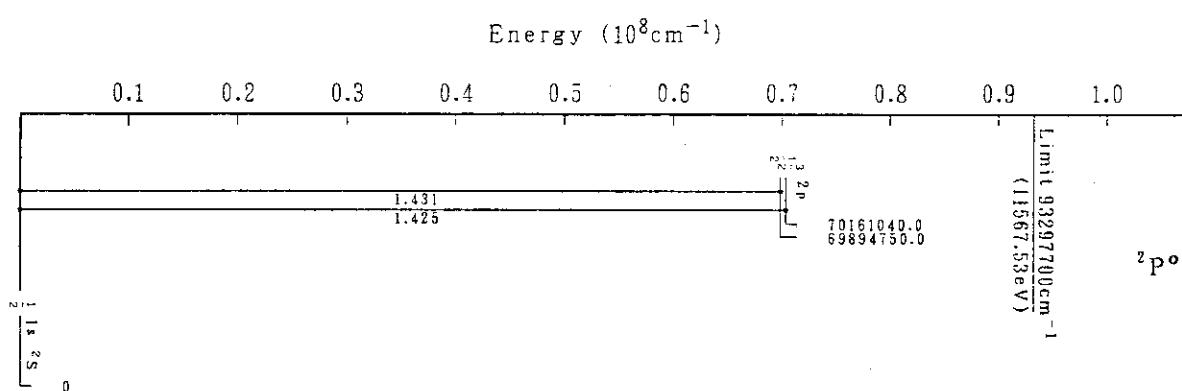


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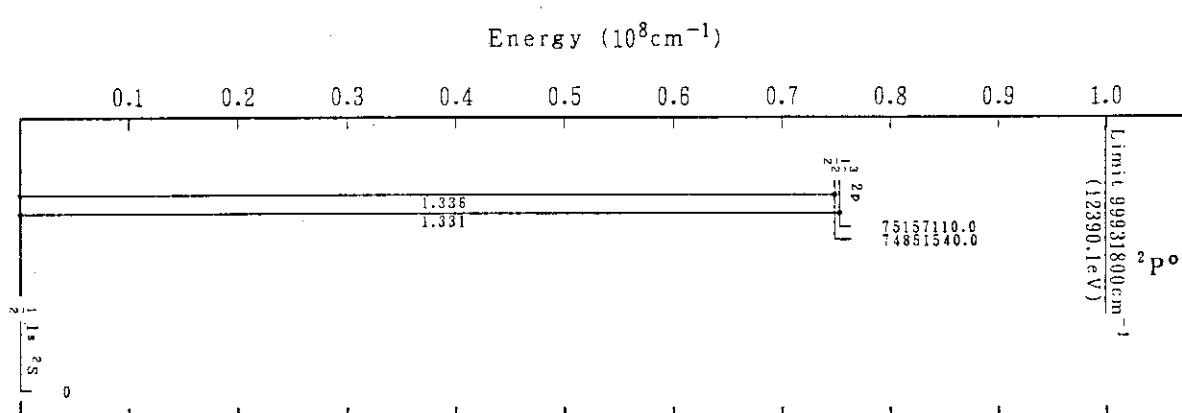




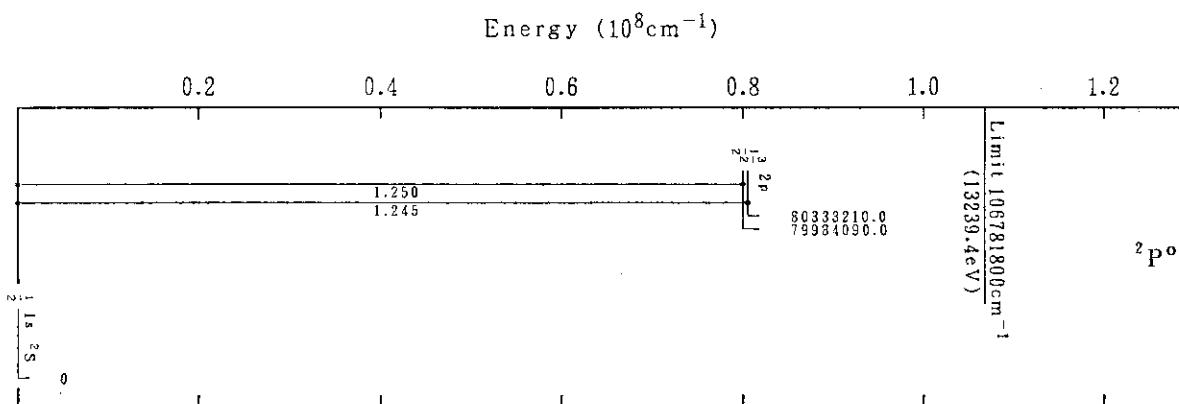
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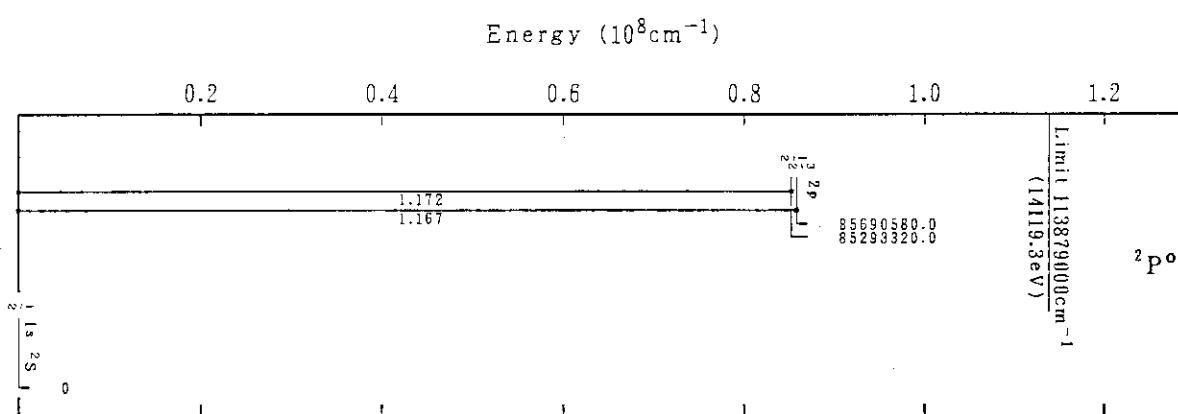
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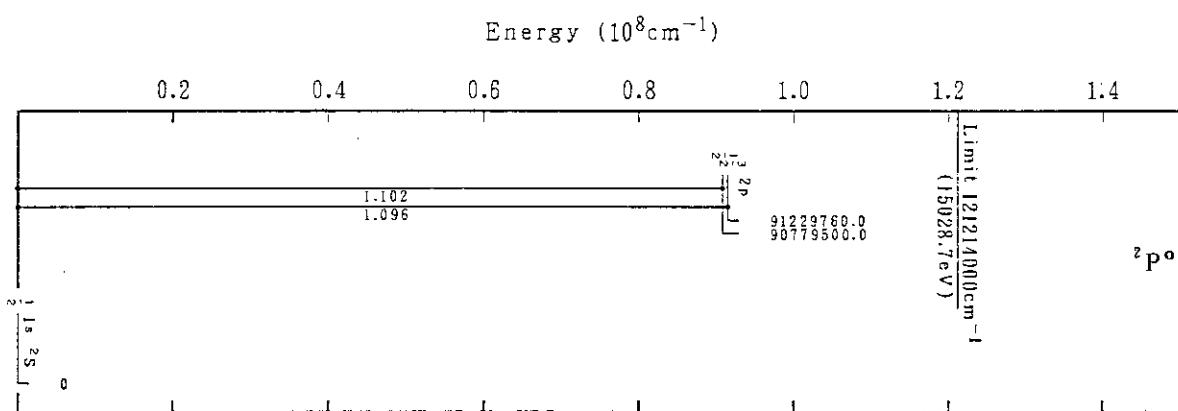
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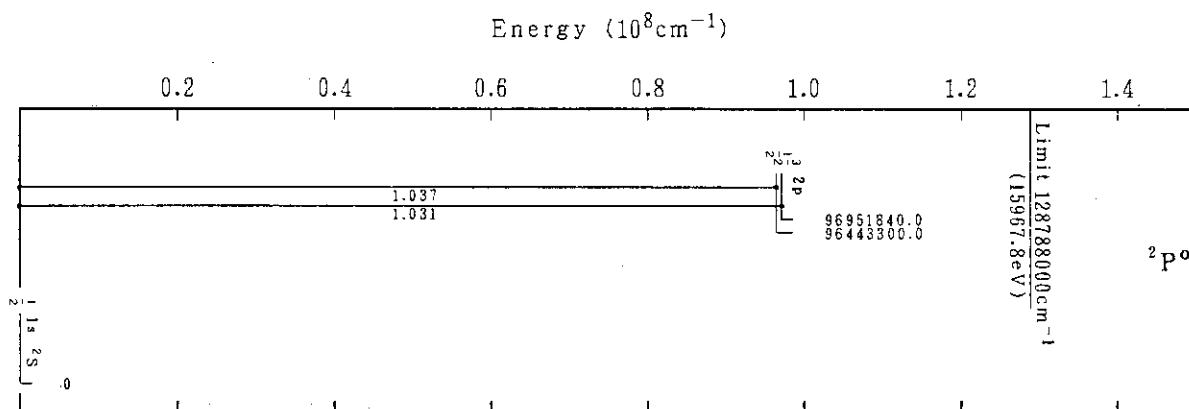
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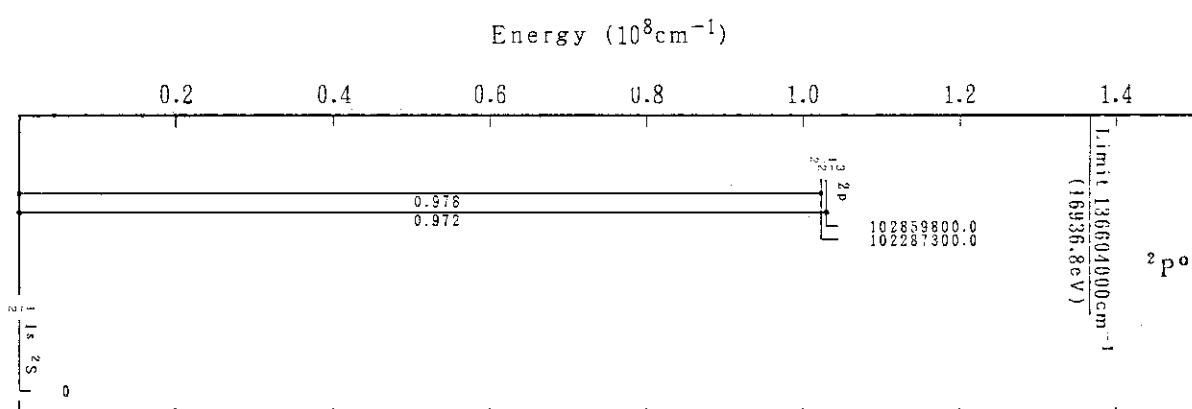
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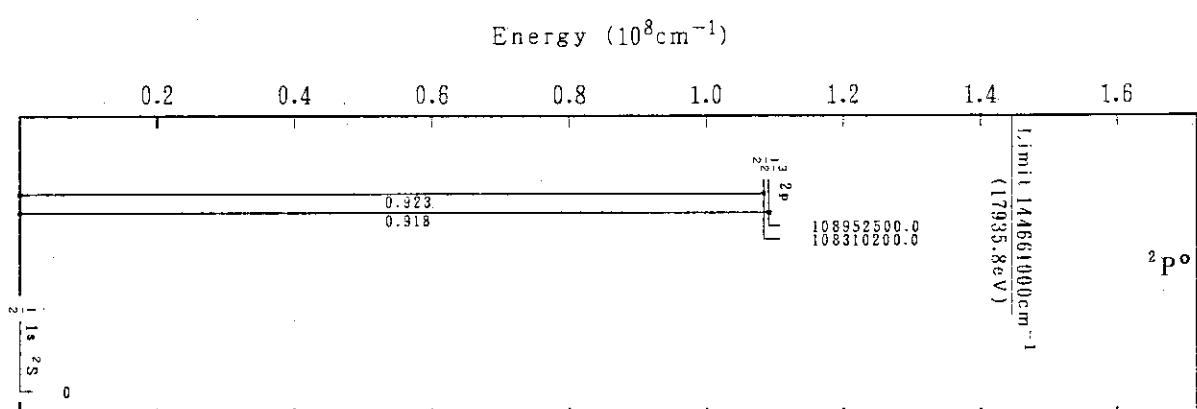
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Se XXXIV(H-Sequence)



Br XXXV(H-Sequence)



Kr XXXVI(H-Sequence)