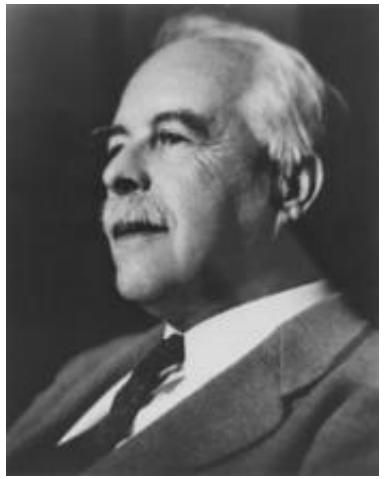
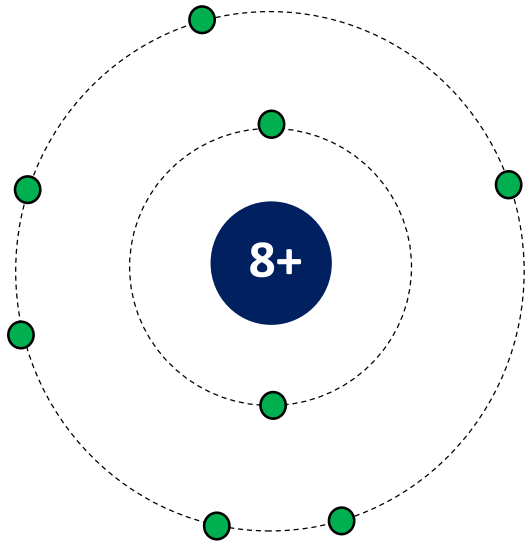
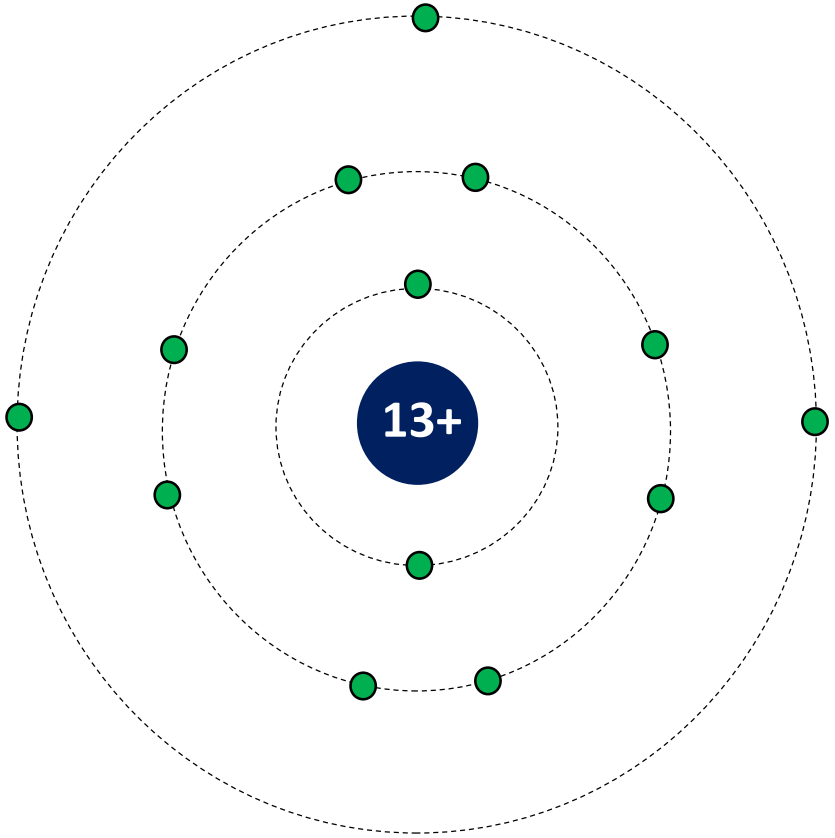
# Valence Electrons & Lewis (Dot) Diagrams



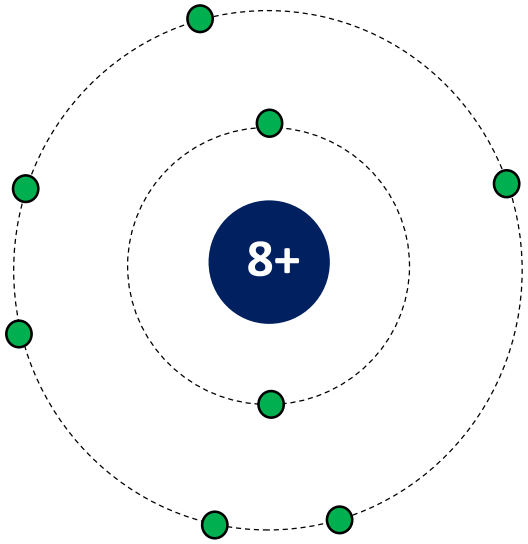
Gilbert Lewis
*(1875 – 1946)*

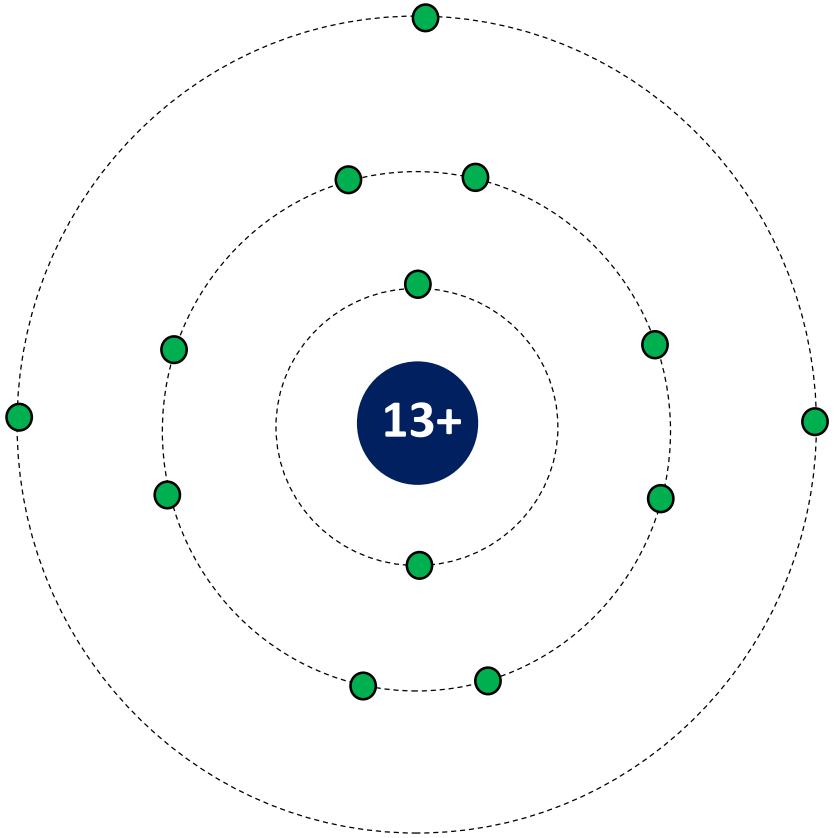
Valence electrons:



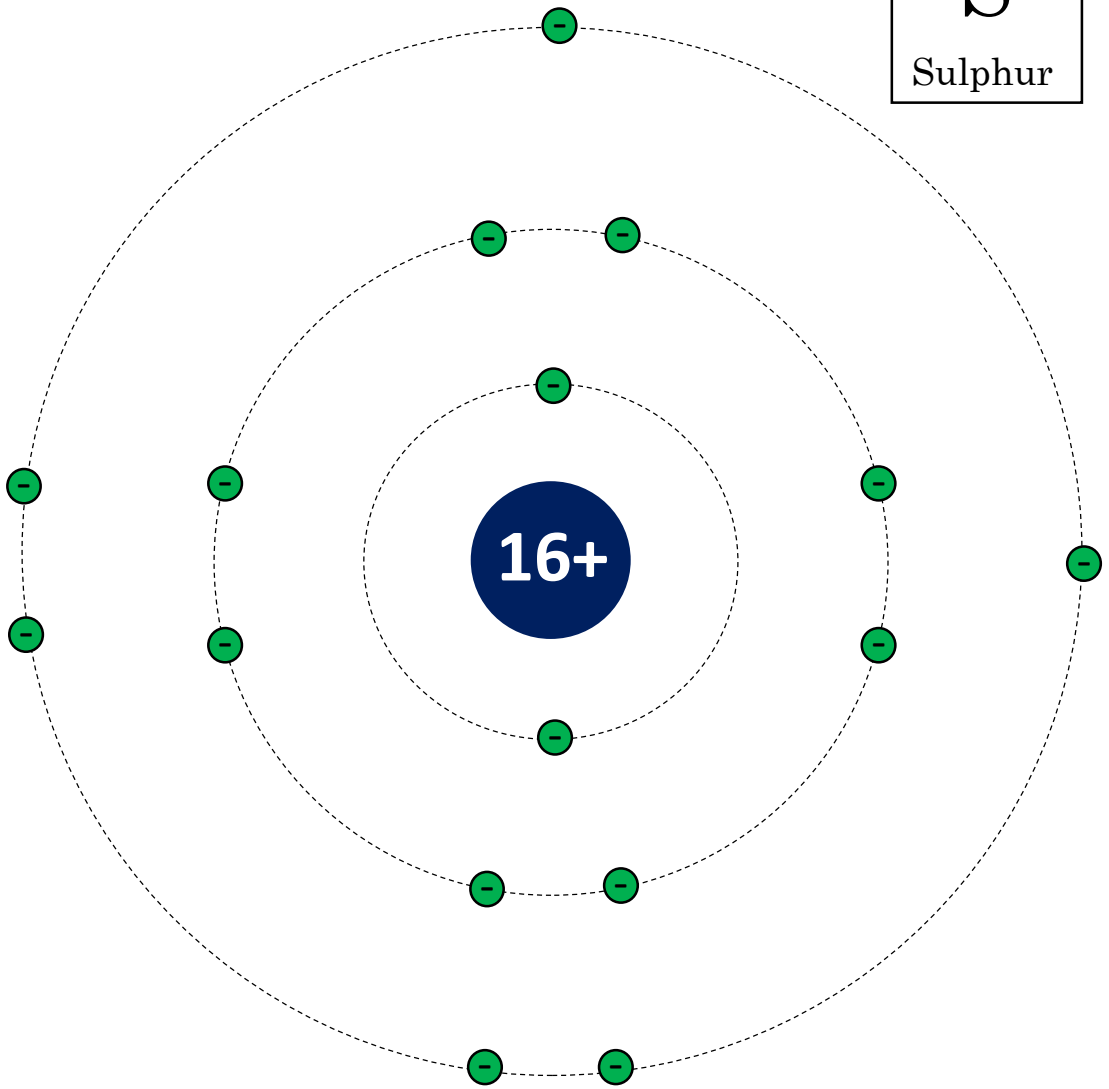
Valence electrons: Electrons that are located in the outermost energy level.



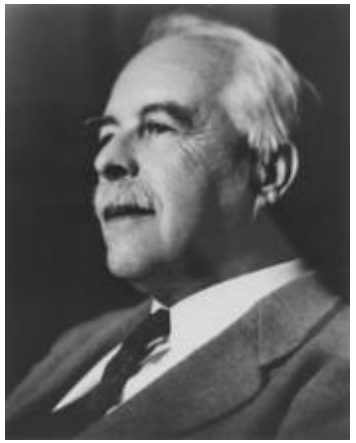



Recall: Bohr–Rutherford Diagrams

16
S
Sulphur




But I don't want to draw all those circles of electrons…



Recall: Bohr–Rutherford Diagrams

16
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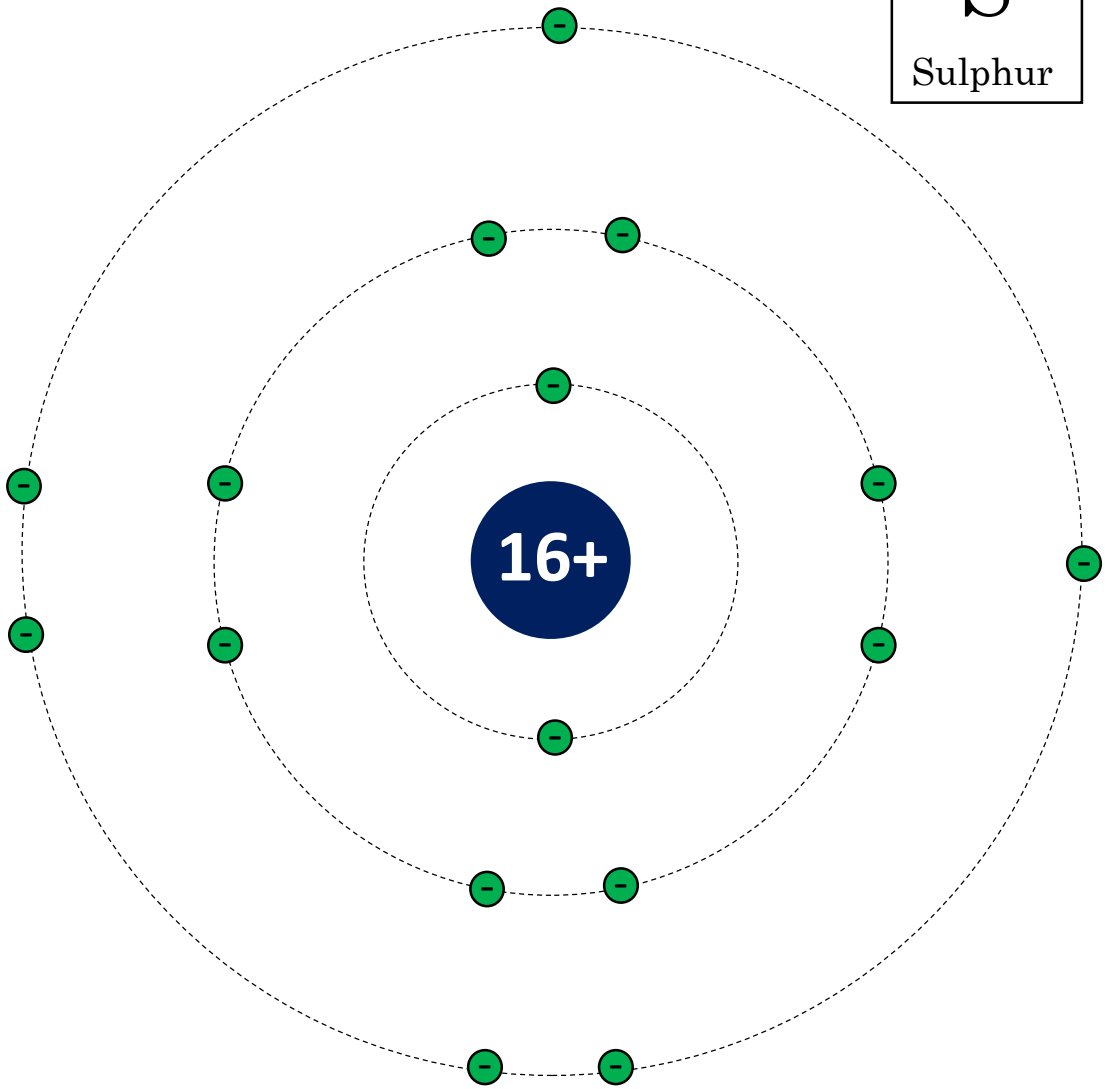
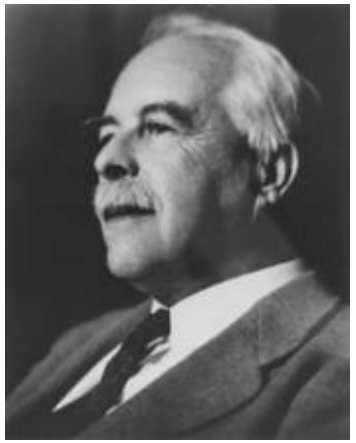
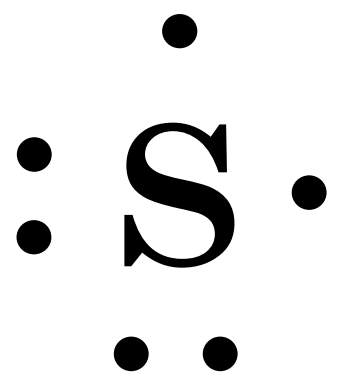



The most important electrons are the **valence** electrons.



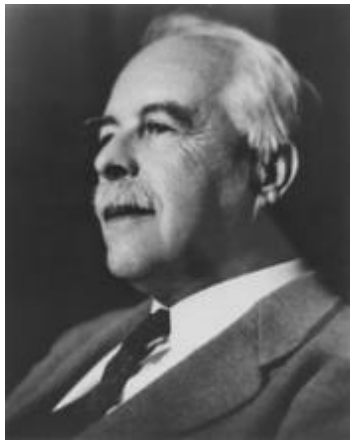
# Lewis (Dot) Diagram:

16
S
Sulphur



Let's just draw the chemical symbol and the valence electrons.

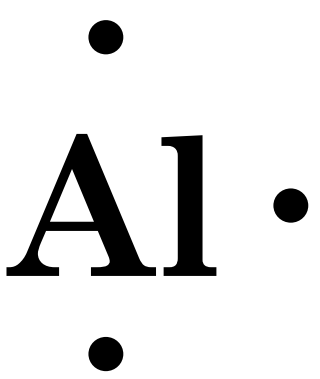
Each dot around the chemical symbol will represent a valence electron.



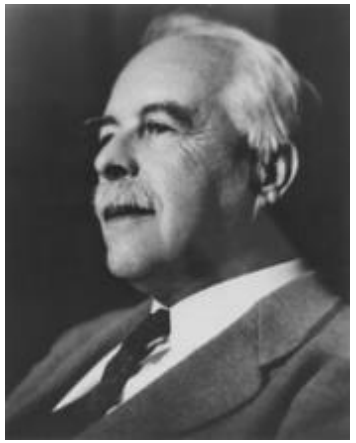
# Lewis (Dot) Diagram:

| 13 |
| --- |
| Al |
| Aluminium |

Example 2: Aluminium




Aluminium atoms have **3 valence** electrons.



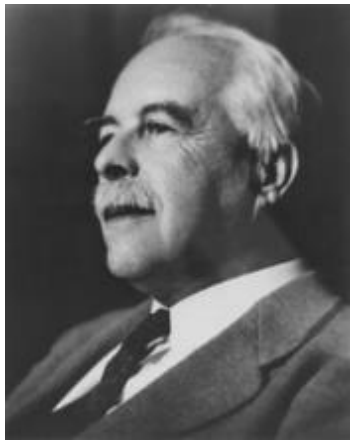
# Lewis (Dot) Diagram:

| 19 |
| --- |
| K |
| Potassium |

Example 3: Potassium

**K** •

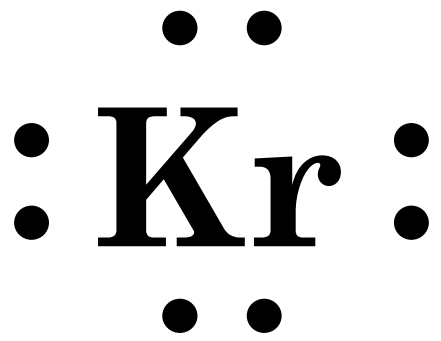
Potassium atoms only have 1 valence electron.



Lewis (Dot) Diagram:

Example 4: Krypton

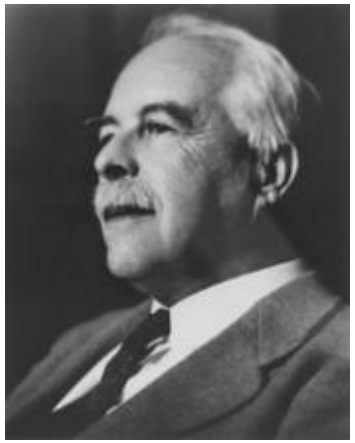
36
Kr
Krypton




Even atoms with more than 20 electrons are easy.

Krypton is in group 8A.

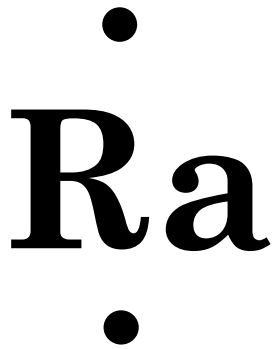
Krypton atoms have **8 valence** electrons.



## Lewis (Dot) Diagram:

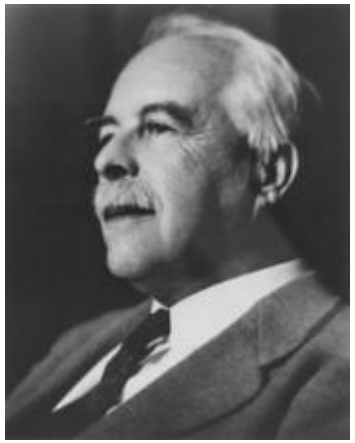
| 88 |
| --- |
| Ra |
| Radium |

Example 5: Radium




Radium is in group 2A.

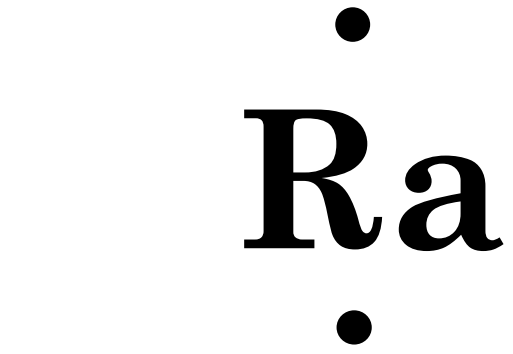
Radium atoms have 2 valence electrons.

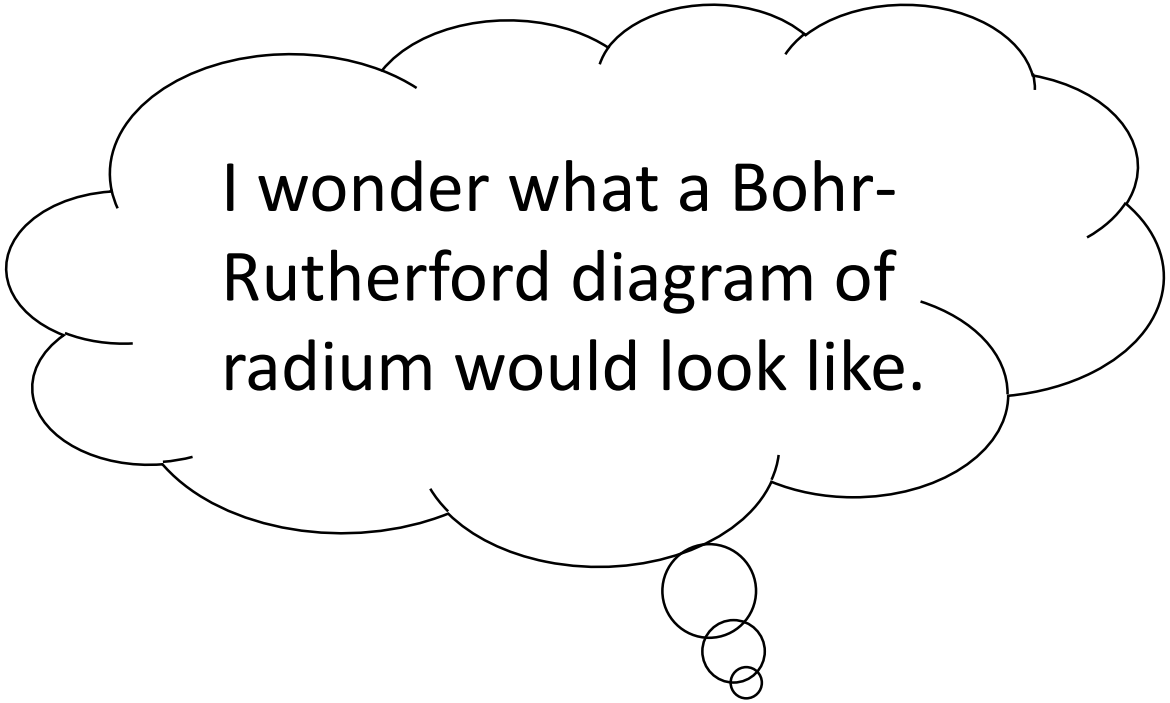


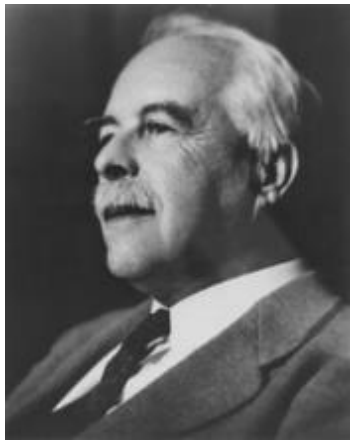
## Lewis (Dot) Diagram:

Example 5: Radium

88
Ra
Radium





88

Ra

Radium