



Modelos Atômicos

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A

graphene

SWCNT

B

graphene

MWCNT

ZnO NP aggregate

r

r_0

k_{out}

k_{in}

$D_{Zn^{2+}}$

Zn^{2+}

Zn^{2+}

$[Zn^{2+}] = [Zn^{2+}]_{bulk} e^{\frac{3.76}{r/nm}}$

Nanomateriais

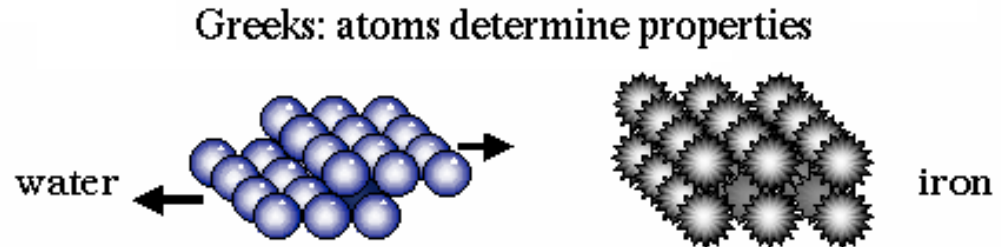
**Os átomos existem
mesmo?**

**Como poderíamos
provar a existência
deles?**

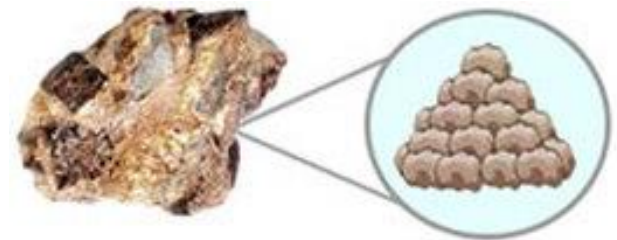
Modelo atômico de Demócrito (460 AC)

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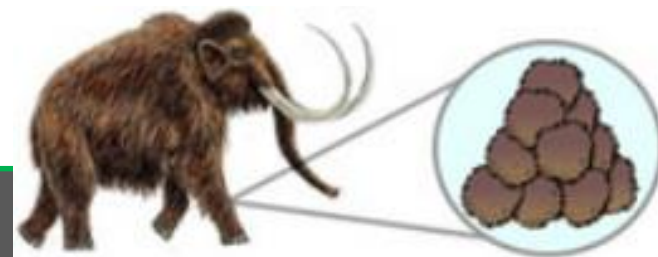
- Os átomos determinam as propriedades



<https://historyofatomictheory.weebly.com/democritus.html>



<http://thehistoryoftheatom.weebly.com/democritus.html>



Modelo atômico de Demócrito (460 AC)

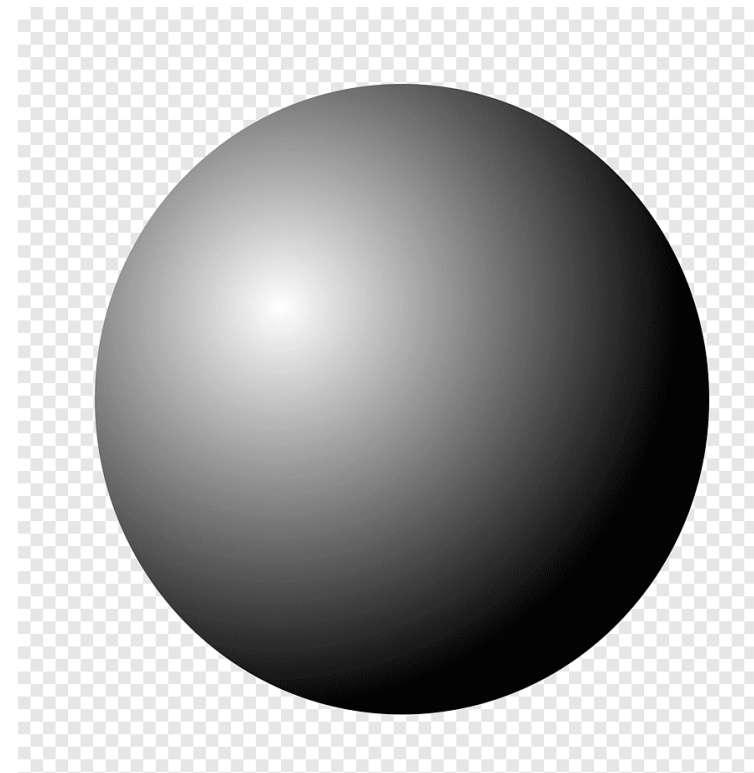
Na visão de Demócrito, como seria um átomo de sal ou vinagre?

Modelo atômico de Dalton (1803 DC)

Postulados:

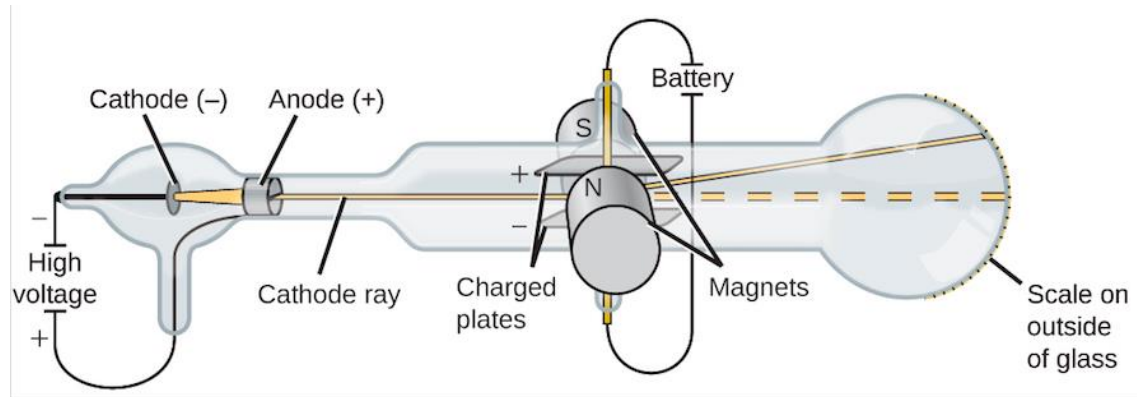
- Todos os átomos de um elementos são idênticos
- Os átomos de diferentes de elementos tem massa diferente
- Um composto é uma combinação específica de átomos de mais de um elemento
- Em uma reação química os átomos não são criados nem destruídos, eles apenas trocam de parceiros tonando-se novos compostos

Como base em que Dalton propõe seu modelo atômico?



Modelo atômico de Thomson (~ 1900)

□ *Breakthrough* em 1897:

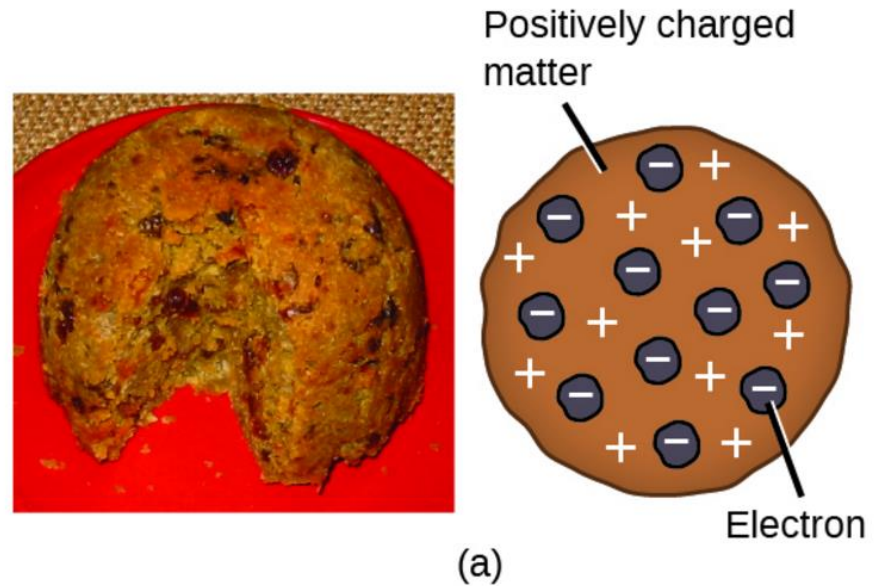


<https://www.khanacademy.org/science/chemistry/electronic-structure-of-atoms/history-of-atomic-structure/a/discovery-of-the-electron-and-nucleus>

□ Video- Thomson experiment

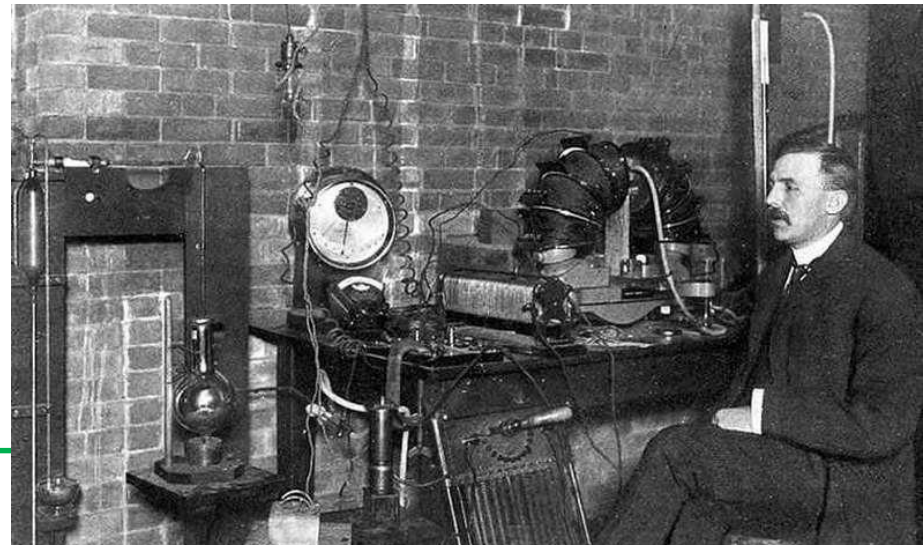
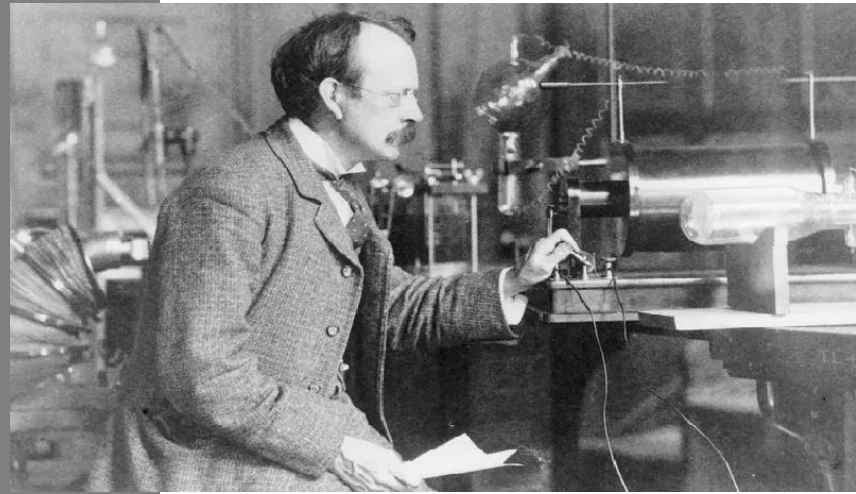
<https://www.youtube.com/watch?v=O9Goyscbazk>

Modelo atômico de Thomson (~ 1900)



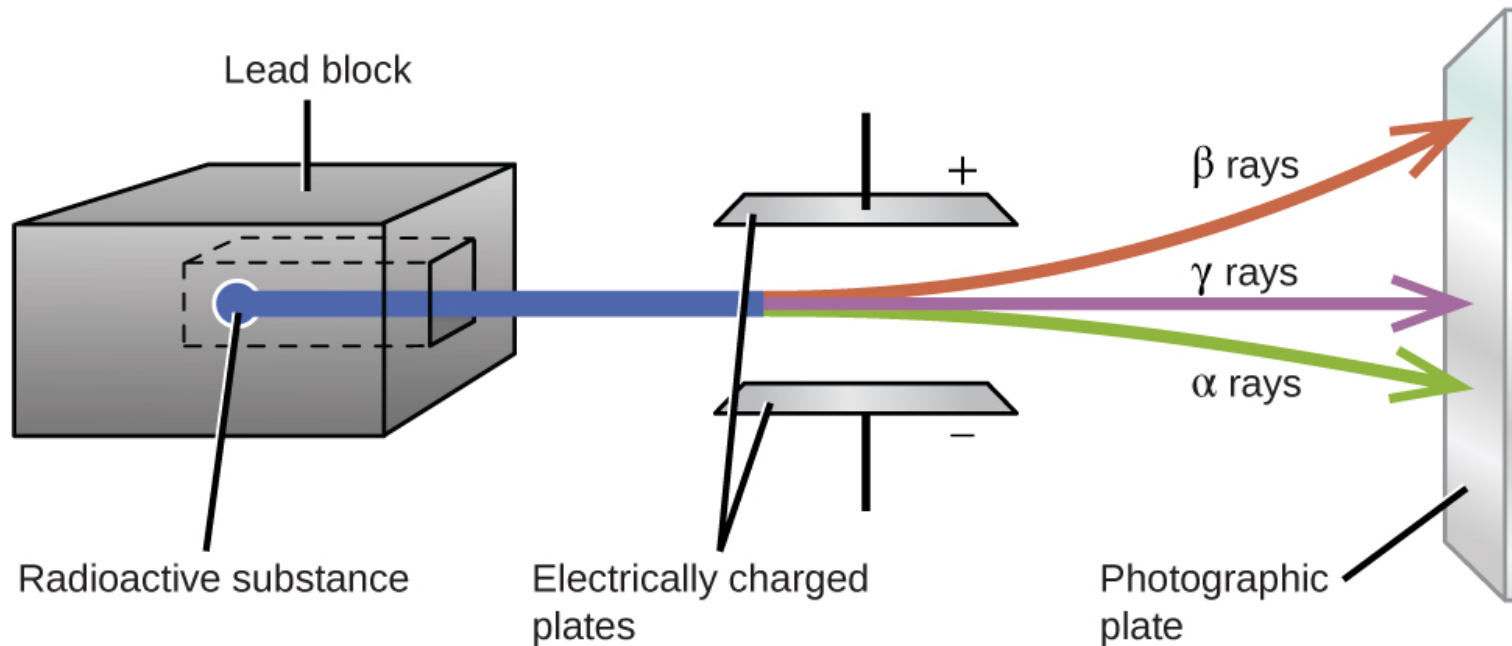
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Thomson & Rutherford



Átomos emitem partículas

☐ Qual a implicação disso?



https://cnx.org/resources/23928b246551b14c3af853d079543699cb7e25b5/CNX_Chem_21_03_Radiation.jpg

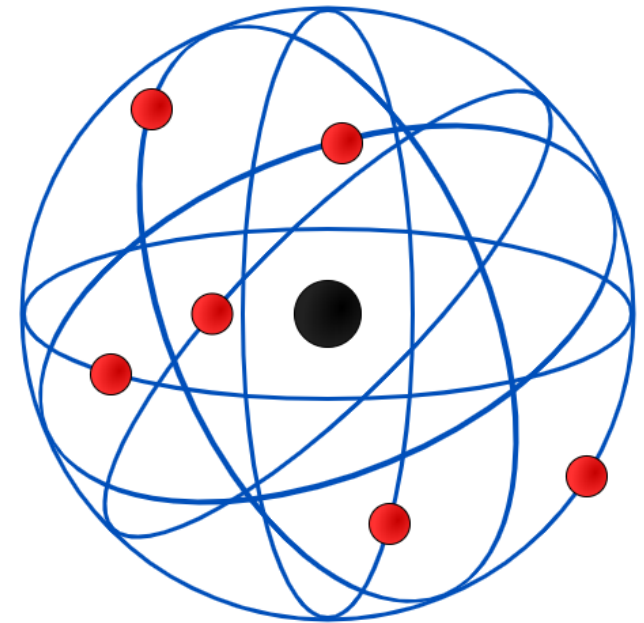
Modelo atômico de Rutherford (1911)

❑ O que fundamenta o modelo de atômico de Rutherford?

❑ Video- Rutherford experiment

<https://www.youtube.com/watch?v=XBqHkraf8iE>

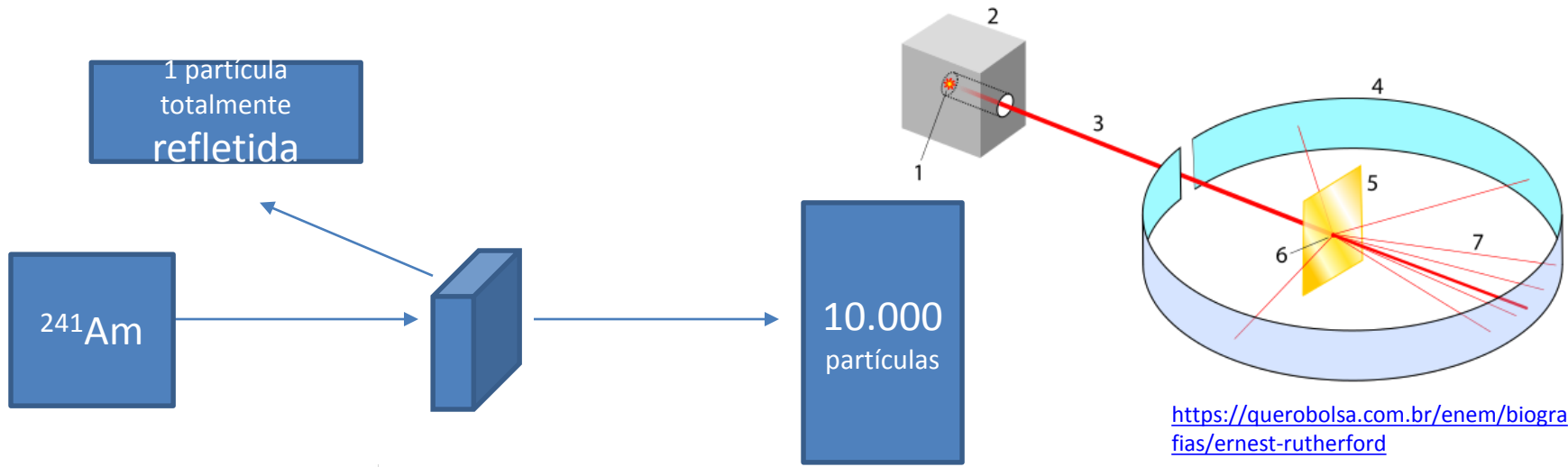
❑ Vamos ilustrar o resultado



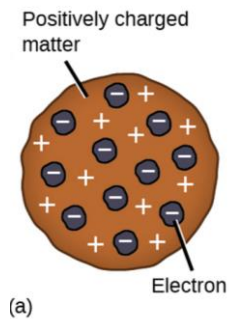
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Modelo atômico de Rutherford (1911)

Ilustração do resultado

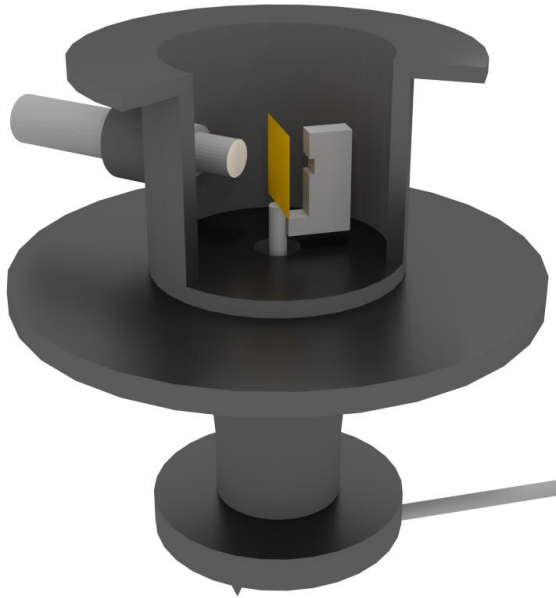
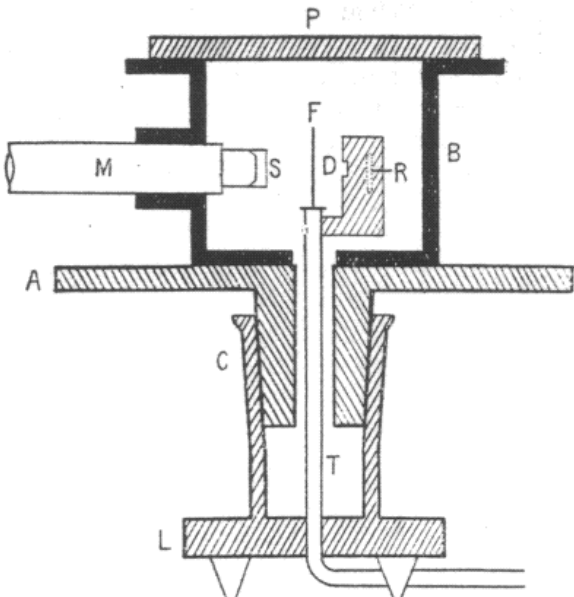


<https://querobolsa.com.br/enem/biografias/ernest-rutherford>



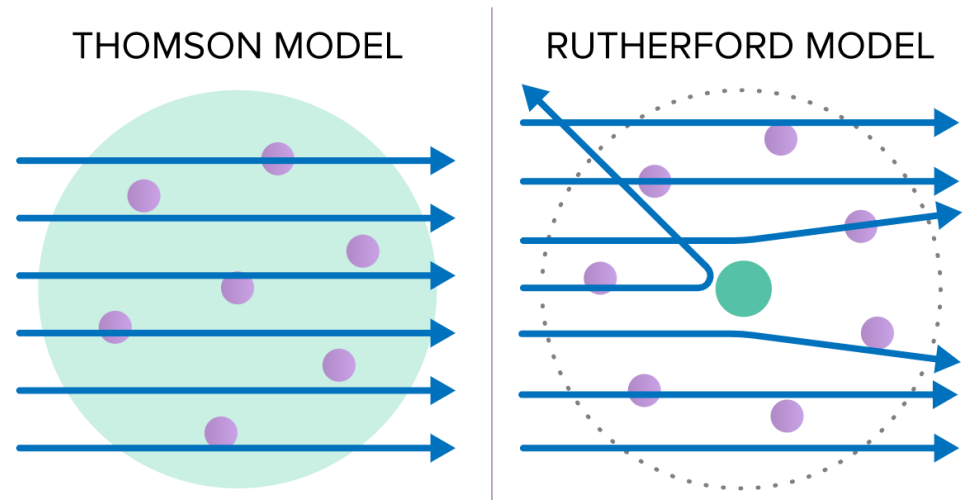
https://en.wikipedia.org/wiki/Geiger%E2%80%99s_Marsden_experiment#The_1908_experiment

Aparato experimental original Geiger & Marsden 1913



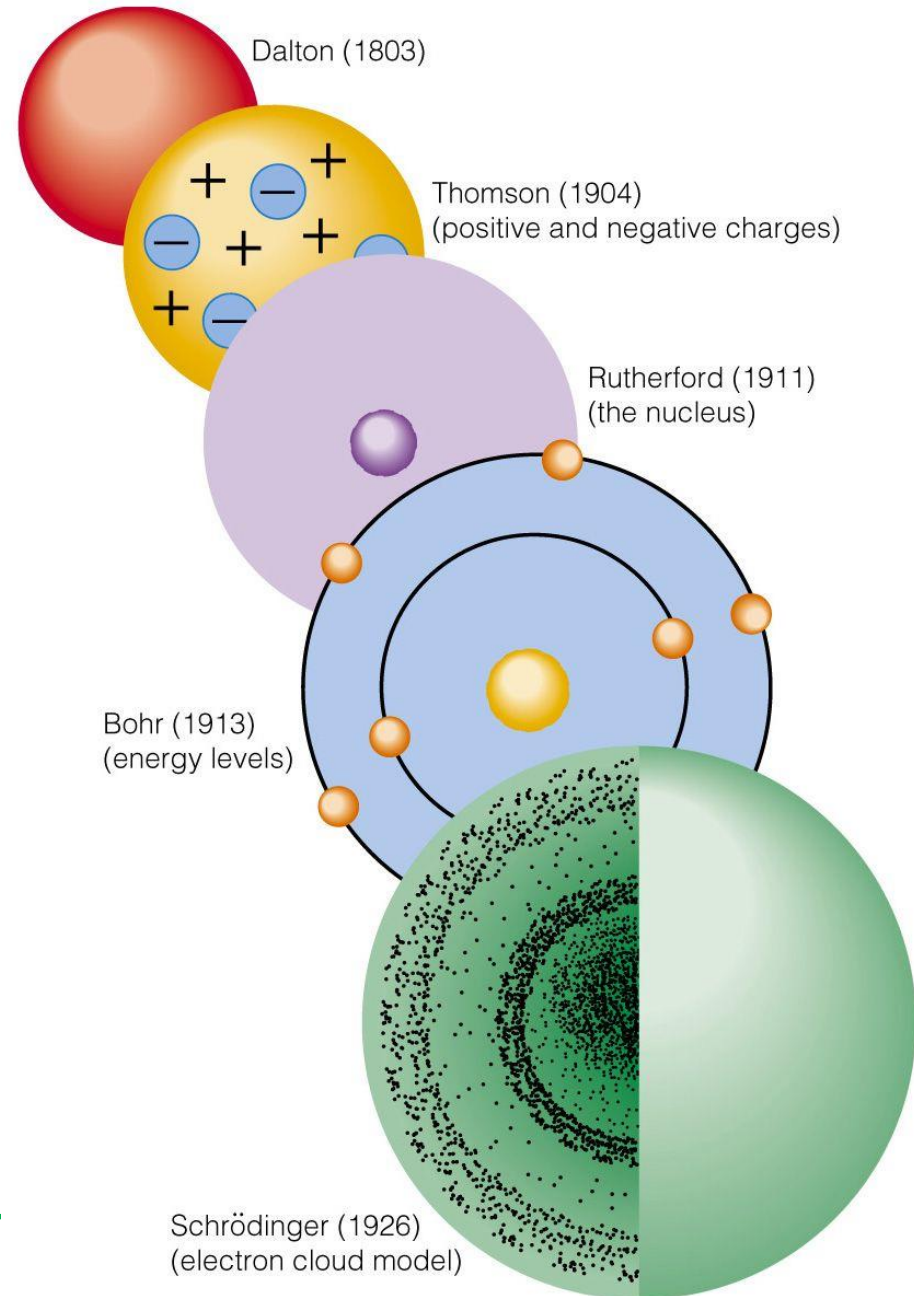
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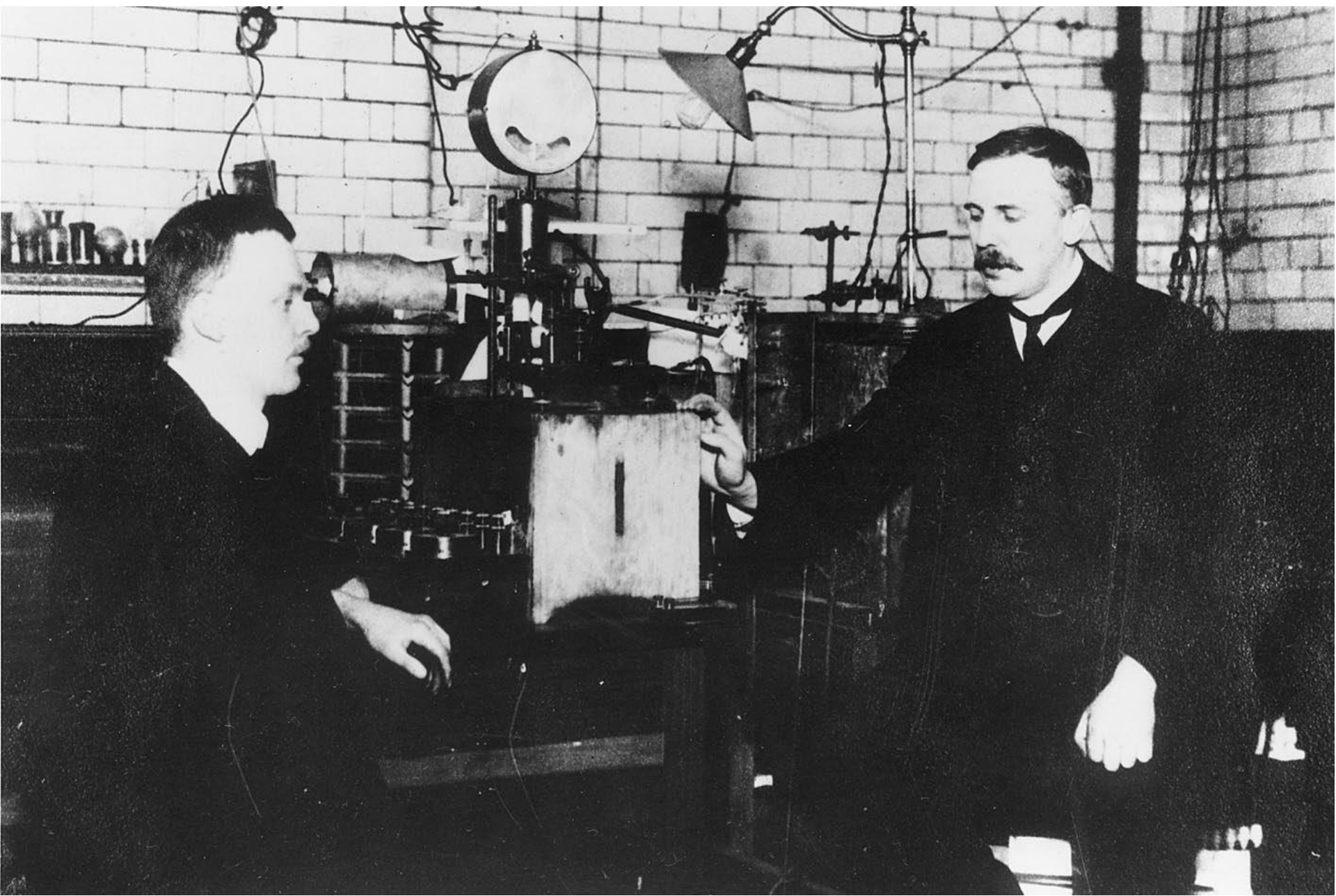
❑ O vazio....



<https://www.khanacademy.org/science/chemistry/electronic-structure-of-atoms/history-of-atomic-structure/a/discovery-of-the-electron-and-nucleus>

Evolução dos modelos atômicos





Próxima aula

- Isótopos
- Partículas nucleares

