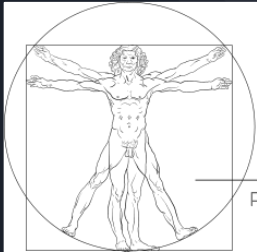


Concept of Atoms and reality in Future Brazilians Chemistry Teachers

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PCM

PÓS-GRADUAÇÃO EM EDUCAÇÃO PARA A
CIÊNCIA E A MATEMÁTICA
UNIVERSIDADE ESTADUAL DE MARINGÁ





Introduction

- Why Study History and Philosophy of Science?
 - Revisit the memory of great scientists of the past
 - Humanize the sciences and bring them closer to the personal, ethical, cultural and political interests of the community
 - Consider how the development of a theory or scientific thought relates to its moral, spiritual, cultural and historical context



Objective

Constitute data referring to the conceptions of what is reality and what is an atom in the discipline of Supervised Internship 2 in a Chemistry Course at a public university in south of Brazil. **With focus on:** The History of Atomic models to teach the atomic hypothesis in high school students.

Methodology

- Six students of the 4th year of the Chemistry course;
- The students should plan a didactic sequence for high school;
- About the History of the atomic models and the atomic hypothesis;
- The students expressed some possible doubts that the high school students could present on the atom hypothesis.





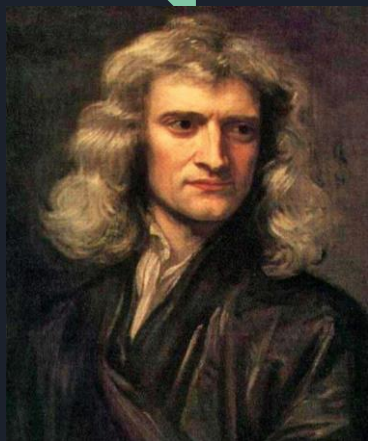
Does the Atom Exist????

“Yes, we can have evidence with spectroscopy”

“Yes, because the objects are here as evidence for the existence of the atom”



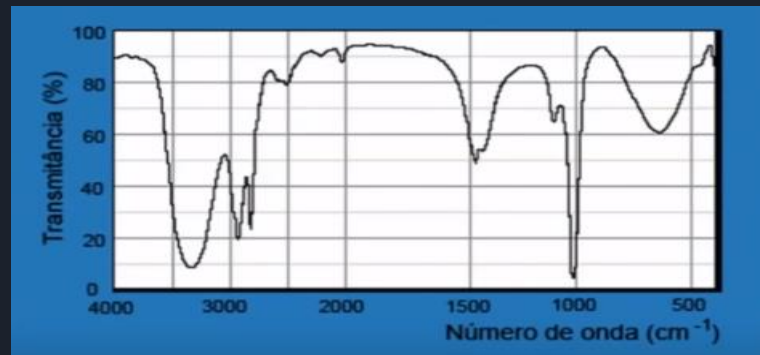
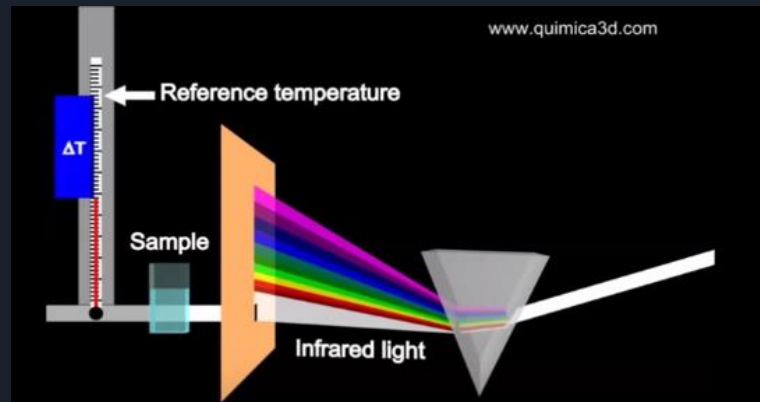
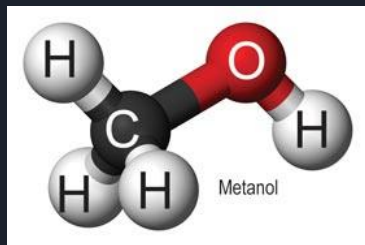
“Yes, we can have evidence with spectroscopy”



Isaac Newton

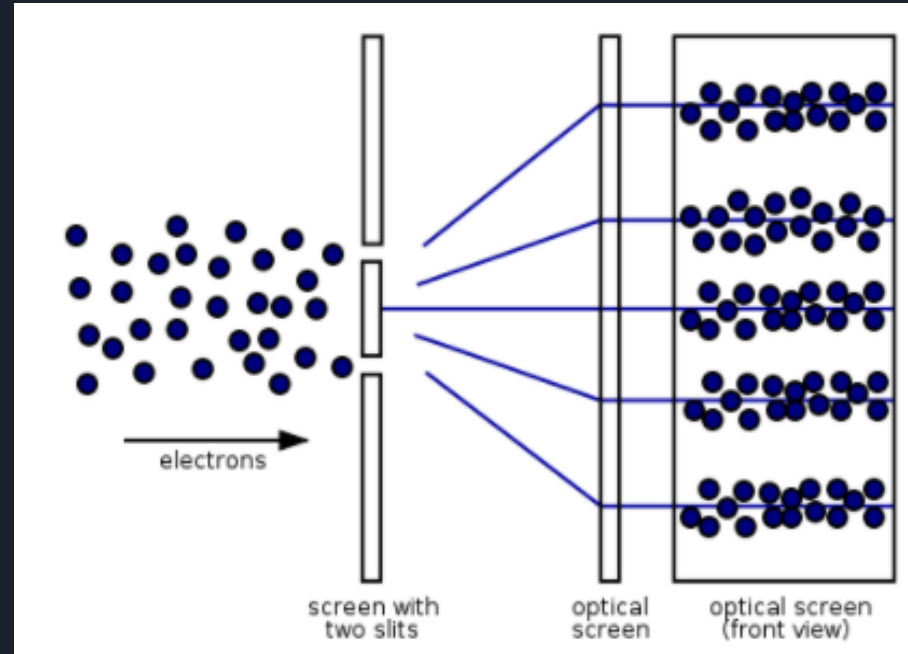
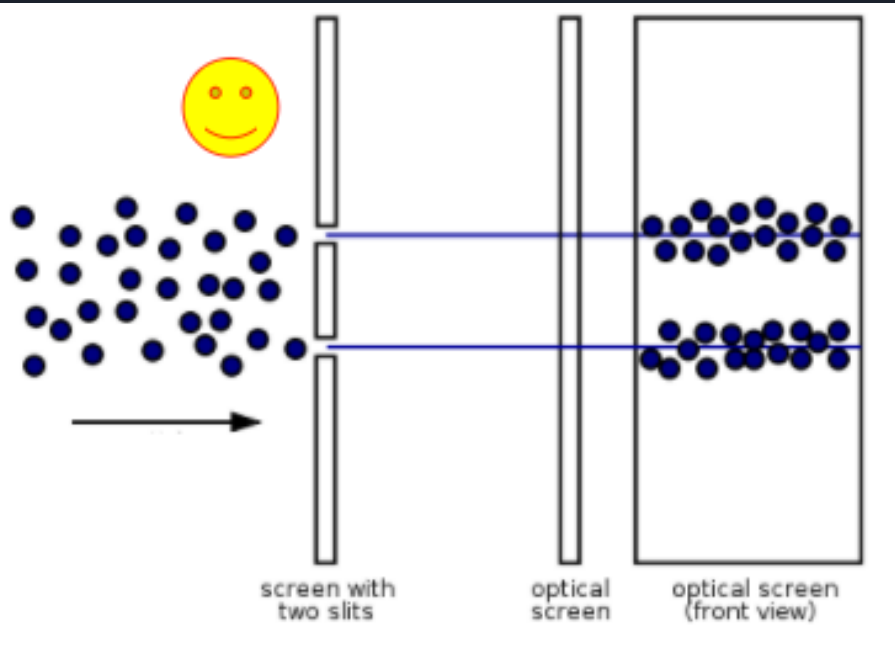


Frederick Herschel

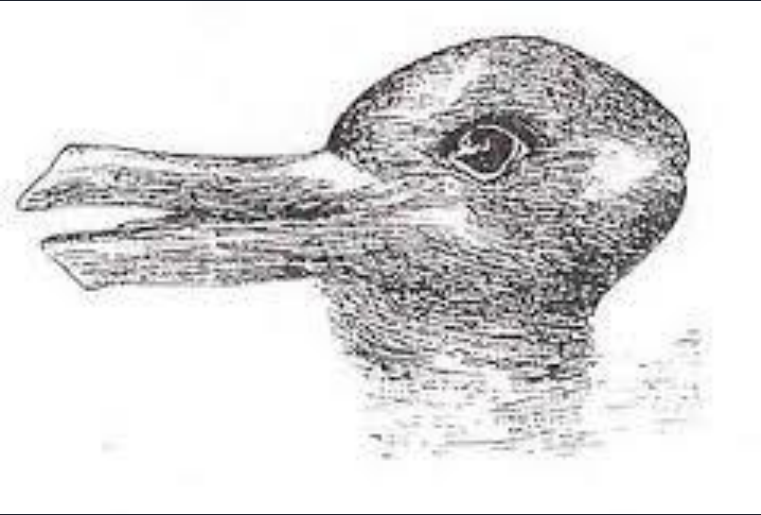


“Yes, we can have evidence with spectroscopy”

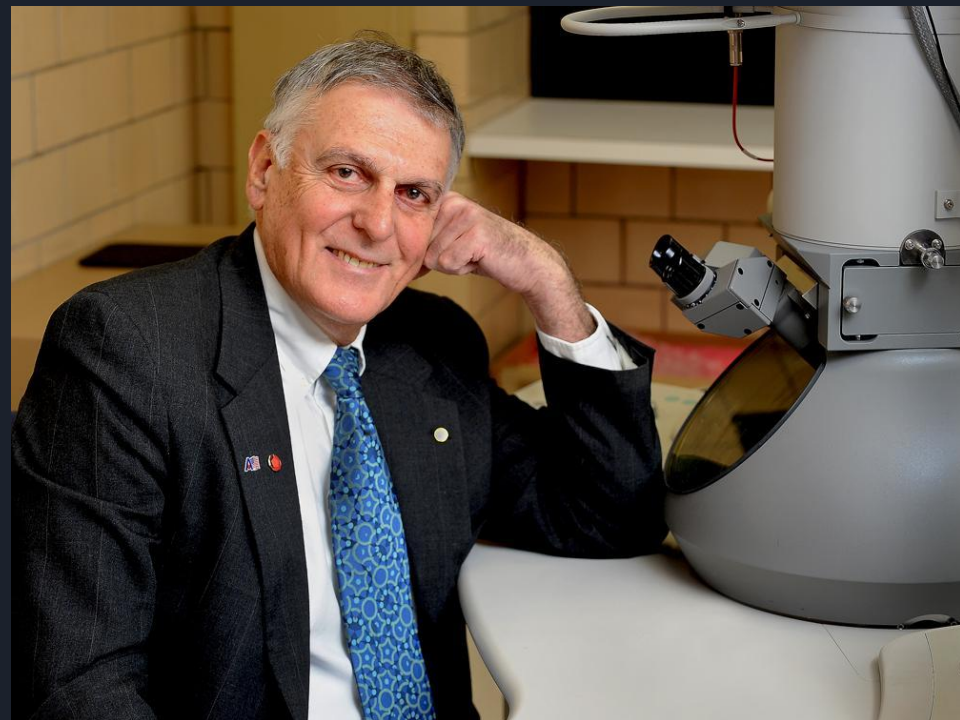
De Broglie Wave-Particle Duality



“Yes, because the objects are here as evidence for the existence of the atom”



Dan Schectman and Halton Arp





“We see what is actually real, or do we see what our glasses(theories) show what we should see?”



Results and Discussion

Categories	Qty	Students Answers
Resistance in the paradigm Shift	3	A1- "There is resistance it comes to breaking paradigm" A3- "(...)with the passing of time new ideas arise that when recent cause serious aversions" A5- "(...) charging a paradigm is extremely difficult and time-consuming.."



Results and Discussion

Influence of the organization of the Scientific Community	5	A1- "(...)many see science as something immutable" A2- "(...) we are always influenced by society" A4- "(...) the scientific community is currently organized(or rather, as it has always been)" A5- "(...) science is complex and involves external factors such as political and social" A6- "(...) scientific community as a bourgeois community"
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Results and Discussion

Vision of Science by current theories	3	A1- "(...) we see what our theories tell us" A3- "(...)we believe in temporary truths." A4- "(...) we see things the way the theories are shown"
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Results and Discussion

Question about what is real.	3	A1- "Real is what can be perceived by the senses or is real what we believe?" A2- "it's hard to know what the theories show us is not really real" A5- "(...) sometimes we have the opportunity to know the 'real' but we are 'trapped' by the theories."
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Results and Discussion

Adequacy of the anomalies by the current paradigm.	2	A4- "The results we get are interpreted in accordance with the theory" A6- "(...) bourgeois community, which adapts all that is new to its theories in order to indoctrinate."
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Conclusion

It was possible to problematize the conceptions about the nature of science presented by students of Chemistry. It is considered that an adequate science vision is fundamental to the teaching of this science.

