

Suggestions to Teachers (Ernest's Nuclear Atom)

Expected results

After the lesson, the students are expected to:

1. Describe the Rutherford's experiment, with which was formulated his atomic model.
2. Experiment with the simulations concerning the J.J. Thompson's atomic model and the Rutherford's atomic model.
3. Design the courses of the alpha rays in the J.J. Thompson's atomic model and the Rutherford's atomic model.
4. Locate the differences between the J.J. Thompson's atomic model and the Rutherford's atomic model, based on their experimentations.
5. Describe the Rutherford's atomic model, based on the narration as well as their experimentations.
6. Describe how science functions, based on the narration.
7. Locate the characteristic of science and the ways it develops, based on the narration as well as the lesson activities, according to the McComas's list.
8. Write the differences and the similarities between the Rutherford's atomic model and the Democritus' atomic theory.
9. Compare and write the differences between the philosophical and the scientific view, based on Democritus' atomic theory about the structure of matter and Rutherford's atomic model.

About the activities of students

The proposed students' activities are indicative and they aim at the accomplishment of the above expected outcomes. Moreover, the teacher may choose some of them for the teaching process in relation to its aims, the needs of students and the available time. Finally, she/he can create her/his own activities. About the emergence of the characteristics of science in the narration, these characteristics are quoted in the website, comprehensively (in classification of the stories by NOS).

About the locating of the characteristics of Nature of Science in the proposed activities, indicatively, we can quote the following:

- A) The activity 2 concerns the characteristics of Nature of Science: a) "Science demands and relies on empirical evidence", b) "Science has a subjective element" and c) "Scientific knowledge is tentative but durable".
- B) The activity 3 concerns the characteristic of Nature of Science: "Science demands and relies on empirical evidence"
- C) The activity 4 concerns the characteristics of Nature of Science: "Science demands and relies on empirical evidence".

- D) The activity 5 concerns the characteristics of Nature of Science: “Knowledge production in science includes many common features and shared habits of mind”.
- E) The activity 6 concerns the characteristics of Nature of Science, which are quoted in the activities: 2, 3, 4 and 5 and the next activity.
- G) The activity 7 concerns the characteristics of Nature of Science: “Science demands and relies on empirical evidence”.

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