Scientific Literacy Center

How the Discovery Process Works I Activity Answer Sheet

History of the Atom

Class Time: 15 minutes

Grade Level: High School- Pre-Freshmen

Assignment Type: Homework

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Adapted From: ScienceNetLinks: The History of the Atom Series- http://sciencenetlinks.com/lessons/history-atom-ancient-greeks/

1. Who was J.J. Thomson, and what was the nature of his work?

He was a British physicist who attempted to investigate the interior of atoms by experimenting with electrical currents inside glass tubes. More specifically, he sought to determine the mystery behind "cathode rays."

2. What did his experiments with cathode rays cause him to conclude?

He made the bold hypothesis that cathode rays were "streams of particles much smaller than atoms" and was, in fact, "miniscule pieces of atoms." He called these particles "corpuscles"—later to be called "electrons"—and asserted that they comprise all matter within atoms and are "the substance from which all the chemical elements are built up."

3. What kind of impact did these findings about the inner workings of atoms have on technology?

The discovery of the electron helped to spur technological development—televisions and computers, in particular—and arguably triggered a fundamental shift bringing science and technology closer together.

4. Describe what is happening in the experiment.

Answers may vary but should describe the separating of the electrical charge from the ray and the development of the m/e ratio of the particle allowing Thomson to conclude that the cathode rays were much smaller than atoms.