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TDS Chapter 1 Discussion

Throughout the first chapter the author, Sam Kean, describes the structure of the periodic table and the atom. He uses different methods to approach different topics in the chapter to make it easier to understand. For example, Kean uses metaphors to compare the periodic table to a castle. He utilizes this technique to make the reader visualize and understand the layout of the periodic table. Kean also uses a storytelling method to describes the structure of the atom. He describes the life time efforts of Gilbert Lewis, Maria Goeppert and other scientists who dedicated their life to expanding the knowledge of the atom and its structure.

First, he uses the sad story of Gilbert Lewis, a chemist whose life work has gone unnoticed, to introduce electrons and how they function. To show how elements form bonds using electrons, he gives examples of the elements that Lewis experimented with. The hydrogen and chlorine in Hydrochloric Acid share electrons and form a bond so they can be stable. This is because of the octet rule, which states that a stable atom has 8 electrons in its valence shell. The chapter uses worlds like electron thief and electron giver to describe the atoms need to take or lose electrons. The experiments support the claims that Kean makes about the electrons ability to form bonds and their involvement in acids and bases.

The nucleus is at the center of the atom and contains protons and neutrons. This is basic information we all know. Something surprising about the nucleus that most people don’t know is inside the nucleus there are shells that are similar to the one that electrons revolve the nucleus in. It was Maria Goeppert who came across this discovery in the 1950’s. While working on the nucleus, she came across a question, “why do certain elements like oxygen have such stable nuclei?” To prove that the shells inside a nucleus do exist, Goeppert did numerous experiments. She finally discovered that a stable nucleus is achieved at only certain atomic numbers because at these numbers the protons and neutrons form into perfectly symmetrical shells similar to electrons and their shells. Kean proves his credibility and supports the information that is presented in chapter one by listing out real life events and experiments that occurred.

Citations

Kean, Sam. *The Disappearing Spoon: And Other True Tales of Madness, Love, and the History of the World from the Periodic Table of the Elements*. Little, Brown and Company, 2010. Print.