APPENDICES

Appendix A
A Sample of Register of Extracted Data (Initial Codes and Excerpts)

Part I: Preliminary Information

Name of the Document: Module for General Chemistry (Chem 1012)	
Type of the Document: Course Module	Date Accessed**: 29th July, 2021**
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Part II: Record of Extracted Data

No.	Unit	Section	Page(s)	Excerpt	Interpretation and Implied atomic notion	Analytic components	Analytic categories	Thematic category
1	2	Title	47	***Atoms***, ***Molecules*** and ***Ions***	This is a very precise rhetoric that, from the very title, acknowledges ***atoms, ions*** and ***molecules*** their **fundamentality** and **independent existence** as **chemical constituents.**	II	**Style:** Choice of Words	**Model: Co-**constituent; **View:** Chemical Atomism **Ontology:** Operational Ontology
2	2	2.1 (Atomic structure and symbolism)	47	… Whereas electrons occupy almost all of an ***atom's volume***. The ***diameter*** *of an* ***atom*** is on the order of 10−10 m	***Volume*** is for something **microscopic** and **visible** that **occupies a space**. Trying to addresses ***atoms*** in such rhetoric manner prescribes a very ***mechanical*** connotations	II/III	**Style:** Choice of Words/Metaphor	**Model:** Billiard ball **View:** Corpuscularism **Ontology:** Mechanical Ontology

3	2	2.1 (Atomic structure and symbolism)	48	***Atoms***-and the protons, neutrons, and electrons that compose them—are extremely ***small***.	that is against what has been informed by the available experimental evidences we have at hand	II	**Style:** Choice of Words/Metaphor	**Model:** Billiard ball **View:** Corpuscularism **Ontology:** Mechanical Ontology
4	2	2.1 (Atomic structure and symbolism)	51	The *iodine* ***atoms*** are added as ***anions***, and each has a 1^- charge and a mass number of 127.	It sounds as if ***ions*** are just the different forms of ***atoms***	III	**Style:** Syntax	**Model:** Sole constituent; **View:** Functional atomism; **Ontology:** Stoichiometric ontology
5	2	2.2 (Chemical Formula)	58	The expression 2H, on the other hand, indicates two separate **hydrogen *atoms*** that are not combined as a unit. The expression $2H_2$ represents two ***molecules*** of **diatomic hydrogen** (Figure 2.6).	***Fundamentality*** of the atom precisely addressed in such cases of **molecules**; but, there is still a problem with ***existence*** of the constituents' atoms such as H and O. Only the molecules (H_2, O_2 and the likes) exist ***independently: violets fundamentality*** and ***independent existence (ontology) of simple molecules***	IV	Partial experimental result bases	**Model:** Sole constituent; **View:** Functional atomism; **Ontology:** Stoichiometric ontology

Appendix B
Guide of Analytical Categories, Descriptions, and Criteria

Name	Description of the category and criteria for sorting
Ontological view implied by the curricular sense	**RQ (a) How is the atom ontologically manifested within the curriculum of science teacher education in Ethiopia?**
Operational Ontology	It is an ontological view asserting that the existence of atoms can be ***determined*** through available analytical and stoichiometric approaches.
The Mereological Notion	Segments of the documents implying, directly or indirectly, that an atom does not lose every shred of its identity when it combines with other atoms or a group of atoms during reaction belong to and were sorted under this sub-theme.
The Solely-emphasized Atomic Notion	In this sense, the atom is the building block of everything created fundamentally-first, and discretely exist in nature [This means that atoms of all elements exist freely in nature.]
The Chemical Notion	It is an atomic notion that acknowledges atoms, simple molecules and ions as constitute chemical substances in a repeating pattern, which in turn comprise the macroscopic world that can't be chemically broken down further [into chemically stable and discretely existing smaller ones].
Mechanical Ontology	It is an ontological theme in which existence of the atom as an objective existing and independent reality is implicitly or explicitly acknowledged.
Source Domains or Reasons	**RQ (b) How can the overall rhetoric pattern and desired associations be best maintained in terms of the reasons or origins of the implied ontological views so as to optimize chemical atomism in teacher education?**
No Noticeable Stance (Paradigm)	Corresponds to the entire rhetoric portions of the data lacking clear and noticeable stance on the reality of the atom and nature of its knowledge.
Little Concern about of Choice of Words (Style)	Corresponds to linguistic portions of the data in which differently interpretable words are used in the way that depicts potential alternative conceptions
Inconclusive Argumentation	Corresponds to argumentative portions of the data lacking the very chemical, clear ontological foundation or basis, sounding historical, philosophical and scientific links with respect to context and evidences.