**EMERALD ROYAL INTERNATIONAL SCHOOL, MPAPE ABUJA**

**LESSON PLAN AND NOTE FOR WEEK 1 ENDING 5TH MAY, 2023**

**TERM: THIRD**

**WEEK : 1**

**DATE: 2ND - 5TH MAY, 2023**

**SUBJECT : CHEMISTRY**

**TOPIC : SULPHUR**

**SUB- TOPIC : 1. general properties of group vi element.**

1. **The stucture of sulphur.**

**PERIOD: 1ST**

**TIME : 8: 10 - 8 :50**

**DURATION:**  40 minutes

**CLASS: SS2**

**NUMBER IN CLASS:**  3

**AVERAGE AGE: 14 years**

**SEX: mixed**

**LEARNING OBJECTIVES: By the end of the lesson, the students should be able to;**

1. State the general properties of water.
2. Explain the genral properties of water.
3. Explain the structure of sulphur.

**RATIONALE:** The students should understand the general properties of group vi elements.

**PREVIOUS KNOWLEGDE:** The student have been taught the periodic table.

**INSTRUCTIONAL MATERIALS:** A chart showing the structure of sulphur.

**REFERENCE MATERIALS:** New school Chemistry for Senior Secondary Schools by Osei Yaw Ababio .

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| --- | --- | --- | --- |
| **STEPS** | **TEACHER’S ACTIVITIES** | **STUDENTS’ ACTIVITIES** | **LEARNING POINTS** |
| **INTRODUCTION** | The teacher introduces the lesson by asking the students to state the elements in group vi. | The students were active. | To arouse the students interest. |
| **PRESENTATION**  **STEP 1** | The teacher states the general properties of group vi elements. | The students pay attention. | To keep them focus for better understanding. |
| **STEP 2** | The teacher asks the students to explain the properties in step 1 above. | The students explains the properties | To encourage critical thinking. |
| **STEP 3** | The teacher explains the structure of sulphur. | The students pay attention. | To keep them focus for better understanding. |
| **BOARD SUMMARY** | They have six elements which are Oxygen , Sulfur , Selenium , Tellurium , Polonium , and Livermorium . ... **Characteristics of Group elements:**   * They have six valence electrons and have common oxidation states as. + 2 and + 4 . * They are less toxic in nature. * They have high electronegativity.   **STRUCTURE OF SULPHUR**  **Sulfur** (or **sulphur** in [British English](https://en.wikipedia.org/wiki/British_English" \o "British English)) is a [chemical element](https://en.wikipedia.org/wiki/Chemical_element" \o "Chemical element) with the [symbol](https://en.wikipedia.org/wiki/Symbol_(chemistry)" \o "Symbol (chemistry)) **S** and [atomic number](https://en.wikipedia.org/wiki/Atomic_number" \o "Atomic number) 16. It is [abundant](https://en.wikipedia.org/wiki/Abundance_of_the_chemical_elements" \o "Abundance of the chemical elements), [multivalent](https://en.wikipedia.org/wiki/Polyvalency_(chemistry)" \o "Polyvalency (chemistry)) and [nonmetallic](https://en.wikipedia.org/wiki/Nonmetal" \o "Nonmetal). Under [normal conditions](https://en.wikipedia.org/wiki/Standard_conditions_for_temperature_and_pressure" \o "Standard conditions for temperature and pressure), sulfur atoms form cyclic octatomic molecules with a chemical formula [S](https://en.wikipedia.org/wiki/Octasulfur" \o "Octasulfur)[8](https://en.wikipedia.org/wiki/Octasulfur" \o "Octasulfur). Elemental sulfur is a bright yellow, [crystalline](https://en.wikipedia.org/wiki/Crystal" \o "Crystal) solid at [room temperature](https://en.wikipedia.org/wiki/Room_temperature" \o "Room temperature).  Sulfur is the tenth most abundant element by mass in the universe and the fifth most on Earth. Though sometimes found in pure, [native](https://en.wikipedia.org/wiki/Native_element_minerals" \o "Native element minerals) form, sulfur on Earth usually occurs as [sulfide](https://en.wikipedia.org/wiki/Sulfide_minerals" \o "Sulfide minerals) and [sulfate minerals](https://en.wikipedia.org/wiki/Sulfate_minerals" \o "Sulfate minerals). Being abundant in native form, sulfur was known in ancient times, being mentioned for its uses in [ancient India](https://en.wikipedia.org/wiki/Ancient_India" \o "Ancient India), [ancient Greece](https://en.wikipedia.org/wiki/Ancient_Greece" \o "Ancient Greece), [China](https://en.wikipedia.org/wiki/History_of_China" \l "Ancient_China" \o "History of China), and [ancient Egypt](https://en.wikipedia.org/wiki/Ancient_Egypt" \o "Ancient Egypt). Historically and in literature sulfur is also called **brimstone**,[[5]](https://en.wikipedia.org/wiki/Sulfur" \l "cite_note-Greenwd-5) which means "burning stone".[[6]](https://en.wikipedia.org/wiki/Sulfur" \l "cite_note-6) Today, almost all elemental sulfur is produced as a byproduct of removing sulfur-containing contaminants from [natural gas](https://en.wikipedia.org/wiki/Natural_gas" \o "Natural gas) and [petroleum](https://en.wikipedia.org/wiki/Petroleum" \o "Petroleum).[[7]](https://en.wikipedia.org/wiki/Sulfur" \l "cite_note-BBC-7)[[8]](https://en.wikipedia.org/wiki/Sulfur" \l "cite_note-podcast-8) The greatest commercial use of the element is the production of [sulfuric acid](https://en.wikipedia.org/wiki/Sulfuric_acid" \o "Sulfuric acid) for sulfate and phosphate [fertilizers](https://en.wikipedia.org/wiki/Fertilizer" \o "Fertilizer), and other chemical processes. Sulfur is used in [matches](https://en.wikipedia.org/wiki/Match" \o "Match), [insecticides](https://en.wikipedia.org/wiki/Insecticide" \o "Insecticide), and [fungicides](https://en.wikipedia.org/wiki/Fungicide" \o "Fungicide). Many sulfur compounds are odoriferous, and the smells of odorized natural gas, skunk scent, grapefruit, and garlic are due to [organosulfur](https://en.wikipedia.org/wiki/Organosulfur" \o "Organosulfur) compounds. [Hydrogen sulfide](https://en.wikipedia.org/wiki/Hydrogen_sulfide" \o "Hydrogen sulfide) gives the characteristic odor to rotting eggs and other biological processes.  Sulfur is an [essential element](https://en.wikipedia.org/wiki/Mineral_(nutrient)" \o "Mineral (nutrient)) for all life, but almost always in the form of [organosulfur compounds](https://en.wikipedia.org/wiki/Organosulfur_compounds" \o "Organosulfur compounds) or metal sulfides. [Amino acids](https://en.wikipedia.org/wiki/Amino_acid" \o "Amino acid) (two [proteinogenic](https://en.wikipedia.org/wiki/Proteinogenic_amino_acid" \o "Proteinogenic amino acid): [cysteine](https://en.wikipedia.org/wiki/Cysteine" \o "Cysteine) and [methionine](https://en.wikipedia.org/wiki/Methionine" \o "Methionine), and many other [non-coded](https://en.wikipedia.org/wiki/Non-proteinogenic_amino_acids" \o "Non-proteinogenic amino acids): [cystine](https://en.wikipedia.org/wiki/Cystine" \o "Cystine), [taurine](https://en.wikipedia.org/wiki/Taurine" \o "Taurine), etc.) and two vitamins ([biotin](https://en.wikipedia.org/wiki/Biotin" \o "Biotin) and [thiamine](https://en.wikipedia.org/wiki/Thiamine" \o "Thiamine)) are organosulfur compounds crucial for life. Many [cofactors](https://en.wikipedia.org/wiki/Cofactor_(biochemistry)" \o "Cofactor (biochemistry)) also contain sulfur, including [glutathione](https://en.wikipedia.org/wiki/Glutathione" \o "Glutathione), and [iron–sulfur proteins](https://en.wikipedia.org/wiki/Iron%E2%80%93sulfur_protein" \o "Iron–sulfur protein). [Disulfides](https://en.wikipedia.org/wiki/Disulfide" \o "Disulfide), S–S bonds, confer mechanical strength and insolubility of the (among others) protein [keratin](https://en.wikipedia.org/wiki/Keratin" \o "Keratin), found in outer skin, hair, and feathers. Sulfur is one of the core chemical elements needed for [biochemical](https://en.wikipedia.org/wiki/Biochemical" \o "Biochemical) functioning and is an elemental [macronutrient](https://en.wikipedia.org/wiki/Macronutrient" \o "Macronutrient) for all living organism. | The students ask question for clarification. | To create room for slow learners. |
| **EVALUATION** | The teacher evaluates the students with the following questions;   1. State the elements in group vi. 2. Stste at laest 2 properties of group vi elements. | The students attempt the questions. | To ascertain their level of understanding. |
| **CONCLUSION** | The teacher concludes by copying note on the board. | The students copy the note into their note books. | For future use. |
| **HOME WORK** | Draw the structure of sulphur from your text book. | The students did your assignment and submit for marking and correction. | To encourage the students to study at home. |



3/4/2023

Principal Head Instuctor