**O3.2 Lesson Plan –** Combustion of carbohydrates

**Age group/class:** 16-17 years old/ Year 11

**Lesson title:** Combustion of carbohydrates

**School Discipline:** Chemistry

**Key concepts:** oxidation-reduction reactions, combustion reactions

**Aims:**

This main aim of this lesson plan is to illustrate the main concepts of oxidation-reduction by demonstrating the combustion reaction of glucose in a highly oxidizing environment.

**Skills developed**:

- Recognize the importance of oxidation reactions of carbohydrates.

- Write the chemical reactions associated to the combustion of carbohydrates.

- Use of laboratory material to conduct this chemical reaction.

**Materials/Equipment needed**:

- VR glasses;

- VR video/link: <https://eloquent-ramanujan-887aa5.netlify.app/chemistry-1.html>

**Lesson plan:**

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| **Stages** | **Description of activity** | **Time** |
| **Preparation before the lesson** | Introducing students to VR glasses if this is their first VR experience.  Proper and safe use of VR glasses.  Potential adverse effects of VR glasses.  Students should be given the choice to opt out of using VR. | 5 min |
| **Introduction** | The students are introduced to the importance of oxidation reactions of carbohydrates.  Some important concepts are revised:  - Oxidation and reduction  - Reduced species and oxidized species.  - Oxidation number.  - Oxidation and reduction semi-reactions. | 20 min. |
| **Guided**  **Immersive**  **Experience** | The students put on the VR headsets to explore the video.  As they are going to see a demonstration of a chemistry experiment, the observed results will be the focus, together with the material/equipment, chemical reactants and experimental procedure.  Turn the headsets off and bring students back into the classroom.  Students take individual notes on the aspects mentioned above. | 10 min. |
| **Follow up** | Students in groups join their notes and write a report including:  - the list of chemical reactants and experimental procedure. A critical analysis should be carried out.  - the chemical reactions that support the observations (1. The potassium chlorate chemical decomposition; 2. The glucose oxidation).  - identification of the oxidized and reduced chemical species.  The groups present and discuss their results. | 15 min. |
| **Formative assessment** | Teacher collects the reports and correct them, if necessary. |  |