Dear students,

 Working with such a disciplined and diligent class of students was a pleasure for me, thank you for your engagement in the activities. The last part of our activity together is writing down a scientific report. **You have time until 23.59h of the 7th November to submit it**.

 The report is individual and should be divided into the following sections:

* **Introduction:**  The solar cells' working principle, the type of solar cells, and detailed information about dye-synthesized solar cells.
* **Experimental procedure:**  The materials we used in the lab and their purposes. How did you build your solar cell? (step by step)
* **Results part 1:** Make a tabel with the voltage results you obtained from the hibiscus dye and comparison with at least **two other groups and discuss the experimental procedure.**(you should discuss with your classmates about their experimental procedures)
* **Results part 2:** IV curves: determine the **short-circuit current and open-circuit voltage values** for the hibiscus solar cell and the solar cell with your chosen dye. **Compare the IV curves** you obtained with the hibiscus and your chosen dye. **Compare the results you obtained** with another group and try to identify and explain the differences, and again discuss the experimental procedure.
* **Informal discussion:**  Each student in the group ***individually***explains what he learned from the solar cell lab and eventually adds any comment on how to improve the solar cells’ performances (open-circuit voltage and short-circuit current).

In the report you can include **maximum 4 pictures** beside the graphs of the IV curves. The **maximum lenght** for the report is **4 A4 pages**; keep as font Arial 12. I will create a folder in Toledo so that everybody can upload their report and upload their IV results with a definite document name e.g., ***pomegranatedye\_darkIV curve***. Do not forget to **write a heading** at the beginning of the report with your name and surname, name of the group, name of the subgroup.

Feel free to reach me out by email in case you have further questions.

 Good luck!

Best regards,

Irene Dei Tos

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Introduction:

This report will describe grätzel solar cells. Grätzel solar cells or dye solar cells are devices which are made with a natural dye. This allows them to be made from readily available low-cost sources.

Experimental procedure

First we gathered all the required material:

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Then we applied titanium dioxide paste to one of coated pieces of glass and designated it the //. We let it dry until visibly there was no wet paste left. Simultaneously a layer of graphite was applied to the other piece of coated glass using a pencil. We also put the tea/hibiscus in water to make a dye solution in water. Then we heated the titanium coated glass on a hot plate for 10 minutes at 300°C to sinter the titanium dioxide. Once the heating was finished we let it cool down for another 10 mins. Then we applied multiple drops of dye to the titanium to let the dye soak in, we did this for 10 minutes as well, then we washed away the access dye with tap water. Then we added the electrolyte with two drops on the titanium side and one drop on the graphite side and put the two electrodes together, with the coated side facing each other. We left a small gap for connectors to be attached.