

Troubleshooting the Dye Sensitized Solar Cell (DSSC):

1. Avoid touching the glass slides with bare hands. Use gloves. This is for preventing contamination!
2. Before coating or assembly of the solar cell, double check the conductive side with a multi-meter! (70% of the failed solar cells will have accidentally used a non-conductive side)
3. To coat the glass, put 2-3 drops of the TiO_2 suspension on the conductive-side-up glass slide using the dropper bottle. The amount of solution needed is only 5 μL per square cm. Within five seconds after application of the TiO_2 suspension, slide (DO NOT ROLL) a clean glass pipette/glass rod (held horizontally) over the plate to spread and distribute the material. Go towards the taped end and back in one swift motion, do not repeat. This should yield a uniform coating; if the coating is not uniform repeat the movement after adding another drop of TiO_2 or by removing the original coating with water.
4. Bake the TiO_2 coated glass slide by placing the glass plate on a hot plate that has been set on **high**. The coating **will turn yellow or brown** almost immediately and then slowly start going back to white (almost white).
5. In order to extract the juice from frozen berries, use a cheesecloth. Dilute the juice with small quantities of distilled water before using. Once you place the TiO_2 coated slide face down in the juice, do not shake or stir the petri dish.
6. Instead of using candle soot for the graphite coating, you can use a No.2 pencil lead. Do not miss large spots and ensure that the coating is uniform.
7. Remove glass plate (which is stained a dark purple) from the raspberry juice, if any of the white color of the TiO_2 can be seen upon viewing the stained film from either side of the glass plate, then the film should be placed back in the dye for an additional 5 minutes.
8. When adding the iodide electrolyte solution to the plates, keep the plates sandwiched together. Alternatively remove and replace each binder clip. This creates a small space between the plates into which the iodide solution is drawn by capillary action and can be seen to **'wet'** the stained TiO_2 film.