

# M3D3: Constructing the DSSC

- Lab Treat ✓
- Next week: TEM + Mod3 mini-report!



## ★ Research Proposal ★

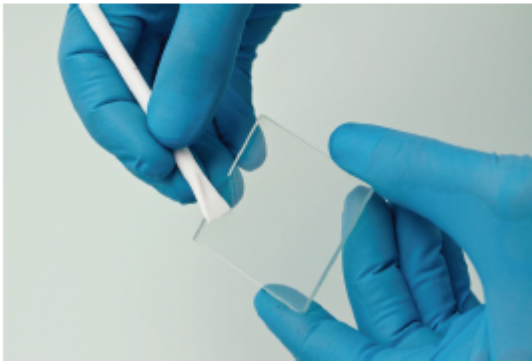
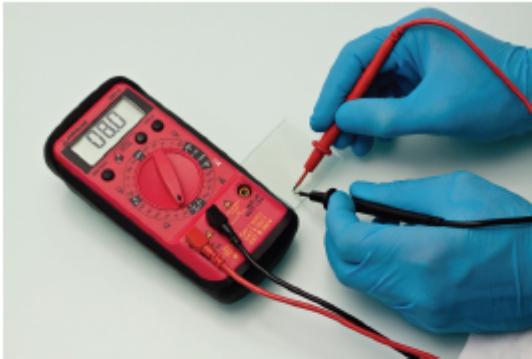
- Today: [Talk with your partner] and narrow down to a topic – ask LOTS of questions *What's the?*
- Thursday: Cross-group discussions *How are you*
- Friday: extended OH – *11:00h - 3pm*  
*2:00 - 4:00pm* *going to do this?*
- 4:30pm Friday – Cheer on Arinze

# Solar cell preparation

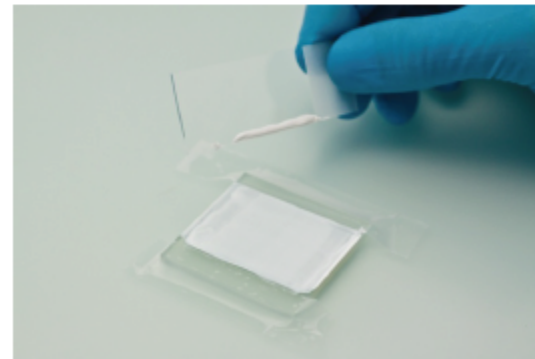
- Phage-nanomaterial complexes ground up and combined with  $\text{TiO}_2$  paste
- You will prepare **anode**
- Base: glass coated with FTO and then  $\text{TiO}_2$  – conductive and transparent
- YOUR PART: PASTE ONTO BASE
- High-temperature setting process, then dye addition



Image from wiki

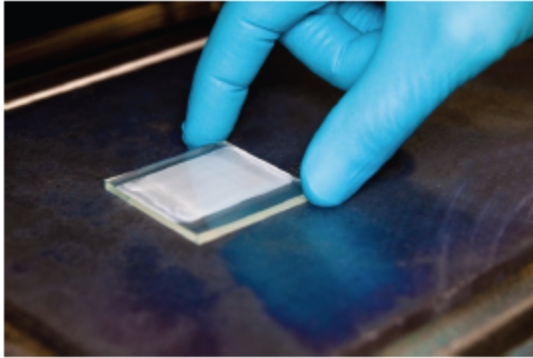


Identifying the conductive side of the TCO (transparent conductive oxide)



3-5 min  
↓  
heat  
120°C  
25 min  
↓  
repeat

“Doctor-blading” the titania ( $\text{TiO}_2$ ) paste

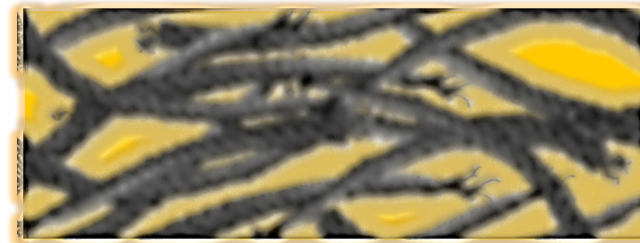


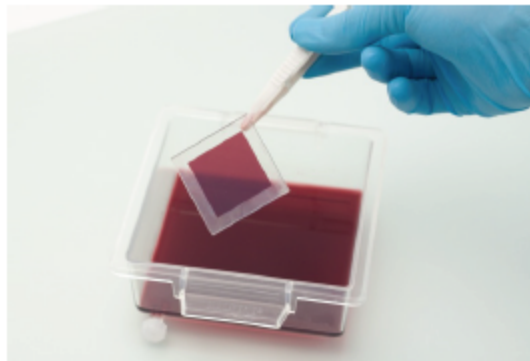
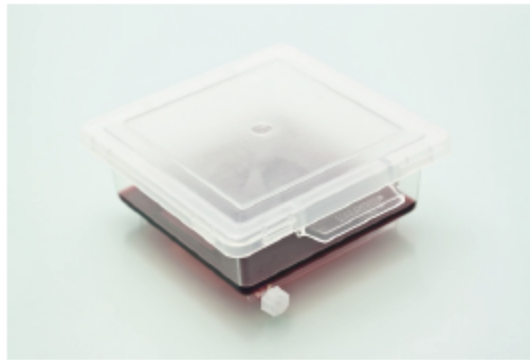
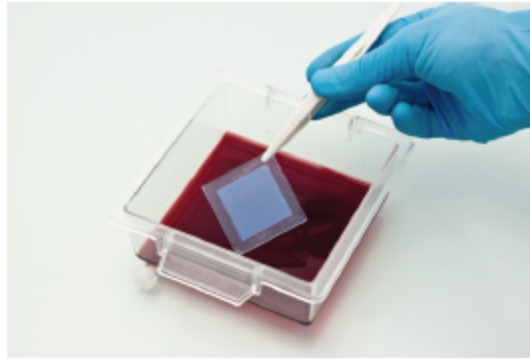
## Sintering the film (heating)

<http://www.solaronix.com>

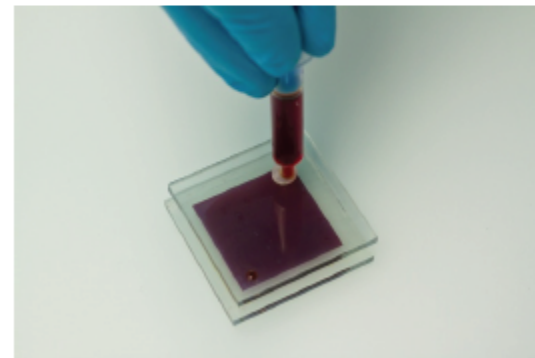
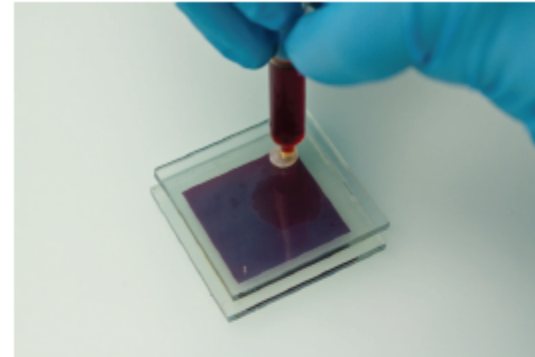
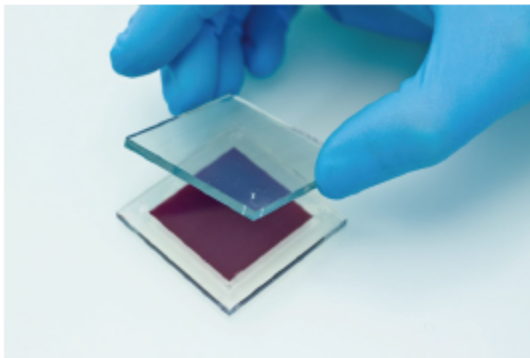
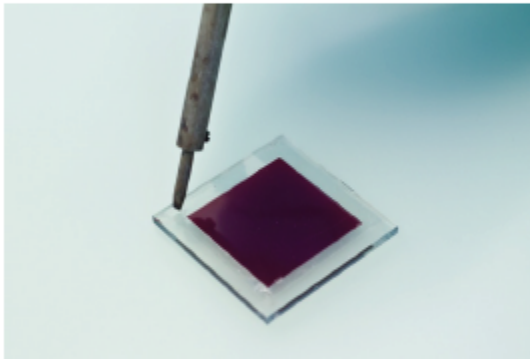
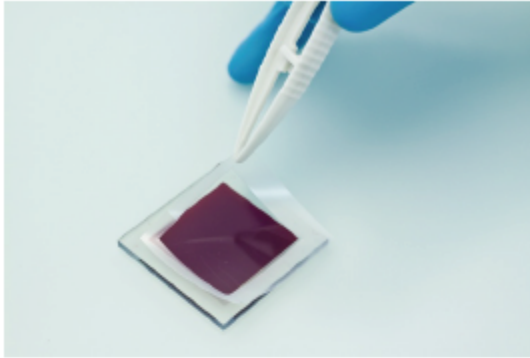
(1) Burn off polymer binder in paste to create pores for the dye. (Must be in air)

(2) Sinter nano-particles . Must be in argon, here particles are connected in a conducting network





Dyeing the film <http://www.solaronix.com>



Filling the electrolyte

Assembling the device with another electrode

- 1) Measure 4mm x 4mm area
  - 2) flip over slide
  - 3) Tape
  - 4) Dot on the "paste"
  - 5) Dr Blade
  - 6) Dry - 5min
  - 7) Remove tape
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