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Getting to Know the OPV Jargon

Latest Submission Grade 100%

1. What is an abbreviation for Organic Solar Cells?

1 / 1 point

☐ SEL

☒ OPV

☐ SOL

✔ Correct

Organic solar cells is a term that covers a number of technologies such as small molecule solar cells, polymer solar cells and others. OPV is an

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LCA

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1. Solar cell A has an efficiency of 5% while solar cell B has an efficiency of 10%.

1 / 1 point

All else being equal how do the energy payback time of the two solar cells compare?



Congratulations!

You just completed the most difficult assignment in the course! You should feel proud of all of your hard work and success.

Keep learning

for solar cell A compared to B

for solar cell A compared to B

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Determine Solar Cell Parameters

Latest Submission Grade 75%

1. How do you calculate P_{max} from I_{Pmax} (write as Im), and V_{Pmax} (write as Vm)?

1 / 1 point

$I_m V_m$

Please note: Each of the following will be interpreted as a single variable, not as a product of variables: Im, Vm. To multiply variables, please use * (e.g. enter x*y to multiply variables x and y).

Vm*Im

✔ Correct

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Retake the assignment in
6h 53m

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Working Principles

Latest Submission Grade 100%

1. Select the correct statements

1 / 1 point

- ☐ Conjugated polymer are polymers with only double bounds
- ☐ Incident light of energy smaller than the energy gap excites an electron from the HOMO state to the LUMO state.
- ☒ Incident light of energy greater than the energy gap excites an electron from the HOMO state to the LUMO state.

✔ Correct

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Materials

Latest Submission Grade 100%

1. Why do we need conjugated polymers?

1 / 1 point

- ☐ Conjugated polymers can absorb electrons and thereby we can have solar cells
- ☒ Conjugated polymers can absorb photons and thereby we can have solar cells
- ☐ Conjugated polymers have nice colors

✔ Correct

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Polymerization

Latest Submission Grade 100%

1. Which polymerization reaction is depicted in the schematic below?

1 / 1 point



- ☒ Direct arylation
- ☐ Suzuki cross coupling
- ☐ Stille cross coupling

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Characterization

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1. Which instrument would you use to determine the molecular weight distribution for polymers?

1 / 1 point

- ☐ Nuclear magnetic resonance (NMR)
- ☒ Size exclusion chromatography (SEC)
- ☐ UV-vis
- ☐ Cyclic voltammetry (CV)

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Decay Curves

Latest Submission Grade 100%

1. What is a decay curve?

1 / 1 point

Select all correct statements

☒ A decay curve consists of electrical measurements plotted at regular intervals

✓ **Correct**

☐ A decay curve can always explain what degradation mechanisms were responsible for the degradation of the solar cell

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ISOS

Latest Submission Grade 100%

1. Which ISOS series deals with shelf life and storage.

1 / 1 point

- ☒ D series
- ☐ L series
- ☐ O series
- ☐ T series

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Stability and Degradation

Latest Submission Grade 100%

1. What is understood by morphological stability?

1 / 1 point

- ☒ Morphological stability refers to the fact that the active layer is not a thermodynamically stable configuration
- ☐ Morphological stability refers to the chemical instability towards oxygen and water most polymers exhibit
- ☐ Morphological stability refers to the chemical instability towards light exposure most polymers exhibit

✓ Correct

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Coating

Latest Submission Grade 100%

1. Write below which coating or printing method is depicted.

1 / 1 point



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Printing

Latest Submission Grade 100%

1. What is the difference between printing and coating?

1 / 1 point

- ☒ Printing can produce patterns, such as text, while coating cannot
- ☐ Printing is better for thinner layers than coating
- ☐ Printing and coating is the same thing

✓ Correct

✓ Congratulations! You passed!

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Final Exam

Latest Submission Grade 100%

1. For what purpose is the material P3HT used in organic solar cells.

1 / 1 point

✓ Correct

2. How is the powerconversion efficiency defined?

1 / 1 point

Write the equation for efficiency using A as the area of the solar cell in m^2 , P_{max} as the power generated by the solar cell in W , and E as the input light in W/m^2 .

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MEET GALA



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Wrapping Up

Videos ☒ Done

Readings ☒ Done

REQUIRED

✓ Quiz
Final Exam
30 min

GRADE

100%

DUE

Feb 13
11:59 PM PST





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