

Lab Activity Handout

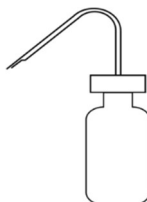
Problem: Which nanoparticle will bleach (or “photo-sanitize”) water the fastest after UV light exposure: titanium dioxide, zinc oxide, or magnesium oxide?

Hypothesis: I predict that _____

because _____.

Materials:



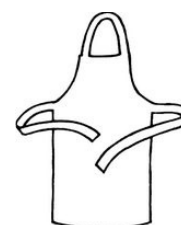


ZnO _____

MgO _____

TiO₂ _____

SAFETY
Equipment



Procedure:

1. Collect all _____; designate responsibilities to each lab group member, if needed.
2. Obtain _____ plastic cups with lids and pour _____ ml of distilled water into each cup.
3. Pour _____ ml of methyl _____ into the 4 cups with water.
4. Pour _____ ml of methylene _____ into the other 4 cups with water.
5. Label the four methyl orange cups as _____, _____, _____, & “CONTROL.”
6. Label the four methylene blue cups as _____, _____, _____, & “CONTROL.”
7. Use a _____ to place _____ drops of each sample oxide as labeled on your cups & be sure to _____ your solution well.
8. Take a _____ of your methyl orange and methylene blue labeled cups with your phone (before light exposure) and be ready to take your cups outside for UV light exposure.
9. Using a stopwatch, record the time in _____ it takes for each sample to bleach (do not run longer than 10 min). Take another picture of the cups (after light exposure).

Team name: _____ Date: _____ Class: _____

Data Table:

COMPLETE BLEACHING AFTER UV EXPOSURE in seconds				
Sample solutions	CONTROL	Titanium Dioxide	Magnesium Oxide	Zinc Oxide
Methylene blue				
Methyl orange				

Illustration: (students color in their results using their picture before & after light exposure.)

Samples before UV light exposure

Methylene Blue Samples



Methyl Orange Samples



Samples after UV light exposure

Methylene Blue Samples



Methyl Orange Samples



Conclusion: