

# Theory Behind Green Roofs

CCDP 2100 X - Group 8 - Josh, Andy, Joey, Connor

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Figure 1: Green Roof [1]



# Overview



Figure 2: Sunlight [2]

**Photooxidative Degradation**  
**Connor Kennedy**



Figure 3: Photosynthesis

**Photosynthesis**  
**Andrew Baker**



Figure 4 : Hydrophobic Plant

**Hydrophobicity**  
**Joey Murphy**

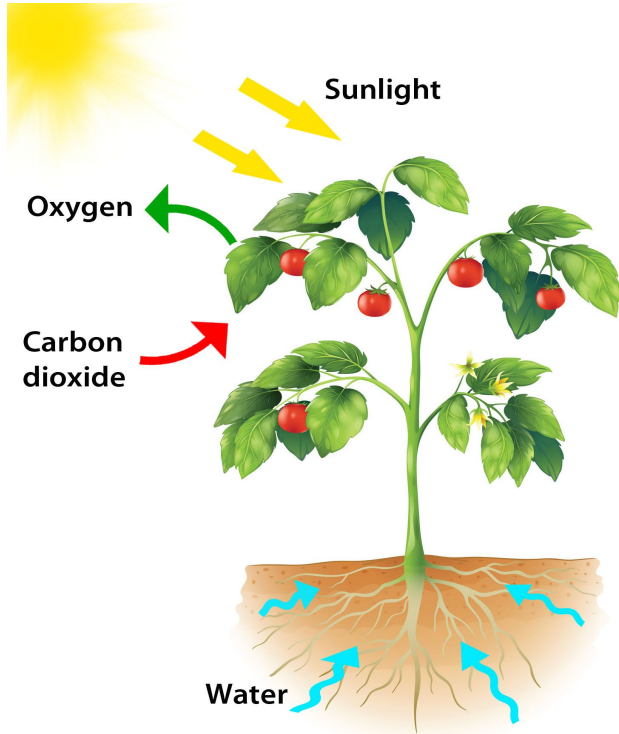


Figure 5: Steam Rising

**Evapotranspiration**  
**Joshua Gatto**



# Photosynthesis - Andy Baker



## Removal of Greenhouse Gases

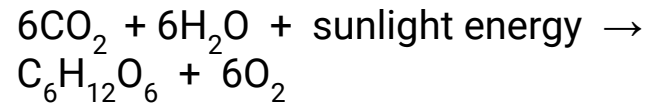
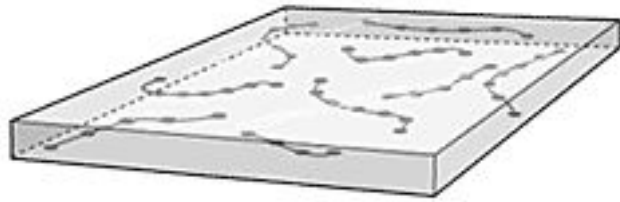


Figure 6: Photosynthesis [6]

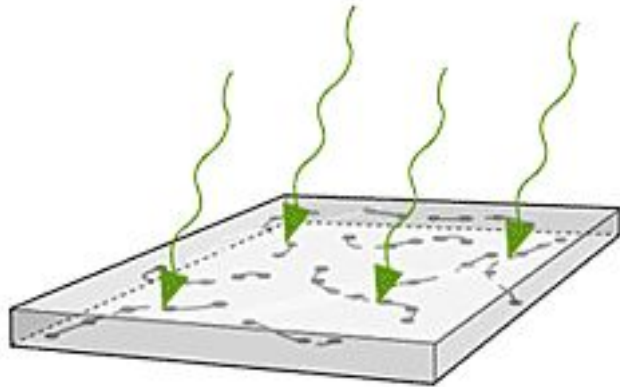




# Photooxidative Degradation- Connor Kennedy



Little or No Exposure



Long-Term Exposure

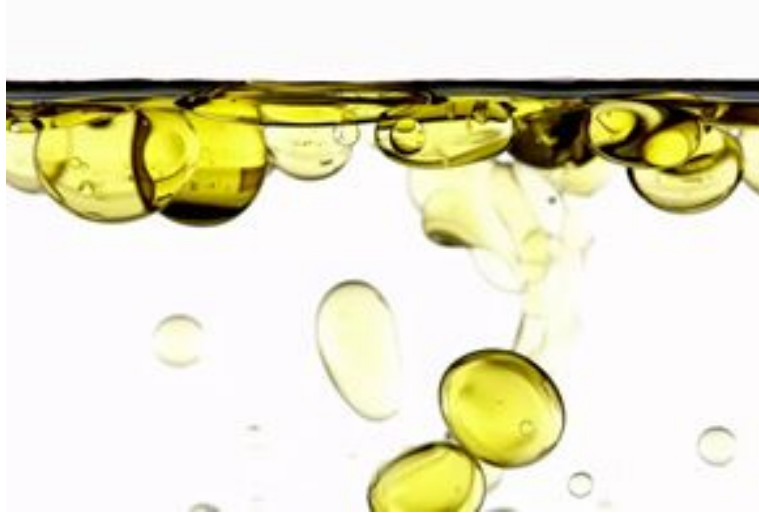
Figure 7: Breaking Polymer Chains [7]



Figure 8: Plastic Melting in Sun [8]



## Hydrophobicity - Joey Murphy



- Low attraction to water
- Polar and Nonpolar
- Contact Angles

**Figure 9 : Oil submerged in water [9]**



## Evapotranspiration - Joshua Gatto



### Evaporation

- Reuses heat energy
- Quenching a pan before washing



### Transpiration

- Plants evaporate water from leaves

Figure 10: Quenching a Pan [10]



# References

- [1]Pinterest, “Green Roof Vancouver” *pinterest.ca*. April 13th, 2013. [Online]. Available: <https://www.pinterest.ca/pin/227291112417271103/>. [Accessed Feb. 25, 2021]
- [2]UPMC, “Sun Damage” *upmc.com*. July 23, 2014. [Online]. Available: <https://share.upmc.com/2014/07/sun-damage-uv-exposure/>. [Accessed Feb. 25, 2021]
- [3] Southern biology, “photosynthesis. [Online], Available: <https://www.southernbiological.com/photosynthesis/> [Accessed Feb 22, 2021]
- [4] D. Chandler, “Explained: Hydrophobic and Hydrophilic”, *news.mit.edu*, July 16, 2013 [Online]. Available: <https://news.mit.edu/2013/hydrophobic-and-hydrophilic-explained-0716>. [ Accessed Feb 5, 2021]
- [5]T. Graham, “How does water evaporate without boiling” *sciencefocus.com*. [Online]. Available: <https://www.sciencefocus.com/science/how-does-water-evaporate-without-boiling/>. [Accessed Feb. 25, 2021]
- [6] Ducksters, “Biology For Kids Photosynthesis”, [Online} Available: <https://www.ducksters.com/science/photosynthesis.php> [Accessed Feb 22, 2021]
- [7]Materials Technology, “UV Degradation Mechanisms” *mattech.co.uk*. [Online]. Available: <http://www.drb-mattech.co.uk/uv%20degradation.html>. [Accessed Feb. 8, 2021]
- [8]P. Patel., “Disappearing Plastics Stay Stronger in the Shadows and Melt away in the Sun” *scientificamerican.com*, August 23, 2019. [Online]. Available: <https://www.scientificamerican.com/article/disappearing-plastics-stay-strong-in-the-shadows-and-melt-away-in-the-sun1/>. [Accessed Feb. 9, 2021]
- [9] A. Helmenstine, “The Definition of Hydrophobic With Examples,” *thoughtco.com*, July 9, 2019. [Online]. Available: <https://www.thoughtco.com/definition-of-hydrophobic-605228> . [Accessed Feb 9,2021]
- [10]Wash Hot Frying Pan Turns a Jet of Cold Water into Steam in a Sink of... RoStRecords, 2017.