



Marine Science Club - Cavitation Uses and Effects

Suggestions for meeting topics, activities, and resources

Brief Introduction

Cavitation is the formation of vapour bubbles with a liquid at low pressure that occur when the liquid has been accelerated to high velocities. When these bubbles collapse (implode) they cause shock waves (think mini explosions). Cavitation can be used by organisms to stun or kill prey. Examples of animals that use cavitation are snapping and mantis shrimp. Cavitation can limit cetacean swimming speeds and damage fast swimming fish fins. Cavitation can cause negative impacts on mechanical elements like propellers and pipes.

Resources & References

- Scientific Journal Article**
- *Unveiling the physical mechanism behind pistol shrimp cavitation*, *Scientific Reports* (2017) (<https://www.nature.com/articles/s41598-017-14312-0>)
 - *Introduction for amazing (cavitation) bubbles*, National Library of Medicine (2015) (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4549851/>)
- Video Suggestions**
- Cavitation - Easily explained! - IET Institute for Energy Technology (<https://www.youtube.com/watch?v=U-uUYCFDTrc>)
 - Motion Pistol Shrimp Attack Hits 4000°C! – BBC Earth Unplugged (<https://www.youtube.com/watch?v=QXK2G2AzMTU>)
 - Mantis Shrimp Punch at 40,000 fps! - Cavitation Physics - Physics Girl! (https://www.youtube.com/watch?v=m78_sOEadC8)
- Encyclopaedia Britannica**
- <https://www.britannica.com/science/cavitation>

Activity/Service Project Suggestions

- Develop a digital resource**
- Make a digital resource using any media format (audio-podcast, video, poster, presentation) that can be shared
- Speaker Presenter**
- Invite someone that studies/understands how animals use cavitation to present to your club. Remember to think of questions to ask based on your research.
 - Invite an engineer to talk about issues that arise from cavitation in the marine industry or marine technology fields.
- Bubble painting**
- <https://www.broogly.com/project/popped-bubble-art>
- Make chocolate mousse [mousse's fluffy texture comes from air bubbles trapped in it as it cools/solidifies]**
- <https://food52.com/recipes/16044-herve-this-chocolate-mousse>