

New approach for oceanic energy harvesting



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Renewable Energy

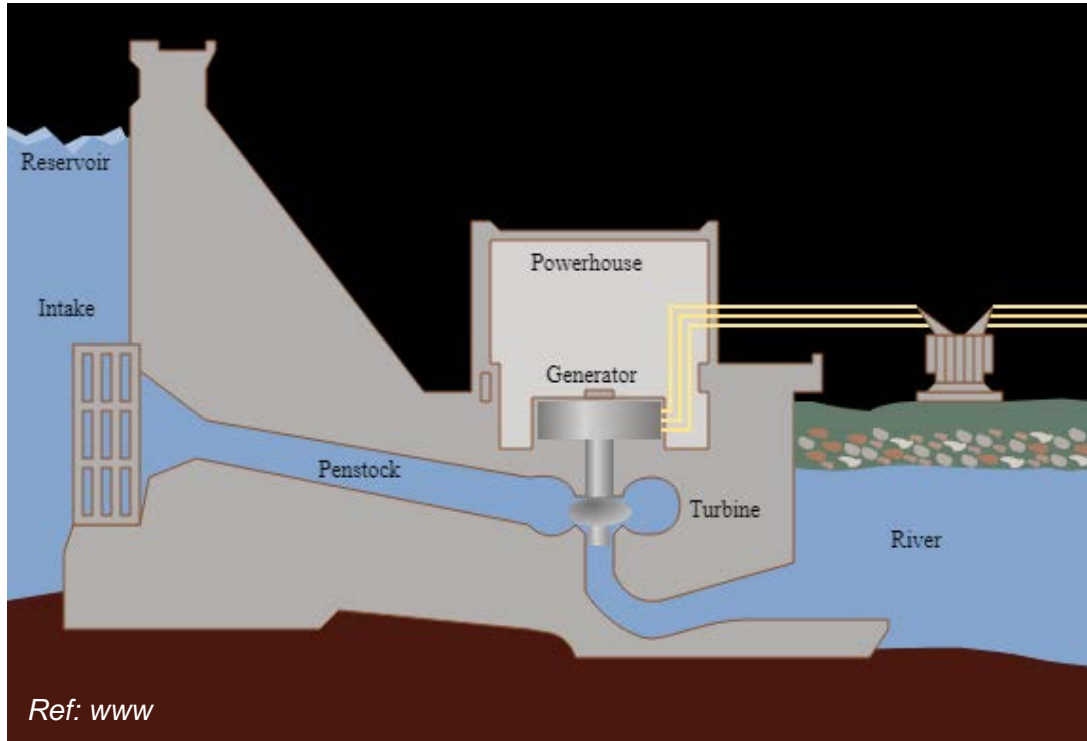
https://youtu.be/iAg8Sky_G1I

For attendees: during review of the presentation, please direct comments to the presenter by using “@PresenterName”. This will ensure they receive your comments and questions directly.

Introduction



Hydropower



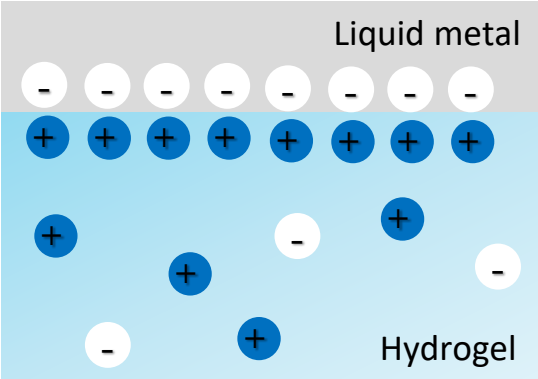
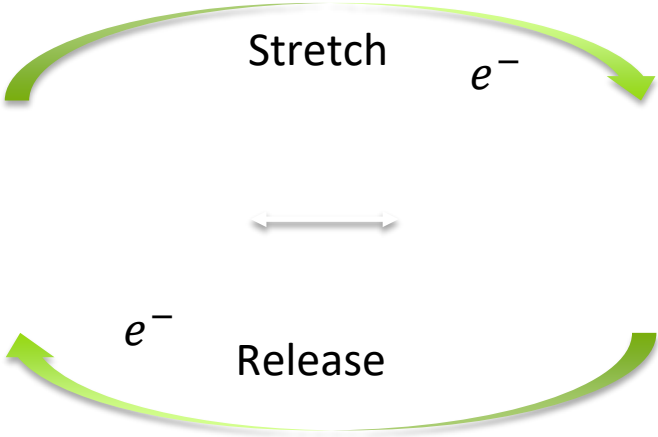
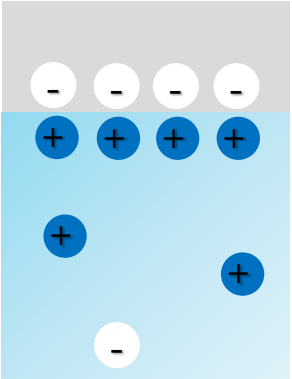
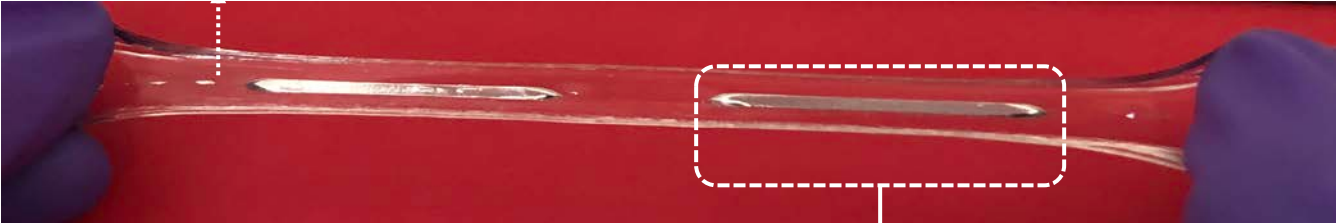
- ✓ Renewable
- ✓ Doesn't generate greenhouse gases

- Carbon emissions: Construction generates CO₂ and plant matter in the flooded area makes methane.
- High initial cost
- Negative effect on local habitat
- Dam failures
- Prone to corrosion

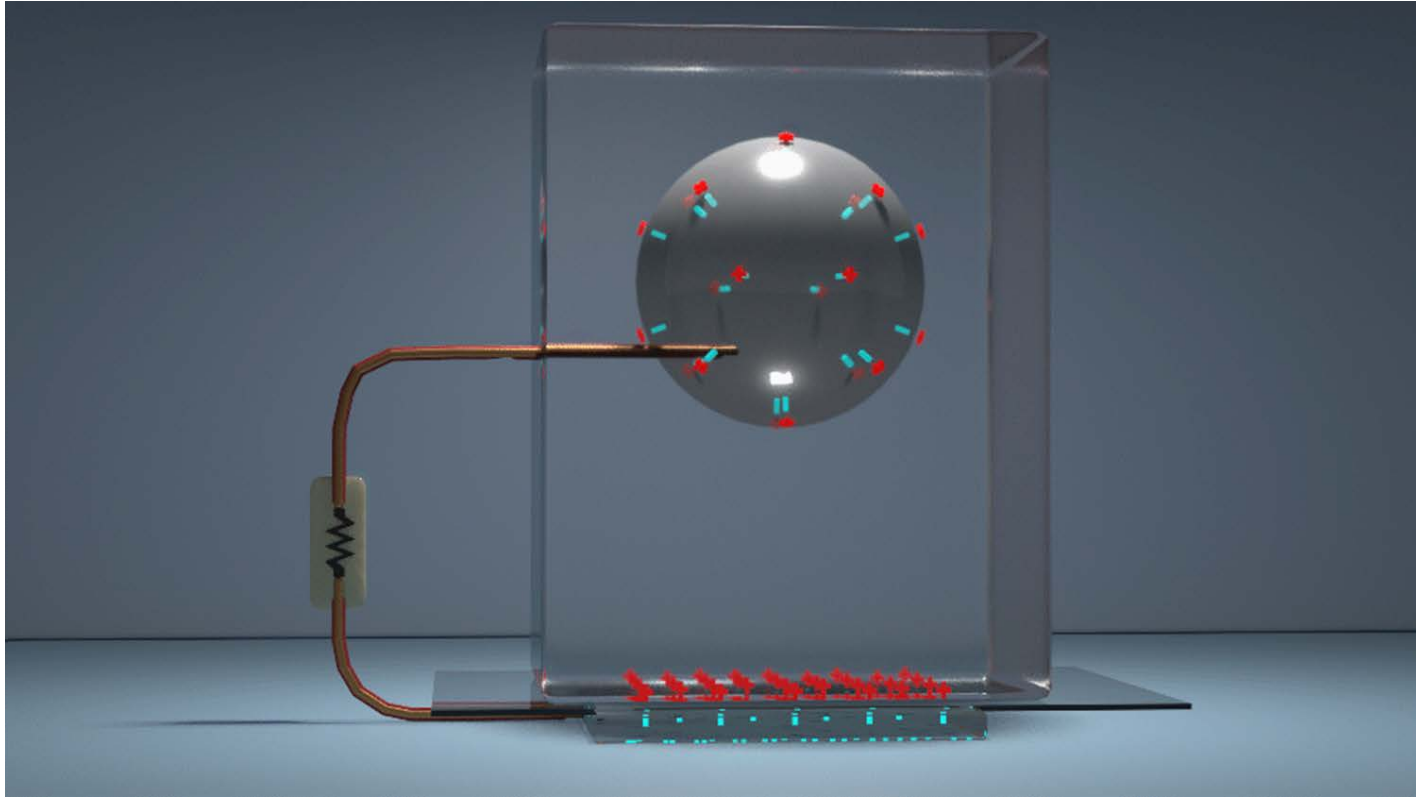
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Liquid Metal

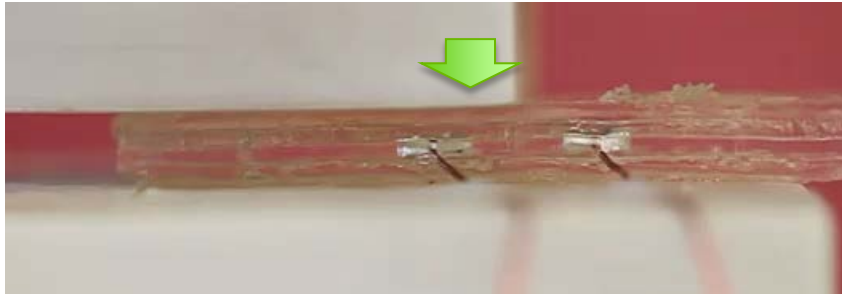
Tough and Stretchable Hydrogel



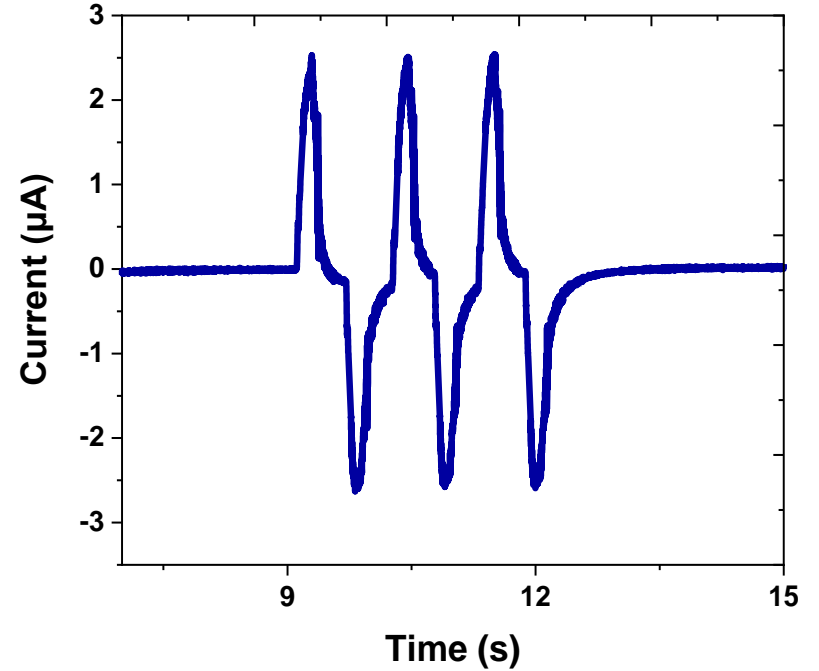
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Results

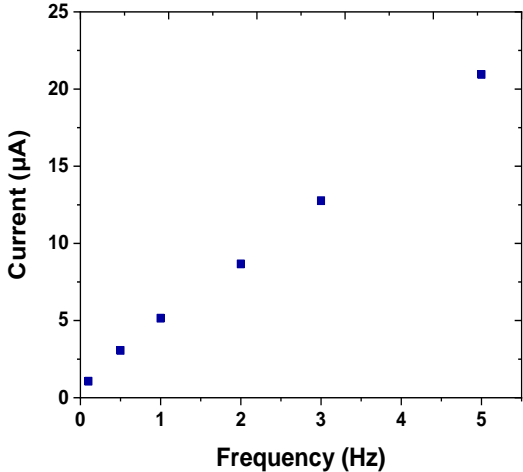
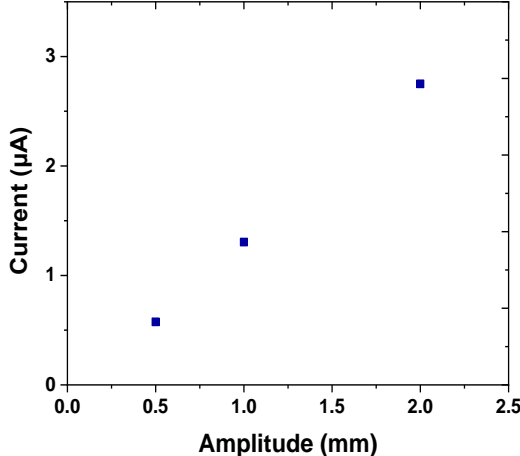
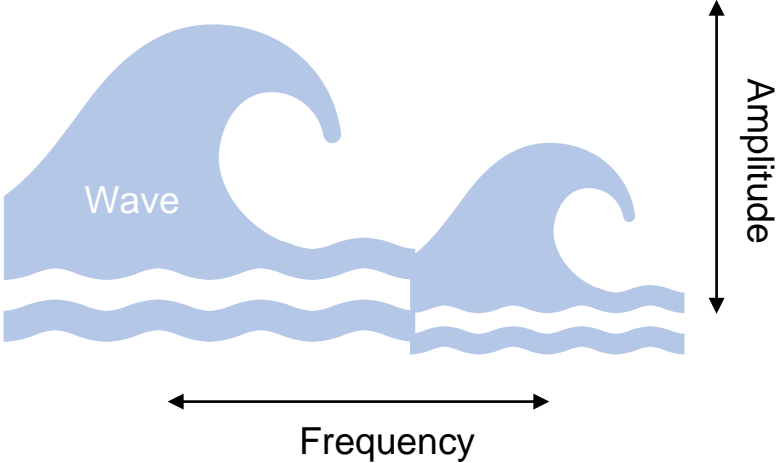


Mechanical energy



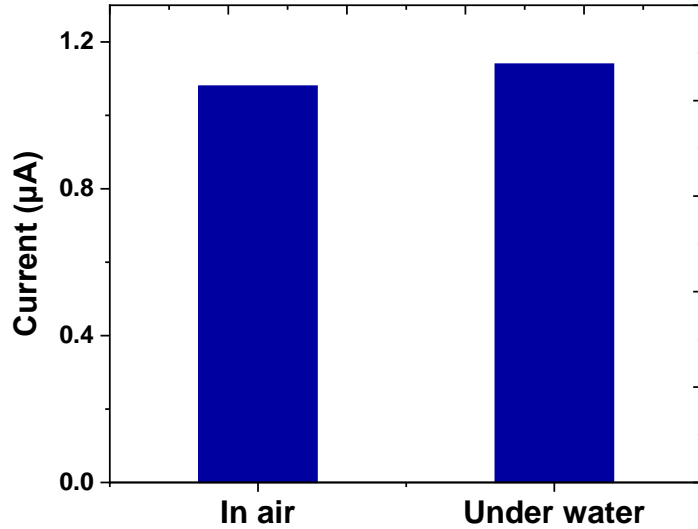
Electrical energy

Results

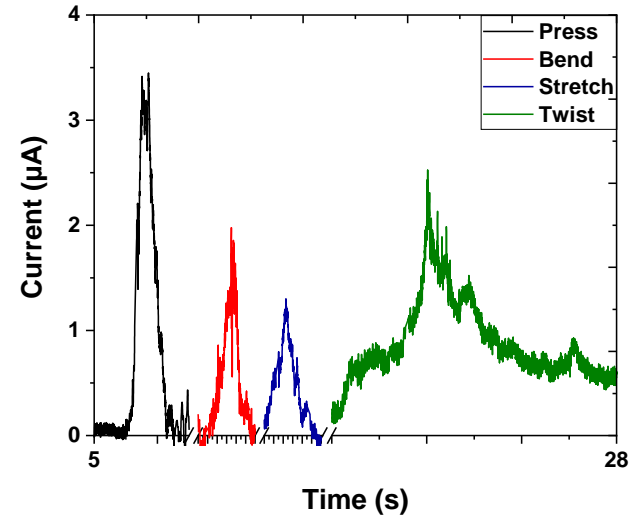
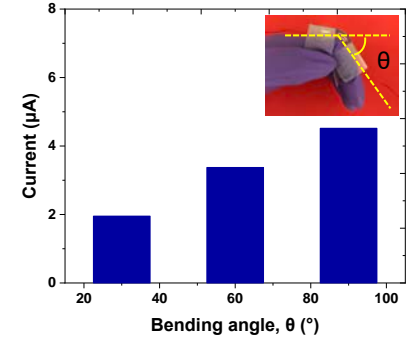
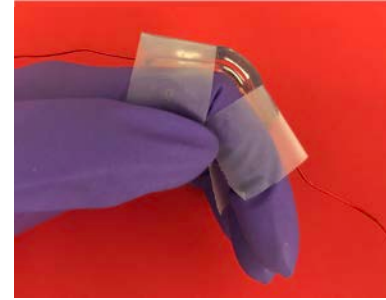


Results

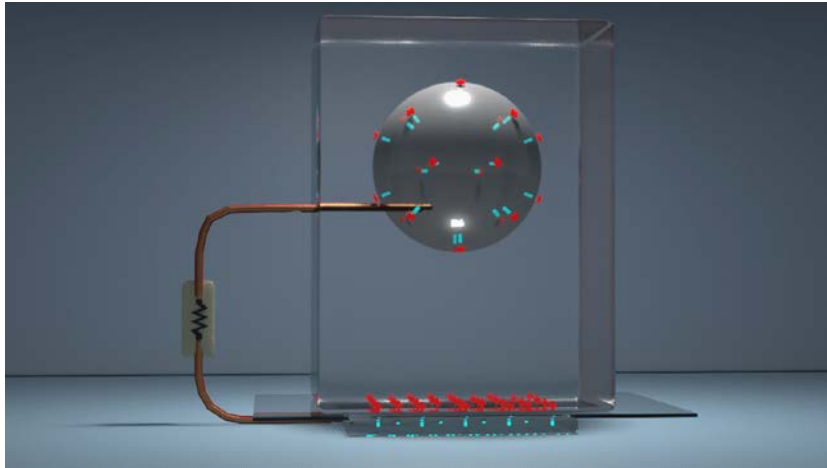
Works underwater and in air



Can be used as human motion harvester



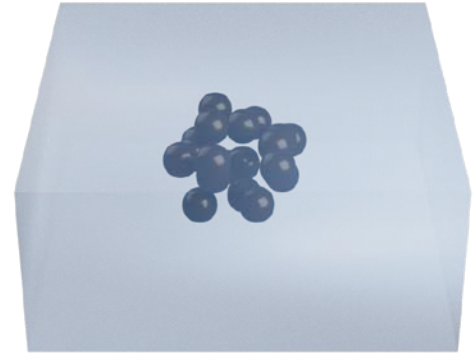
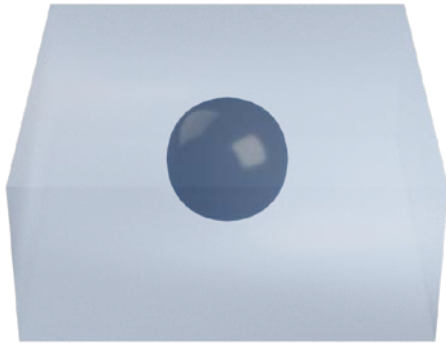
Conclusions



- ✓ Renewable
- ✓ No carbon emissions
- ✓ Inexpensive and easy to setup
- ✓ Friendly to marine life - No rotating blades or noise unlike turbines
- ✓ Not prone to corrosion
- ✓ Can generate energy from human motion and wind

Future work

High surface area electrodes to increase power output



Acknowledgments



Thank you!



*North Carolina Renewable
Ocean Energy Program*