



**Call for Research Preproposal on
Ocean Acidification
and
Wireless Power Transfer**

February 2018 – January 2020

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Objective 1

Impacts of ocean acidification on marine organisms

Preference will be given to proposals that focus on New England species of concern such as lobsters, scallops, mussels, etc.



Resources

- [Ocean Acidification State of the Science \(March 2013\)](#)
- Previously funded MIT Sea Grant ocean acidification research presentations can be found on our website: <http://seagrants.mit.edu/RFP.php>
- Current research papers on ocean acidification can be found on NOAA's Ocean Acidification Program's website:
<http://oceanacidification.noaa.gov/WhatsNew/OAPublications.aspx>



Objective 2

Underwater Position Flexible Wireless Power Transfer Station to Support Sensor Data Gathering

Develop coastal infrastructure to ensure an equivalent 'underwater gas station' or an equivalent 'underwater gas transfer truck'

*as presented at December 2016 meeting [[view presentation](#)]
and as updated at FY2018 RFP Info Meeting [[view presentation](#)]*



Resources

- One possible method to achieve Objective 2 is described in Stanislav V. Lukashov
 - A self-tuning 100 watt wireless power transfer system
 - MIT MEng Thesis Course 6, February 2017
 - Pdf File will be made available after February 1, 2017
- Additional useful information can be found in:
<http://www.oceanologyinternational.com/novadocuments/49643?v=635314268958030000>



Prototype Characteristics

Demonstrate position flexible wireless power transfer with an example load such as illumination

Technical Specifications:

- Power source of 1 kW
- Auto-start, Auto-stop
- Drive load energy in the ½ to 2 kWh range

Required Deliverables

- Different elements of the prototype can be approximated using boxes, as employed in Lukashov Thesis
- Paper design on how to best retrofit demonstrator into existing subsystems



2016-2018 Funded Projects

- Scott Doney of WHOI, *Quantification of the Contribution of Wastewater Effluent to Coastal Ocean Acidification*
- Justin Ries of Northeastern, *Impact of ocean acidification on calcification rate, shell properties, pallial fluid pH, and epigenetics of commercially important mollusks across critical life stages*
- Robyn Hannigan of UMass Boston, *Effects of acidification and temperature on shell mineralogy and transcriptome of the American lobster*



2017-2019 Funded Projects

- Themistoklis Sapsis of MIT, *Towards a Cost-Effective Monitoring System of Coastal Ocean Acidification in the US North East*
- Zhaohui 'Aleck' Wang of WHOI, *Developing a Miniaturized In-Situ Sensor Technology for Simultaneous Measurements of Seawater Dissolved Inorganic Carbon and pCO₂*
- Timothy Manning Swager of MIT, *Sensors for Measuring Carbon Dioxide, Bicarbonate, and pH in the Ocean*



Pre-proposals for MIT Sea Grant RFP

DUE March 3, 2017 at 5 pm

Thanks!

