



News Release

TEAM OF LEADING ENVIRONMENTAL AND AEROSPACE INSTITUTIONS PLEDGE TO DONATE \$250,000 PRIZE MONEY FROM WENDY SCHMIDT OCEAN HEALTH XPRIZE TO HELP SAVE OUR OCEANS

Honeywell Aerospace, Monterey Bay Aquarium Research Institute, Scripps Institution of Oceanography and Sea-Bird Scientific receive recognition for the development of accurate and sustainable pH sensors for oceanic acidification monitoring

SEATTLE, July 21, 2015 – Team DuraFET, a collective of environmental and technology leaders from Honeywell Aerospace (**NYSE: HON**), Monterey Bay Aquarium Research Institute, Scripps Institution of Oceanography at UC San Diego, and Sea-Bird Scientific, has been awarded \$250,000 in the Wendy Schmidt Ocean Health XPRIZE for its development of advanced deep-sea pH sensor technologies (SeaFET, SeapHOx and Deep-Sea DuraFET). The sensors allow scientists and oceanographers to accurately and easily observe ocean acidification, and address potential threats to global marine ecosystems.

This type of sensor technology is critical because rising levels of carbon in the atmosphere react in the ocean to create carbonic acid, resulting in increased ocean acidity. Ocean acidification can harm the ecological health of the world's oceans and the industries that depend on that ecosystem.

Team DuraFET's sensor technologies are the result of a seven-year partnership to develop, test and successfully deploy a sensor that could provide precise pH measurements over year-long periods while remaining affordable and sustainable. The technology is based on Honeywell's solid-state Ion Sensitive Field Effect Transistor, which enables a more accurate and cost-effective approach to ocean chemical sensing. Team DuraFET won a \$250,000 prize in the Accuracy category of the Wendy Schmidt Ocean Health XPRIZE. Team DuraFET will donate the prize money to the Argo ocean observing program, with the goal of driving continued research



into monitoring pH levels across varying ocean depths for months and years at a time. Argo is an international project dedicated to the observation of temperature and salinity of the earth's oceans. This donation will enable Argo to begin broadening its mission to include ocean acidification.

“The addition of stable biogeochemical sensors for pH and other measurements is a valuable new dimension to the Argo program,” said Dean Roemmich, a professor of oceanography at Scripps and co-chair of the International Argo Steering Team. “Our current global core measurements have so far been only temperature, salinity and ocean current. The addition of pH would give us a more comprehensive view of the ecological health of the global ocean.”

“Honeywell Aerospace has been a pioneer in safety and innovation technology for more than 100 years. And while that technology can normally be found flying 30,000 feet above the ocean, and not swimming beneath it, we understand how to create products that can withstand harsh environments,” said Robert Carlson, senior technical manager of Advanced Technology, Honeywell Aerospace. “As a part of Team DuraFET, we are able to use that expertise to better understand our oceans and to help keep them safe for generations to come.”

“The oceans are an essential natural resource whose resilience is being challenged by increasing acidity. What we don't know is how bad the problem is because the health of regions away from the coast is almost completely unobserved right now due to the logistics and costs of operating research ships,” Kenneth Johnson, senior scientist, Monterey Bay Aquarium Research Institute. “The DuraFET pH sensor allows for the robotic observing of noncoastal regions, serving as a low-cost, easy-to-deploy sentinel for ocean health. Currently, a network of these remarkable sensors is being created by the Southern Ocean Carbon and Climate Observations and Modeling (SOCCOM) project program to observe the remote ecosystems of the Southern Ocean where susceptibility to acidification is greatest.”



“It has been exciting to play a role in adapting the DuraFET technology developed by Honeywell for use in the ocean,” said Todd Martz, associate professor, Scripps Institution of Oceanography. “This sensor would not exist without a strong partnership between leaders from both industry and academia, so it is a satisfying feeling to see a working technology come out of the long days and nights spent in the lab by scientists at Honeywell, the Monterey Bay Aquarium Research Institute and a number of excellent graduate students at Scripps.”

“As the commercial partner on Team DuraFET, we are excited to be able to bring this technology from the laboratory to the ocean. By partnering with the strong institutions in team DuraFET, we have developed a truly accurate and durable sensor that will significantly broaden our view on the health of our ocean ecosystem,” said Casey Moore, president, Sea-Bird Scientific. “Since the late 1970s, Sea-Bird has been trusted to provide the data that can solve the hardest real-world problems in the world’s oceans. We will use this experience to use Team DuraFET’s technology to create a broad family of products that will support essential acidification studies in the near-shore and ocean environments.”

Development of the oceanographic DuraFET sensors was supported by grants from the U.S. National Science Foundation, the National Ocean Partnership Program, and the David and Lucile Packard Foundation.

About the Wendy Schmidt Ocean Health XPRIZE

The Wendy Schmidt Ocean Health XPRIZE is a \$2 million global competition that challenges teams of engineers, scientists and innovators to create affordable, accurate and efficient pH sensors. Current options on the market are costly, imprecise, or too unstable to allow for sufficient knowledge on the state of ocean acidification, and this competition seeks to change that.

Supporting Resources

- Read more about [Team DuraFET](#) and the [Wendy Schmidt Ocean Health XPRIZE](#)
- Read more about the [SOCCOM](#) research program and [Argo](#)
- Read more about [Monterey Bay Aquarium Research Institute](#)
- Read more about [Scripps Institution of Oceanography](#)
- Read more about [Sea-Bird Scientific](#)
- Read more about [Honeywell Aerospace](#) and on the [Follow The Aero](#) blog
- Like [Honeywell Aerospace](#) on Facebook and follow [@Honeywell_Aero](#) on Twitter
- Subscribe to Honeywell's [Corporate RSS feed](#)

Media Contacts:

Nicole Stewart
Honeywell Aerospace
+1 (480) 414-6083
nicole.stewart@honeywell.com
[Honeywell Aerospace Media Center](#)

Kim Fulton-Bennett
Monterey Bay Aquarium Research Institute
+1 (831) 775 1835
kfb@mbari.org

Robert Monroe
Scripps Institution of Oceanography
+1 (858) 822-4487
rmonroe@ucsd.edu

Geoff MacIntyre
Sea-Bird Scientific
+1 (902) 492-4780
gmacintyre@sea-birdscientific.com

About Monterey Bay Aquarium Research Institute

The Monterey Bay Aquarium Research Institute (MBARI) is a private, non-profit research institution where scientists and engineers work together to develop new instruments and methods for studying the ocean. MBARI scientists and engineers conduct multidisciplinary research in a variety of fields, including marine biology, marine chemistry, marine geology, physical oceanography, and marine technology. Located in Moss Landing, California, MBARI is supported primarily by the David and Lucile Packard Foundation.

About Scripps Institution of Oceanography

Scripps Institution of Oceanography at the University of California, San Diego, is one of the oldest, largest, and most important centers for global science research and education in the world. Now in its second century of discovery, the scientific scope of the institution has grown to include biological, physical, chemical, geological, geophysical, and atmospheric studies of the earth as a system. Hundreds of research programs covering a wide range of scientific areas are



under way today on every continent and in every ocean. The institution has a staff of about 1,400 and annual expenditures of approximately \$170 million from federal, state, and private sources. Scripps operates robotic networks and one of the largest U.S. academic fleets with four oceanographic research ships and one research platform for worldwide exploration. Birch Aquarium at Scripps serves as the interpretive center of the institution and showcases Scripps research and a diverse array of marine life through exhibits and programming for more than 425,000 visitors each year. Learn more at scripps.ucsd.edu.

About Sea-Bird Scientific

Sea-Bird Scientific, a global provider of oceanographic and water quality sensors and platforms, is headquartered in Bellevue, WA. Sea-Bird Scientific manufactures a variety of pH sensors including the SeaFET™ Ocean pH sensor. The SeaFET™ is also used in the SeapHOx™, a combination pH, conductivity, temperature, depth, and oxygen sensor. Using Team DuraFET's deep ocean pH sensor technology, Sea-Bird Scientific has recently launched the Deep SeapHOx™ and Float Deep SeaFET™ sensors bringing highly accurate and stable pH measurements to depths of 2000 meters.

About Honeywell Aerospace

Honeywell Aerospace products and services are found on virtually every commercial, defense and space aircraft, and its turbochargers are used by nearly every automaker and truck manufacturer around the world. The Aerospace business unit develops innovative solutions for more fuel-efficient automobiles and airplanes, more direct and on-time flights, safer flying and runway traffic, along with aircraft engines, cockpit and cabin electronics, wireless connectivity services, logistics, and more. The business delivers safer, faster, and more efficient and comfortable transportation-related experiences worldwide. For more information, visit www.honeywell.com or follow us at [@Honeywell_Aero](https://twitter.com/Honeywell_Aero) and [@Honeywell_Turbo](https://twitter.com/Honeywell_Turbo).

Honeywell (www.honeywell.com) is a Fortune 100 diversified technology and manufacturing leader, serving customers worldwide with aerospace products and services; control technologies for buildings, homes and industry; turbochargers; and performance materials. For more news and information on Honeywell, please visit www.honeywellnow.com.

Honeywell and the Honeywell logo are the exclusive properties of Honeywell, are registered with the U.S. Patent and Trademark Office, and may be registered or pending registration in other countries. All other Honeywell product names, technology names, trademarks, service marks, and logos may be registered or pending registration in the U.S. or in other countries. All other trademarks or registered trademarks are the property of their respective owners. Copyright 2015 Honeywell.

###