

# 海のフロンティアを拓く 岡村健二賞

Kenji Okamura Memorial Award for Pioneering the Ocean Frontier

2023

#### 「海のフロンティアを拓く岡村健二賞」創設趣意

テクノオーシャン・ネットワーク(TON)では、岡村健二氏のご遺志を継ぐ事業の一つとして、ご遺族のご芳志をいただき、同氏が所属されていた三菱重工業株式会社のご厚意のもと、2010年に「海のフロンティアを拓く岡村健二賞」を創設いたしました。

故岡村健二氏は、日本の海洋開発について、先行的・共通的技術開発の必要性、重要性を強調され、海洋科学技術センター(現JAMSTEC)の設立および初代理事の一人として機器開発や深海研究の実施に積極的に取り組まれました。これは国家プロジェクトである有人潜水艇「しんかい2000」や「しんかい6500」の実現につながりました。また、海洋技術の先進国である米国を目標にわが国の海洋工学の向上に腐心され、わが国の海洋関係者に米国の技術レベルとわが国のそれとをしっかり認識することの重要性を常に考えられ、米国で毎年開催される海洋国際コンベンションであるOCEANSやROV International(現Underwater Intervention)等を日本に誘致することを考えておられました。その夢は、岡村氏が物故された後、ようやく2004年にNOAA長官を基調講演に招いたTechno-Ocean / OCEANS 2004として実現したわけです。また、同氏は、技術者として世界トップクラスの高速ディーゼル機関を開発、完成させたディーゼル機関の国際的権威者でもあります。

このように、技術者として常に新しい技術への挑戦を続け、国際的視野に立ち、先見の明をもたれた岡村健二氏は、海洋立国日本の発展のためにご活躍され、多大なるご貢献をされました。

そこで、TONでは、2010年のTechno-Ocean開催を機に、岡村健二氏の社会的功労を偲び、学術的功績を讃え、「海のフロンティアを拓く岡村健二賞」を創設し、同氏の遺志を継ぐわが国の若い研究者・技術者に対して、これを贈呈することといたしました。

#### 岡村健二氏 プロフィール

大正元年12月8日長岡市にて出生。昭和9年東京帝国大学工学部卒業後、同年三菱航空㈱入社。昭和39年社名改称により三菱重工業㈱転籍。本社技術本部技術管理部長、同社技術本部長代理等の要職を経た後、昭和62年1月まで同社技術本部顧問。昭和39年5月より菱日エンジニアリング㈱取締役、三菱開発㈱常務取締役、菱和海洋開発㈱取締役社長を歴任。昭和46年海洋科学技術センター理事、昭和61年同顧問。昭和50年国際海洋資源工学委員会(ECOR)会長。昭和26年米国Naval Academyから「舶用高性能ディーゼル機関の開発」でPhDを授与。昭和30年紫綬褒章、昭和55年第一回MTS国際賞、昭和58年勲三等瑞宝章、昭和62年国際燃焼機関会議ゴールドメダルなどを受賞。平成元年1月15日逝去。

### "Kenji Okamura Memorial Award for Pioneering the Ocean Frontier" Founding Statement

The Techno-Ocean Network (TON) established the Kenji Okamura Memorial Award for Pioneering the Ocean Frontier in 2010. This award is one of a number of projects conducted in accordance with the wishes of the late Dr. Kenji Okamura with the kind consent of his bereaved family and through the courtesy of Mitsubishi Heavy Industries Ltd., the company for which he worked for many years.

With respect to Japanese marine development, the Dr. Okamura laid a strong emphasis on the necessity and importance of pursuing advanced and unified technological development. Dr. Okamura was actively involved in developing equipment and conducting deep-sea research as one of the founding directors of the Japan Marine Science and Technology Center (the forerunner organization of the present Japan Agency for Marine-Earth Science and Technology (JAMSTEC)). His work was closely linked with the achievement of the national projects to develop the manned deep-sea submergence research vehicles "SHINKAI 2000" and "SHINKAI 6500". Dr. Okamura also made every effort to raise Japan's ocean engineering to a level matching that of the United States, which possessed the world's most advanced ocean technology. He always considered it extremely important that those working in ocean-related fields in Japan had a clear grasp of the technological levels in both the US and in Japan, and to this end he paid consideration to attracting international marine conventions to Japan such as OCEANS and ROV International (the present Underwater Intervention), which are held annually in the US. This dream was finally realized in 2004, after his death, with the holding of Techno-Ocean/OCEANS 2004, to which the President of the NOAA was invited as a keynote speaker. Furthermore, Dr. Okamura was an acknowledged international expert on diesel engines who developed and perfected one of the world's top-class high-speed diesel engines.

In ways such as these, Dr. Okamura continually rose to the challenge of developing new technology. He possessed a foresight that rested on a global viewpoint, played an active role in developing Japan as an ocean state, and made numerous contributions to the advance of technical knowledge.

Taking advantage of the opportunity presented by the holding of Techno-Ocean 2010, TON established the Kenji Okamura Memorial Award for Pioneering the Ocean Frontier in commemoration of Dr. Okamura's services to society and in celebration of his academic achievements. This award is presented to young Japanese researchers and engineers who are judged to be working innovatively in the ocean field in accordance with his wishes.

#### Kenji Okamura — Profile

Dr. Kenji Okamura was born in Nagaoka City on December 8, 1912. He graduated from the Engineering Department of Tokyo Teikoku University (the present Tokyo University) in 1934 and joined Mitsubishi Aircraft Company in the same year. In 1964, in line with a change of company name, he was transferred to Mitsubishi Heavy Industries, Ltd. After holding important posts such as Technology Management Manager and later Acting Manager at the Head Office Technology & Innovation Headquarters, he served as an advisor to the Technology & Innovation Headquarters until January 1987. From May 1964 he also held several other prominent positions such as Director of Ryonichi Engineering Co., Ltd., Executive Managing Director of Mitsubishi Kaihatsu Kabushiki Kaisha, and President and Director of Ryowa Kaiyo Kaihatsu Kabushiki Kaisha. In 1971, he became the Director of the Japan Agency for Marine-Earth Science and Technology (JAMSTEC) and subsequently served as an advisor to that organization from 1986. In 1975, he became Chairman of the Engineering Committee on Oceanic Resources (ECOR). In 1951, he was awarded a PhD by the Naval Academy for "the development of a marine high-performance diesel engine." During his long career, he was also honored with a slew of awards including the Medal with Purple Ribbon in 1955, the First MTS International Award in 1980, the Order of the Sacred Treasure in 1983, and the International Council on Combustion Engines (CIMAC) Gold Medal in 1985. Dr. Okamura died on January 15, 1989.

#### 2023年「海のフロンティアを拓く岡村健二賞」受賞者



国立研究開発法人 海洋研究開発機構 技術開発部 基盤技術研究開発グループ 副主任研究員 出口 充康

出口充康氏は水中音響通信特有の課題に対してマルチチャネル Decision Feedback Equalizer (DFE) や time-reversal DFEなど時間領域でチャネル 等化 (時空間等化)を行う方法について研究を進めてきた。

同氏はこれらの研究開発グループの中核を担いDFEをさらに高機能化するための様々な方向を考案し研究を進め、適応的に調整する方法(Adaptive Digital Down-Conversion (ADDC) DFE)やDigital Phase Lock Loop (DPLL)をフィードバックフィルタに付加する方法を考案することにより、この方法の有効性をシミュレーションと実データで解析し従来のDFEよりも復調成績が向上することを示した。

以上のように同氏は音波伝搬現象やデジタル信号処理に関する深い理解と 見識を基に、水中音響通信における特有の問題に対して、独創的かつ実装可能 な方法を考案し研究を鋭意進めている。

テクノオーシャン・ネットワークは、このような研究成果を挙げている出口充康氏が、今後さらなる飛躍的と成果を挙げうると判断し、この分野の将来を切り開く若手研究者への賞である「海のフロンティアを拓く岡村健二賞」を贈り、これまでの顕著な業績を讃える。

## "Kenji Okamura Memorial Award for Pioneering the Ocean Frontier" 2023 Award Winner

### Mitsuyasu DEGUCHI

Researcher, Japan Agency for Marine-Earth Science and Technology Marine Engineering Science Group, Engineering Department

Dr. Mitsuyasu Deguchi conducts research into channel (spatio-temporal) equalization methods in the time domain to solve issues specific to underwater acoustic communications such as using a multi-channel Decision Feedback Equalizer (DFE) and time-reversal DFE.

A core member among R&D groups in this field, he has devised and tested different ways to improve the DFE method. From this he has developed the Adaptive Digital Down-Conversion (ADDC) DFE and a Digital Phase Lock Loop (DPLL). Simulations and real data have been used to analyze their effectiveness compared to conventional DFE and an improved demodulation performance has been demonstrated.

Through his wide knowledge and deep understanding of both sound wave propagation phenomena and digital signal processing, Dr. Deguchi has devised original and practical methods which can be implemented to solve the unique obstacles of underwater acoustic communication.

The Techno-Ocean Network wishes to recognize the remarkable research achieved already by Dr. Deguchi and has every expectation that he will continue to achieve such dramatic results in the future. As such, the TON presents him with the 'Kenji Okamura Memorial Award for Pioneering the Ocean Frontier', an award reserved for outstanding young researchers driving the future of this field.



| 2010 | 福場 辰洋          | Tatsuhiro FUKUBA  |
|------|----------------|-------------------|
| 2012 | 巻 俊宏           | Toshihiro MAKI    |
| 2012 | 亀山 宗彦          | Sohiko KAMEYAMA   |
| 2014 | Blair THORNTON |                   |
| 2016 | 高橋 勇樹          | Yuki TAKAHASHI    |
| 2016 | 水野 勝紀          | Katsunori MIZUNO  |
| 2018 | 高橋 朋子          | Tomoko TAKAHASHI  |
| 2021 | 松田 匠未          | Takumi MATSUDA    |
| 2023 | 出口 充康          | Mitsuyasu DEGUCHI |

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